RESPONSIVENESS SUMMARY

DRAFT PERMIT FOR DANGEROUS AND OR MIXED WASTE RESEARCH, DEVELOPMENT, AND DEMONSTRATION

Hanford Facility Demonstration Bulk Vitrification System (DBVS Facility) In the 200 West Area of the Hanford Site

November 2004

Introduction

This responsiveness summary is a result of written comments received by the Washington State Department of Ecology (referred to hereafter as Ecology or Department) on the proposed Draft Permit to the Hanford Facility Dangerous and/or Mixed Waste Research, Development, and Demonstration (RD&D) Permit. This Permit sets the conditions for operation and management of the Demonstration Bulk Vitrification System (DBVS Facility). The Draft Permit and Fact Sheet were available for public review and comment from July 26, 2004, to September 9, 2004. A Public meeting/hearing was held August 31, 2004. The following is a summary of changes made to the Draft RD&D Permit:

Introduction

No changes were made.

List of Attachments

These Attachments were revised to include portions of the Permit Application that were omitted from the Draft Permit.

- Appendix A of the Permit Application was added to Permit Attachment LL.
- Appendix B of the Permit Application was added to Permit Attachment FF.
- Appendix F of the Permit Application was added to Permit Attachment FF.
- Appendix F of the Permit Application was added to Permit Attachment JJ.
- Appendix F of the Permit Application was added to Permit Attachment KK.

Permit Attachment 1 was added to incorporate Section 1.0 of the Permit Application into the Permit for information purposes only

Definitions

A definition for “high winds” was added.

Acronyms

- No new or revised acronyms were added.

Part I, Standard Conditions

- Permit Condition I.I was revised to make the proposed permit language more clear with respect to the proposed permit duration of 400 operating days.

Part II, General Facility Conditions

- Permit Condition II.B.7.z was added to clarify Land Disposal Restriction (LDR) Standards in Attachment BB.
- Permit Condition II.L was modified to clarify meeting the LDR Standards.

Part III, Containers

- No changes.

Part IV, Tanks

- Permit Condition IV.A.8.d.ii was changed to address hose-in-hose-transfer-line leak detection.

Part V, Demonstration Bulk Vitrification System (DBVS)

- Permit Condition V.I.4.d was changed to address hose-in-hose-transfer-line leak detection.
- Permit Condition V.I.6.b was revised to include the need to collect data to demonstrate LDR compliance.
- Permit Condition V.I.6.e was revised to clarify the intent of the permit condition.
- Permit Condition V.I.7 was modified to add requirements to generate information on the fate of constituents of concern, to generate information to assess the potential for waste minimization for secondary wastes, and to generate information on accepting a potential waste stream from the future Waste Treatment Plant in the Phase 2 Campaign Plans.

Part VI, Facility Submittal Schedule

Two changes were made to Table VI.1 as follows:

- A row was added to the table to include the required submissions in Permit Condition III.G.4.
- The permit condition citations listed for Reference "II.C.6" was changed to the correct erroneous permit condition cited.

Miscellaneous Changes

- Several minor changes were made throughout the Permit for grammar and consistency in presentation.
- The list of attachments was updated.

This Responsiveness Summary is intended to address all the comments received and show how those comments were evaluated. Ecology received the following comments, and has responded to each in the following order:

- 1 comment was received from Allan Panitch on August 16, 2004.
- 1 comment was received from CH2M HILL, on August 20, 2004.
- 70 comments were received from Rodney S. Skeen and the Confederated Tribes of the Umatilla Indian Reservation on August 25, 2004.
- 1 comment was received from Ron Bourgoin on September 1, 2004.
- 9 comments were received from Allyn Boldt on September 8, 2004.
- 17 comments were received from Floyd E. Ivey on September 9, 2004.
- 15 comments were received from Heart of America Northwest, Gerald Pollett on September 9, 2004.
- 4 comments were received from the Confederated Tribes and Bands of the Yakima Nation, Andrea J. Spencer on September 13, 2004.

This Responsiveness Summary will be made part of the Hanford Facility Administrative Record for future reference.

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ACRONYMS

BBI	best basis inventory
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act*
CFR	*Code of Federal Regulations*
CH2M HILL	CH2M Hill Hanford Group, Inc.
Cs-137	cesium-137
DBVS FACILITY	Demonstration Bulk Vitrification System
DEIS	Draft Environmental Impact Statement
DNS	determination of nonsignificance
DRE	destruction and removal efficiency
dscm	dry standard cubic meter
DST	double-shell tank
Ecology	Washington State Department of Ecology
EHW	extremely hazardous waste
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ERA	*Energy Reorganization Act*
ESP	Environmental Simulation Program
ETF	Effluent Treatment Facility
FHA	final hazard analysis
GAO	Government Accountability Office
gpm	gallons per minute
HFFACO	*Hanford Federal Facility Agreement and Consent Order*
HIHTL	hose-in-hose transfer line
HLVIT	high-level vitrification
ICV®	in-container vitrification
IDF	Integrated Disposal Facility
ILAW	immobilized low-activity waste
INEEL	Idaho National Engineering and Environmental Laboratory

kg.....kilogram
LDR.....Land Disposal Restriction
LAW .....low-activity waste
M^3.....cubic meter
MACT .....Maximum Achievable Control Technology
MDWS .....Mitigated Determination of Nonsignificance
MT.....metric ton
NAS.....National Academy of Sciences
NCR .....Nonconformance Report
NEPA .....*National Environmental Policy Act*
NRC .....Nuclear Regulatory Commission
NWP.....Nuclear Waste Program
NWPA.....Nuclear Waste Policy Act
ORP.....Office of River Protection
OSWER.....Office of Solid Waste and Emergency Response
PCB .....Polychlorinated Biphenyl
PHA.....Preliminary Hazard Analysis
PNNL .....Pacific Northwest National Laboratory
ppm .....parts per million
ppmv .....parts per million by volume
QA/QC .....Quality Assurance/Quality Control
RCRA.....*Resource Conservation and Recovery Act*
RCW .....*Revised Code of Washington*
RD&D .....research, development, and demonstration
SCR.....selective catalytic reduction
SST.....single-shell tank
TBD.....to be determined
TEQ.....toxicity equivalence
TWRS .....Tank Waste Remediation System
TSCA .....*Toxic Substances Control Act*
TSD .....treatment, storage, and disposal
TWINS.....Tank Waste Inventory Network System

USDOE .....United States Department of Energy

USDOE-ORP .....United States Department of Energy, Office of River Protection

USDOE-RL.....United States Department of Energy-Richland Operations Office

VOC .....Volatile Organic Analysis

WAC .....*Washington Administrative Code*

WAP.....Waste Analysis Plan

WFQ.....waste form qualification

WIR.....waste incidental to reprocessing

WRS .....Waste Retrieval System

wt.....weight

COMMENTER:
Alan Panitch
P.O. Box 99387
Seattle, WA 98199-0387

The commenter states the following:
COMMENT 1: "I do not trust the pronouncements of the Feds (AEC/NRC, etc.) especially the present administration. The enclosed clipping (New York Times newspaper article *"High Accident Risk is Seen in Atomic Waste Project"*) is essentially what I think i.e., when in doubt, don't. I've had 30 some years as contract manager dealing with government agencies. I just don't believe them in this area."

ECOLOGY RESPONSE: Ecology appreciates the comment.

Ecology has the responsibility to ensure that the RD&D Permit includes terms and conditions on the design and operation of the facility to assure the protection of human health and the environment.

The purpose of the RD&D Permit is to allow for the Test and Demonstration of the bulk vitrification facility for treatment of Hanford tank wastes. The Permit is temporary in duration and limits the quantities of dangerous and/or mixed waste to be treated. The Permittees must comply with all terms and conditions set forth in this Permit. The Permittees shall also comply with all applicable state regulations, including Chapter 173-303 Washington Administrative Code (WAC) and those specified in the Permit. Ecology will enforce all conditions of this Permit, based on federal regulations for which the state of Washington has received final authorization and all conditions that are state-only requirements.

COMMENTER:
CH2M HILL Hanford Group, Inc.
2440 Stevens Center Place
Richland, WA 99354

COMMENT 1: Office of River Protection (ORP) and CH2M HILL propose that the leak detection rate for the Hose-in Hose-Transfer Lines (HIHTL) be different than that specified in the Permit for tank systems. The Draft Permit Condition IV.A.8.d.ii states, "detection of a leak of at least 0.1 gallons per hour within twenty-four (24) hours is defined as being able to detect a leak within twenty-four (24) hours". This is not practical for HIHTLs and is not what is currently being required on the Hanford site. Our proposed change would be to revise Permit Conditions IV.A.8.d.ii and V.I.4.d to state, "Leak detection for HIHTL shall detect within 24-hours a leak rate as specified by the Permittees" *Temporary Waste Transfer Line Management Program, RPP-12711* and approved by Ecology for use with HIHTLs. This is consistent with the current agreement with Ecology.

ECOLOGY RESPONSE: Ecology agrees to revise the Permit Conditions IV.A.8.d.ii and V.I.4.d to read, "Detailed plans and descriptions, demonstrating the leak detection system is operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of dangerous and/or mixed waste, or accumulated liquid in the secondary containment system within twenty-four (24) hours [WAC 173-303-640(7)(b)(i)]. Leak detection for HIHTL shall detect within 24-hours a leak rate as specified by the Permittees' *Temporary Waste Transfer Line Management Program, RPP-12711*." Note: The Permittee will be responsible for providing a table for inclusion in the RD&D Permit (e.g., Table IV-2) summarizing line length, total holdup volume until detection, total time until detection occurs and minimum detectable leak rate.

COMMENTER:
Rodney S. Skeen, PhD, P.E.
Manager, Modeling Program of the Confederated Tribes of the Umatilla Indian Reservation Department of Science and Engineering (DOSE)

Page 3 of 101, Table of Contents: General Comment.
COMMENT 1: The attachments to the Permit are not listed in the table of contents. Please add a list of the permit attachments to the table of contents.
REQUEST ACTION: Please add a list of the permit attachments to the table of contents.

ECOLOGY RESPONSE: Ecology makes no change because The "List of Attachments" was included in the RD&D Permit Table of Contents on Page 2. A List of Attachments can be found on Page 7 of the RD&D Permit.

Page 21 of 101, Section II.A.5, text stating: "*At any time the offgas treatment system ceases to operate or produces insufficient vacuum to recover emissions from the areas, systems, or units, the Permittees shall … take measures to minimize evolution of emissions…."*
COMMENT 2: This reviewer could find no details within the Permit on what measures would be taken by the Permittees to minimize emissions during a failure of the offgas treatment system. Also, no analysis is provided to quantify a best and worst case emission level that can be expected during an offgas treatment system failure.
REQUEST ACTION: Please add the indicated information to the Permit and initiate Government-to-Government consultation processes and another public comment period to allow adequate review of the document.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that the RD&D Permit Application was deficient in providing this information. Ecology included compliance schedules under the following permit conditions in the RD&D Permit to require that the Permittees specifically identify measures it will implement to comply with this requirement and submit this information for Ecology review and approval.

Permit Condition II.C.6. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive written approval from Ecology for incorporation in Permit Attachment FF, of the following, with the exception of II.C.6.a.viii.A,

which will be incorporated into the Permit Administrative Record. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3:

Permit Condition II.C.6.a.iv. Mitigate effects of equipment failure and power outages.

Permit Condition II.C.6.a.vi. Prevent releases to the atmosphere.

Permit Condition II.C.6.a.vii. Test and maintain equipment to assure proper operation in the event of an emergency pursuant to WAC 173-303-340(1).

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.j. Detailed description of procedures for start-up and shutdown of waste feed and controlling and minimizing emissions in the event of an equipment malfunction including off-normal and emergency shutdown procedures, procedures for switching to back-up systems and tie into Permit Tables V.7 and V.8 and Appendix E of Permit Attachment LL.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6, and V.8 completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS offgas systems to recover emissions from the areas, systems or units, loss of DBVS subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS. Appendix E shall include a narrative description and information to support the parameters and limit values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

Also, as specifically reflected in Permit Condition II.A.4, “Air pollution control devices and capture systems in the DBVS Facility shall be maintained and operated so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the above equipment is properly operated and maintained, so as to minimize the emission of air contaminants and process upsets, shall be established and followed in accordance with the Ecology approved DBVS Campaign Plan.” Permit Condition VI.6.c requires that the DBVS Campaign Plans include a narrative description and information to support any updated Emergency Parameters and Limit Values (Emergency Parameters and Limit Values originally required under Permit Condition V.I.4.k).

With respect to the second question on Permit Condition II.A.5, concerning projecting best and worse case emission levels during an offgas treatment system failure; it is expected that the testing and monitoring under the RD&D Permit will provide information for such an evaluation to support an application for a long-term treatment permit, if the RD&D activities are determined to be successful.

However, Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.
Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the Nuclear Waste Program (NWP) website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permit tee's commencement of

Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such r changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 22 of 101, Section II.A.9, text stating: "Upon completion of the DBVS Facility construction subject to this Permit, the Permittees shall produce as-built drawings…."
COMMENT 3: This item is not included in the compliance table.
REQUEST ACTION: Please add item II.A.9 to the compliance table in Section VI, to ensure the table provides a complete list of the future information the Permittees must provide.

ECOLOGY RESPONSE: Ecology disagrees as discussed below:

The complete text of Permit Condition II.A.9 reads as follows, "Upon completion of the DBVS Facility construction subject to this Permit, the Permittees shall produce as-built drawings of the project which incorporate the design and construction nonconformance resulting from all change documentations, as well as changes made pursuant to Permit Condition II.A.8. The Permittees shall place the as-built drawings into the operating record within three (3) months of completing construction." The DBVS as-built drawings will become a part of the operating record and are not required to be submitted to Ecology.

Page 36 of 101, Section II.H.10, text stating: "*Section 11.3, page 11-1, second sentence, is revised as follows: 'Closure will require the removal…'* "
COMMENT 4: The indicated modification of the closure plan does not explicitly state that the goal of closure is to leave the site in a condition that is at least as clean as when the project commenced. The text should be modified to read:

> *Section 11.3, page 11-1, second sentence, is revised as follows: 'The closure process will restore the facility to pre-test conditions. Closure will require the removal….'*

REQUESTED ACTION: Please consider making the indicated change and, if the goal of closure is not to leave the site in a condition that is at least as clean as when the project commenced, please indicate under which applicable laws, statutes, and regulations this type of action is permitted.

ECOLOGY RESPONSE: Ecology agrees that the language in the Permit Application is not clear and consequently added language in Permit Condition II.H.10. Permit Condition II.H.10

states, "The following amendment to Permit Attachment EE is hereby made. The Permittee shall submit the revised page reflecting this amendment to Ecology prior to initial receipt of dangerous and/or mixed waste in the DBVS Facility. This amendment does not constitute a permit modification pursuant to Permit Conditions I.C.2 and I.C.3".

Section 11.3, page 11-1, second sentence, is revised as follows: "Closure will require the removal and disposal of all dangerous and/or mixed waste present, removal of contaminated process equipment and contaminated structural components, and removal of all soil contaminated by the DBVS Facility in accordance with WAC 173-303-610(2)(a)]."

Ecology believes that this permit condition addresses the commenter's concerns.
Page 37 of 101, Sections II.J.1.a through II.J.1.c, text stating: "…*such that the human health or the environment is threatened* …."
COMMENT 5: It is not clear from the Permit what criteria will be applied to evaluate whether or not a spill threatens human health or the environment.
REQUEST ACTION: Please revise the Permit to include the indicated evaluation criteria.

ECOLOGY RESPONSE: Ecology disagrees with the requested action and provides the following for clarification.

All spills, regardless of quantity, are to be reported as required under Permit Condition II.J.1.a, and Washington Administrative Code 173-303-145. WAC 173-303-145 cited in Permit Condition II.J.1, clearly states what actions are required of the permittee in the event of a spill or release of dangerous or mixed waste. For example, Washington Administrative Code 173-303-145 is titled "Spills and discharges into the environment" and includes notification, and mitigation and control requirements for such instances.

Pages 42 and 43 of 101, Sections III.G.4: General comment.
COMMENT 6: This section is not included in the compliance table.
REQUEST ACTION: Please add the items in Section III.G.4 to the compliance table in Section VI, to ensure the table provides a complete list of the future information the Permittees must provide.

ECOLOGY RESPONSE: Ecology agrees to include Section III.G.4 in the Compliance Table, Part VI of the Permit.

Page 45 of 101, Section IV.A.3.f, text stating: "*Prior to initial receipt of dangerous and/or mixed waste in the DBVS*…."
COMMENT 7: This item is not included in the compliance table.
REQUEST ACTION: Please add item IV.A.3.f to the compliance table in Section VI, to ensure the table provides a complete list of the future information the Permittees must provide.

ECOLOGY RESPONSE: Ecology disagrees with the requested action. Permit Condition IV.A.3.f is information that is a requirement of WAC 173-303-640 and the DBVS Facility's operating record. The permit condition is not a compliance schedule or an additional required submittal.

Page 57 of 101, Section V.A.1.b, text stating: "*The Permittees shall construct all containment systems for the DBVS as specified in Permit Attachment LL and Part V. of this Permit*."
COMMENT 8: The indicated condition suggests that tank construction requirements are included in the Permit. However, as noted previously, the Permit contains very little specific technical information, but rather only provides vague language on tank size and functions and proposes future addition of design specifics. Addition of these specifics will not require a permit modification and therefore will not be subject to Tribal or public scrutiny.
REQUEST ACTION: Please revise the Permit to ensure the public has an adequate opportunity to comment on the technical details of the construction and operation of the DBVS.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Permit Condition V.A.1, Construction and Maintenance, also requires tank construction in accordance with WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-340.

Permit Condition V.I, Compliance Schedules, adequately provides for the submittals of information signed and certified in accordance with WAC 173-303-810(12) prior to construction, and/or installation, and/or initial receipt of dangerous and/or mixed waste for each system, sub-system, operation procedures, integrity assessments, and emissions.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400 operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.
This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 58 of 101, Section V.A.1.h, text stating: "*The Permittees must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on information provided in Permit Attachment LL.*"
COMMENT 9: As previously noted for other details, the adequacy of corrosion protection cannot be evaluated from the information provided in this Permit.
REQUEST ACTION: Please ensure when details on material of construction and waste characteristics are added to the Permit that the Tribes and the public have an opportunity to comment on the corrosion protection proposed for the system**.**

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that the Permittees must provide the type and degree of corrosion protection to Permit Attachment LL. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous and/or mixed waste into the facility.

Permit Condition V.I.2. Prior to construction of each secondary containment and leak detection system for the DBVS as identified in Permit Tables V.2 and V.5, the Permittees shall submit and receive Ecology approval for the engineering information as specified below, for incorporation into Permit Attachment LL.

Permit Condition V.I.2.d. A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)].

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

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In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 59 of 101, Section V.A.1.m, text stating: "*Process monitors/instruments, as specified in Permit Tables V.3 and V.6, shall be equipped with operational alarms to warn…from the limits specified in Permit Tables V.7 and V.8 and Permit Attachment LL.*"
COMMENT 10: Tables V.3, V.6, V.7, V.8, and Attachment LL have no details.
REQUEST ACTION: Please ensure when details are added on the location and types of processing monitoring that the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the public has an opportunity to comment on the adequacy of the system.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that these tables in the Draft Permit and Permit Attachment LL need to be completed. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous or mixed waste into

the facility.

Permit Condition V.I.4.b. Detailed Description of an Emergency Parameter Control/Response System addressing operating parameters specified in Permit Tables V.7 and V.8, as approved pursuant to Permit Conditions V.I.4.k and V.I.6.c.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values to be identified in Appendix E of Permit Attachment LL, and Permit Tables V.3, V.6 and V.8, completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS offgas systems to recover emissions from the areas, systems or units, loss of DBVS subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS. Appendix E shall include a narrative description and information to support the parameters and limits values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

Permit Condition V.I.5.a. Permit Tables V.3 and V.6 shall be completed for DBVS leak detection system instruments and parameters, to provide the information as specified in each column heading.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400 operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating

the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 62 of 101, Section V.A.1.aa, text stating: "*Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall*…."
COMMENT 11: This item is not included in the compliance table.
REQUEST ACTION: Please add item V.A.1.aa to the compliance table in Section VI to ensure the table provides a complete list of the future information the Permittees must provide.

ECOLOGY RESPONSE: Ecology disagrees with the requested action as discussed below.

Part VI, Facility Submittal Schedule of the RD&D Permit is a table that contains a list of the information the DBVS Facility is required to submit to Ecology. Permit Condition V.A.1.aa is

information that is required to be maintained in the operating record of the DBVS Facility, not submitted to Ecology. Therefore, this would not be included in Table VI.1 of Part VI in the RD&D Permit.

Page 63 of 101, Section V.C.1.b, text stating: "*The Permittees shall operate the DBVS in order to maintain the systems and process parameters listed in Permit Tables V.3, V.6, V.7, and V.8,*…."
COMMENT 12: Tables V.3, V.6, V.7, and V.8 contain no details.
REQUEST ACTION: Please ensure when details are added to the indicated tables that the public has an opportunity to comment on the proposed operating ranges and set points for the system.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that the tables have no details. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous and/or mixed waste into the facility.

Permit Condition V.I.4.b. Detailed Description of an Emergency Parameter Control/Response System addressing operating parameters specified in Permit Tables V.7 and V.8, as approved pursuant to Permit Conditions V.I.4.k and V.I.6.c.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6, and V.8, completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS offgas systems to recover emissions from the areas, systems or units, loss of DBVS subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS. Appendix E shall include a narrative description and information to support the parameters and limits values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.
Permit Condition V.I.5.a. Permit Tables V.3 and V.6 shall be completed for DBVS leak detection system instruments and parameters, to provide the information as specified in each column heading.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400 operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC

173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 64 of 101, Section V.C.1.h, text stating: "*The Permittees shall not exceed 50% of the organic design capacity of the carbon filter and shall change-out the carbon filter prior….*"
COMMENT 13: The relative humidity of the vapor stream that passes though the carbon filter can have a large effect on the adsorption capacity of the carbon bed since water will compete for adsorption sites. To account for this phenomenon, the Permit should contain a requirement for monitoring the relative humidity of the air exiting the carbon filters and also include an upper limit on the amount of moisture allowed at this point.
REQUEST ACTION: Please ensure the Permit has the indicated additions**.**

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that relative humidity of the exhaust gas stream from the DBVS is one of the parameters (e.g., temperature, incoming constituent concentration, constituent vapor pressure, etc.) that is an important indicator for tracking remaining organic capacity of the carbon filter. Ecology included compliance schedules under the following permit conditions in the RD&D Permit to require that the Permittees specifically develop a program subject to Ecology review and approval (i.e., monitoring, procedures, tracking, etc., instrumentation and control systems) to assure that 50% of the organic design capacity of the carbon filter is not exceeded:

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Condition I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.m. Continuous emission monitor for measuring organic breakthrough of the DBVS carbon filter. Include monitor specifications, proposed location, monitoring plan, and documentation that the monitor is capable of detecting the organics (volatile, semi-volatile, and non-volatile) that could potentially be emitted from the DBVS.

Permit Condition V.I.4.n. Detailed procedures for maintaining and documenting in the DBVS operating record, a running count of the organic inventory fed to DBVS Waste Dryer from the DBVS Facility on a per campaign basis of spiked and non-spiked constituents and change-out of the carbon filter so as not to exceed fifty percent (50%) of the organic design capacity of the carbon filter.

Permit Condition V.I.4.o. Operation, calibration and maintenance procedures for the particulate matter, carbon monoxide, nitrogen oxide, sulfur oxides, organic continuous emission monitors, and the monitoring for the correction factor under Permit Condition V.I.4.a, including references to the technically appropriate specifications from 40 Code of Federal Regulations (CFR) Part 60, Appendix B, for each parameter.

Permit Condition V.I.3. Prior to installation of each sub-system as identified in Permit Tables V.1 and V.4, the Permittees shall submit and receive approval from Ecology for the engineering information as specified below, for incorporation into Permit Attachment LL (the information specified below will include dimensioned engineering drawings). Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3:

Permit Condition V.I.3.c. For subsystems that are not marked with an asterisk on Permit Tables V.1 and V.4 shall provide design information including: design drawings (General Arrangement Drawings in plan and cross section, references to codes and standards, updated Appendix B of Permit Attachment LL process flow diagrams, piping and instrumentation diagrams [including pressure control systems and mass and energy balances]), projected performance documentation, instrumentation/control loops for each subsystem, materials of construction, analysis/design methodology, fan curves for exhaust fan 1 (36-N31-025) and exhaust fan 2 (36-N31-026), physical and chemical tolerances of equipment, carbon filter organic (volatile, semi-volatile, non-volatile) design capacity and typical design details to support the subsystems and projected operational capability [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B))].

Permit Condition V.I.6.c. Also requires that the Permittees provide documentation with each DBVS Campaign Plan that fifty percent (50%) of the organic design capacity of the carbon filter, as specified in Permit Attachment LL, will not be exceeded during the DBVS Campaign.

Ecology believes that this addresses the commenter's concerns.

Page 64 of 101, Section V.E.3, text stating: "*The Permittees shall operate, calibrate, and maintain the instruments specified on Permit Tables V.3, V.6, and V.8,* …."
COMMENT 14: Tables V.3, V.6, and V.8 contain no details.
REQUEST ACTION: Please ensure when details are added to the indicated tables that the CTUIR and the public has an opportunity to comment on the proposed instrumentation.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that these tables in the Draft Permit need to be completed. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous or mixed waste into the facility.

Permit Condition V.I.4.b. Detailed Description of an Emergency Parameter Control/Response System addressing operating parameters specified in Permit Tables V.7 and V.8, as approved pursuant to Permit Conditions V.I.4.k and V.I.6.c.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6, and V.8, completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS offgas systems to recover emissions from the areas, systems or units, loss of DBVS subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS. Appendix E shall include a narrative description and information to support the parameters and limits values,

parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

Permit Condition V.I.5.a. Permit Tables V.3 and V.6 shall be completed for DBVS leak detection system instruments and parameters, to provide the information as specified in each column heading.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400 operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 68 of 101, Section V.I.3.c, text stating: "*For subsystems that are not marked with an asterisk on Permit Tables V.1 and V.4 shall provide design information including:*…"
COMMENT 15: The detailed information needed to properly review of Tables V.1 and V.4 has not been included in this Permit.
REQUEST ACTION: Please ensure when the indicated details are added to the Permit that the CTUIR and the public has an opportunity to review and provide comment.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that these tables in the Draft Permit and Permit Attachment LL need to be completed. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous or mixed waste into the facility.

Permit Condition V.I.3. Prior to installation of each subsystem as identified in Permit Tables V.1 and V.4, the Permittees shall submit and receive approval from Ecology for the engineering information as specified below, for incorporation into Permit Attachment LL (the information specified below will include dimensioned engineering drawings). Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition V.I.3.b. For subsystems that are marked with an asterisk on Permit Tables V.1 and V.4, the Permittees shall provide design information including: updated Appendix B of Permit Attachment LL process flow diagrams, piping and instrumentation diagrams (including pressure control system and mass and energy balances, physical and chemical tolerances of

equipment, projected performance documentation, instrumentation/control loops, and materials of construction.
Permit Condition V.I.3.c. For subsystems that are not marked with an asterisk on Permit Tables V.1 and V.4, shall provide design information including: design drawings (General Arrangement Drawings in plan and cross section, references to codes and standards, updated Appendix B of Permit Attachment LL process flow diagrams, piping and instrumentation diagrams [including pressure control systems and mass and energy balances]), projected performance documentation, instrumentation/control loops for each subsystem, materials of construction, analysis/design methodology, fan curves for exhaust fan 1 (36-N31-025) and exhaust fan 2 (36-N31-026), physical and chemical tolerances of equipment, carbon filter organic (volatile, semi-volatile and non-volatile) design capacity and typical design details to support the subsystems and projected operational capability.

Ecology disagrees with the commenter's request for another public comment period as previously explained in Comment 12.

Page 68 through 71 of 101, Section V.I.4, text stating: "*Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL.*"
COMMENT 16: The information detailed in the subsections of V.I.4 is extremely important to defining how the facility will be operated.
REQUEST ACTION: Please ensure when the indicated details are added to the Permit that the CTUIR and the public has an opportunity to review and provide comment.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The information detailed in the subsections of V.I.4 is extremely important, and the Permittees are required to submit this information to Ecology for approval prior to accepting dangerous and/or mixed waste into the facility.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400 operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the

environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

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Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 70 of 101, Section V.I.4.p.iii, text stating: "*Excessive ICV® package bottom temperature*."
COMMENT 17: Is the bottom of the ICV® package the only portion that is subject to excessive temperatures? Should this condition also be extended to the sides of the unit where off-normal circumstances such as improper placement of insulating materials could result in unacceptable temperatures?
REQUEST ACTION: Please evaluate the need for including the sides of the container in condition V.I.4.p.iii.

ECOLOGY RESPONSE: Ecology provides the following clarification as discussed below.

This permit condition was not intended to address potential off-normal circumstances, but rather to address the potential that the bottom of the ICV® package might be subject to excessive temperatures during normal operations. Ecology believes that it is not necessary to include the box sides in Permit Condition V.I.4.p.iii. The only way that the box sides could be exposed to excessive temperatures would be under the off-normal circumstance where the insulating panels were missing from the box sides. The box assembly, including the insulation board and refractory materials will be inspected before use.

Page 71 of 101, Section V.I.5, text stating: "*Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into this Permit*."
COMMENT 18: The information detailed in the subsequent subsections of V.I.5 is extremely important to defining how the facility will be operated.
REQUEST ACTION: Please ensure when the indicated details are added to the Permit so that the CTUIR and the public has an opportunity to review and provide comment.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that the information the Permittees are required to submit in Permit Condition V.I.5 is important, however, Permit Condition V.1, Compliance Schedules, adequately provides for the submittals of information signed and certified in accordance with WAC 173-303-810(12) prior to construction, and/or installation, and/or initial receipt of dangerous and/or mixed waste for each system, sub-system, operation procedures, integrity assessments, and emissions.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC

173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 72 and 73 of 101, Section V.I.6.e, text stating: "…*to support that the DBVS Campaign Plan design and operation during the campaign is projected to meet performance standards specified in Permit Condition V.I.6.f, within and outside of expected bounds of DBVS operations: (For purposes of this permit condition outside of expected bounds of process operations shall be defined as follows):*"

COMMENT 19: In the opinion of this reviewer, this permit condition is awkwardly worded. The text indicated above is followed by a description of what appears to be bounding design conditions that must be met by the proposed DBVS. However, the term "outside of expected bounds" does not imply a specific set of extreme values, but rather any value that is above (or below) an expected range. Hence, it is not clear how the indicated bounding values are to be applied to evaluate the sufficiency of the design. If this section is intended to describe bounding design conditions then it would be clearer if the indicated text were rewording as follows:

> "…*to support that the DBVS Campaign Plan design and operation during the campaign is projected to meet performance standards specified in permit Condition V.I.6.f while operating under normal conditions and at the bounding conditions detailed as follows:*

REQUEST ACTION: Please consider making the indicated changes to the text.

ECOLOGY RESPONSE: Ecology agrees that the recommended wording is clearer and has revised Draft Permit Condition V.I.6.e to incorporate it. The draft permit condition now reads:

> "V.I.6.e. Documentation (e.g., engineering calculations, test data, and/or manufacturer/vendor's warranties/operations and maintenance documentation, etc.) to support that the DBVS Campaign Plan design and operation during the campaign is projected to meet performance standards specified in Permit Condition V.I.6.f while operating under normal conditions and at the bounding conditions detailed as follows:"

Page 73, third paragraph, text stating: "*Dryer Offgas Treatment System and the Main Offgas Treatment System operation at or below lower bounds of expected efficiencies, as specified on Permit Tables V.1 and V.4 and Permit Attachment LL*."

COMMENT 20: Since no lower bound is given in this condition, the phrase "at or below" implies that the indicated systems must met its performance standards while operating at an efficiency that could range down to zero (0.0). Was this lower level of efficiency intended by the permit writer?

REQUEST ACTION: Please verify that the text in the Permit fulfills the intended purpose.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The intent was not to assume zero efficiency for all the offgas treatment equipment, but to assume appropriately conservative values for the expected system performance when establishing that the campaign is expected to meet the offgas system performance standards. In

some cases, an appropriately conservative value may be zero (e.g., acid gas removal in the condenser which is listed with a nominal control efficiency of <10%).

Ecology included compliance schedules under the following permit conditions in the RD&D Permit to require that the Permittees to specifically update Permit Attachment LL and complete Tables V.1 and V.4, to include information on projected DBVS subsystem efficiencies, subject to Ecology review and approval. If the lower bound of efficiency of a DBVS subsystem for a particular constituent is zero under normal operations, then it would be expected that zero credit would be accounted for that constituent for that subsystem towards meeting the performance standards. The RD&D Permit language does as such fulfill its intended purpose.

Permit Condition V.I.3. Prior to installation of each sub-system as identified in Permit Tables V.1 and V.4, the Permittees shall submit and receive approval from Ecology for the engineering information as specified below, for incorporation into Permit Attachment LL (the information specified below will include dimensioned engineering drawings). Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition V.I.3.c. For subsystems that are not marked with an asterisk on Permit Tables V.1 and V.4, shall provide design information including: design drawings (General Arrangement Drawings in plan and cross section, references to codes and standards, updated Appendix B of Permit Attachment LL process flow diagrams, piping and instrumentation diagrams [including pressure control systems and mass and energy balances]), projected performance documentation, instrumentation/control loops for each subsystem, materials of construction, analysis/design methodology, fan curves for exhaust fan 1 (36-N31-025) and exhaust fan 2 (36-N31-026), physical and chemical tolerances of equipment, carbon filter organic (volatile, semi-volatile, non-volatile) design capacity and typical design details to support the subsystems and projected operational capability [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)].

Permit Condition V.I.5. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following as specified below for incorporation into this Permit. Such approval shall not require a permit modification under Permit Condition I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2, V.I.3, and V.I.4, as approved by Ecology:

Permit Condition V.I.5.b. Permit Tables V.1 and V.4 amended as follows [WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)]:

Permit Condition V.I.5.b.iii. Under column 3, replace "Reserved" with the appropriate references (e.g., drawing numbers, etc.) to the updated portions of Permit Attachment LL.

Permit Condition V.I.5.b.iv. Under column 4, update and complete list of narrative description, tables and figures.

Page 73 of 101, Section V.I.6.f.i, text stating: "*A destruction and removal efficiency (DRE)…*"

COMMENT 21: Although a DRE is being established for organics, it does not appear that this Permit contains concentration limits for organics other than dioxins and furans.
REQUEST ACTION: Please consider adding risk based concentration limits for individual organics and an additional overall limit based on the additive effects of all the organics.
ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology has included other requirements in the RD&D Permit to limit the emission of organics including requiring continuous emission monitoring for measuring organic breakthrough of the DBVS carbon filter (Permit Condition V.E), tracking organics into the DBVS and change-out of carbon filter so as not to exceed fifty percent (50%) of the organic design capacity of the carbon filter (Permit Conditions V.C.1.h and V.C.1.i), monitoring carbon monoxide as an indicator of the organics in the DBVS emissions (Permit Condition V.E), and requiring that the Permittees take no credit for retention of organics in the melt in determining projected compliance with performance standards (Permit Condition V.I.6.e). These requirements are conservative and appropriately specific, consistent with the RD&D nature of the activities covered under this Permit. It is expected that the testing and monitoring under the RD&D Permit will provide information to develop risk based concentrations for individual organics to support a Permit Application for a long-term treatment permit, if the RD&D activities are determined to be successful.

Page 73 of 101, Section V.I.6.f.ii text stating: "*Particulate mater emissions from the DBVS offgas exhaust stack*…."
COMMENT 22: It is stated in 40 CFR 63.1203(b)(7) that measured particulate level must be corrected to a dry, seven percent (7%) oxygen basis before being compared to the required limit of 34 mg/ dry standard cubic meter (dscm).
REQUEST ACTION: Please add language to the permit to specify that the particulate matter limit is based on the offgas level corrected to a dry, seven percent (7%) oxygen basis.

ECOLOGY RESPONSE: Ecology neither agrees or disagrees and provides clarification as discussed below.

Though Ecology has determined that it is appropriate to apply the hazardous waste combustion numerical emission standards for incinerators under 40 CFR Part 63 Subpart EEE to the DBVS as a thermal treatment system under the RD&D Permit, Ecology has not made a determination that the seven percent (7%) oxygen correction factor that is applied to these numerical standards for incinerators is appropriate for the DBVS Facility. Ecology has included the following permit conditions to determine the appropriate correction factor, that should be applied to the DBVS Facility and to require the monitoring necessary to implement this correction factor:

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Condition I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.a. A correction factor, with supporting description, and monitoring that can be applied to the performance standards specified in Permit Condition V.I.6.f that would assure that the design and operation of the DBVS promotes the reduction of the total quantity of dangerous/hazardous constituents released as air emissions by maximizing removal and destruction of constituents prior to release from the exhaust stack, versus significant reduction of the concentration of the emissions in the exhaust by increased dilution air. The supporting description shall discuss how it will be applied and the appropriateness of its application to each performance standard specified in Permit Condition V.I.6.f and specific details on how the factor will be monitored during operation.

Permit Condition V.I.4.o. Operation, calibration and maintenance procedures for the particulate matter, carbon monoxide, nitrogen oxide, sulfur oxides, organic continuous emission monitors, and the monitoring for the correction factor under Permit Condition V.I.4.a, including references to the technically appropriate specifications from 40 CFR Part 60, Appendix B, for each parameter.

Page 73 of 101, Section V.I.6.f.iii, text stating: "*Hydrochloric acid and chlorine gas emissions from the DBVS offgas exhaust stack*…."
COMMENT 23: It is stated in 40 CFR 63.1203 that measured hydrochloric acid and chlorine level must be corrected to a dry, seven percent (7%) oxygen basis before being compared to the required limit of 21 parts per million by volume (ppmv).
REQUEST ACTION: Please add language to the permit to specify that the hydrochloric acid and chlorine matter limit is based on the offgas level corrected to a dry, seven percent (7%) oxygen basis.

ECOLOGY RESPONSE: Ecology neither agrees nor disagrees and provides clarification as discussed below.

Though Ecology has determined that it is appropriate to apply the hazardous waste combustion numerical emission standards for incinerators under 40 CFR Part 63 Subpart EEE to the DBVS as a thermal treatment system under the RD&D Permit, Ecology has not made a determination that the seven percent (7%) oxygen correction factor that is applied to these numerical standards for incinerators is appropriate for the DBVS. Ecology has included the following permit conditions to determine the appropriate correction factor, that should be applied to the DBVS and to require the monitoring necessary to implement this correction factor:

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Condition I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.a. A correction factor, with supporting description, and monitoring that can be applied to the performance standards specified in Permit Condition V.I.6.f that would assure that the design and operation of the DBVS promotes the reduction of the total quantity of dangerous/hazardous constituents released as air emissions by maximizing removal and

destruction of constituents prior to release from the exhaust stack versus, significant reduction of the concentration of the emissions in the exhaust by increased dilution air. The supporting description shall discuss how it will be applied and the appropriateness of its application to each performance standard specified in Permit Condition V.I.6.f and specific details on how the factor will be monitored during operation.

Permit Condition V.I.4.o. Operation, calibration and maintenance procedures for the particulate matter, carbon monoxide, nitrogen oxide, sulfur oxides, organic continuous emission monitors, and the monitoring for the correction factor under Permit Condition V.I.4.a, including references to the technically appropriate specifications from 40 CFR Part 60, Appendix B, for each parameter.

Page 74 of 101, Section V.I.6.f.viii, text stating: "*Carbon monoxide emissions from the DBVS offgas exhaust stack*…."
COMMENT 24: It is stated in 40 CFR 63.1203(b)(5)(i) that carbon monoxide level must be corrected to a dry, seven percent (7%) oxygen basis before being compared to the required limit of 100 parts per million (ppm).
REQUEST ACTION: Please add language to the permit to specify that the carbon monoxide limit is based on the offgas level corrected to a dry seven percent (7%) oxygen basis.

ECOLOGY RESPONSE: Ecology neither agrees nor disagrees as discussed below.

Though Ecology has determined that it is appropriate to apply the hazardous waste combustion numerical emission standards for incinerators under 40 CFR Part 63 Subpart EEE to the DBVS as a thermal treatment system under the RD&D Permit, Ecology has not made a determination that the seven percent (7%) oxygen correction factor that is applied to these numerical standards for incinerators is appropriate for the DBVS. Ecology has included the following permit conditions to determine the appropriate correction factor, that should be applied to the DBVS and to require the monitoring necessary to implement this correction factor:

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Condition I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.a. A correction factor, with supporting description, and monitoring that can be applied to the performance standards specified in Permit Condition V.I.6.f that would assure that the design and operation of the DBVS promotes the reduction of the total quantity of dangerous/hazardous constituents released as air emissions by maximizing removal and destruction of constituents prior to release from the exhaust stack, versus significant reduction of the concentration of the emissions in the exhaust by increased dilution air. The supporting description shall discuss how it will be applied and the appropriateness of its application to each performance standard specified in Permit Condition V.I.6.f and specific details on how the factor will be monitored during operation.

Permit Condition V.I.4.o. Operation, calibration and maintenance procedures for the particulate matter, carbon monoxide, nitrogen oxide, sulfur oxides, organic continuous emission monitors, and the monitoring for the correction factor under Permit Condition V.I.4.a, including references to the technically appropriate specifications from 40 CFR Part 60, Appendix B, for each parameter.

Page 74 of 101, Section V.I.6.f.ix, text stating: "*Hydrocarbon emissions from the DBVS offgas exhaust stack*…."
COMMENT 25: It is stated in 40 CFR 63.1203 that hydrocarbon level must be corrected to a dry, seven percent (7%) oxygen basis before being compared to the required limit of 10 ppm.
REQUEST ACTION: Please add language to the permit to specify that the hydrocarbon limit is based on the offgas level corrected to a dry seven percent (7%) oxygen basis.

ECOLOGY RESPONSE: Ecology neither agrees nor disagrees as discussed below.

Though Ecology has determined that it is appropriate to apply the hazardous waste combustion numerical emission standards for incinerators under 40 CFR Part 63 Subpart EEE to the DBVS as a thermal treatment system under the RD&D Permit, Ecology has not made a determination that the seven percent (7%) oxygen correction factor that is applied to these numerical standards for incinerators is appropriate for the DBVS. Ecology has included the following permit conditions to determine the appropriate correction factor, that should be applied to the DBVS and to require the monitoring necessary to implement this correction factor:

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Condition I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.a. A correction factor, with supporting description, and monitoring that can be applied to the performance standards specified in Permit Condition V.I.6.f that would assure that the design and operation of the DBVS promotes the reduction of the total quantity of dangerous/hazardous constituents released as air emissions by maximizing removal and destruction of constituents prior to release from the exhaust stack, versus significant reduction of the concentration of the emissions in the exhaust by increased dilution air. The supporting description shall discuss how it will be applied and the appropriateness of its application to each performance standard specified in Permit Condition V.I.6.f and specific details on how the factor will be monitored during operation.

Permit Condition V.I.4.o. Operation, calibration and maintenance procedures for the particulate matter, carbon monoxide, nitrogen oxide, sulfur oxides, organic continuous emission monitors, and the monitoring for the correction factor under Permit Condition V.I.4.a, including references to the technically appropriate specifications from 40 CFR Part 60, Appendix B, for each parameter.

Page 74 of 101, Section V.I.7, text stating: "*…Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan.…*"
COMMENT 26: The CTUIR and the public should be given opportunity to review and comment on this document prior to approval.
REQUEST ACTION: Please ensure that the CTUIR and the public has an opportunity to review and provide comment to the Phase 2 Campaign Plan.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term

operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 94 of 101, Table V.7: General Comment
COMMENT 27: It was not apparent to this reviewer that this Permit contained emissions limits for either total radioactivity, or for the concentration of individual radioactive components. REQUEST ACTION: Please justify the omission of emission limits for radioactive materials.

ECOLOGY RESPONSE: Ecology provides the following clarification as discussed below.

Radioactive emissions are regulated by the Washington State Department of Health under Washington Administrative Code 246-247, and the Department of Health issued on September 23, 2004, a Notice of Construction Approval Order which regulates the radioactive emissions for the DBVS Facility.

In the introduction section of the RD&D Permit (page 5) and the first paragraph in Part VI of the Permit, it states, "Any procedure, method, data, or information contained in this document that relates solely to radionuclides or to the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) is not provided for the purpose of regulating the radiation hazards of such components under the authority of this Permit and Chapter 70.105 RCW." Therefore, no emissions limits for radioactivity or individual radioactive components will be included in this Permit.

Page 96 of 101, second table entry, text stating: "…*with the exception of II.C.1.a.viii.A, which will be* …."
COMMENT 28: Does Ecology mean II.C.6.a.vii.A rather than II.C.1.a.vii.A?
REQUEST ACTION: Please verify the accuracy of the indicated reference.

ECOLOGY RESPONSE: Ecology agrees with the requested action.

Ecology does mean Permit Condition II.C.6.a.viii and has made the correction in the table.

COMMENTS TO PERMIT ATTACHMENT AA

Page 2-5, Section 2.5.3, text stating: General Comment.
COMMENT 29: It is not possible from the information provided with this Permit to determine if a 1200-kw backup power system is of adequate size to ensure safe shutdown of the DBVS in the case of a failure of the main power system. Please make certain that an evaluation of the power requirements of critical systems is included with subsequent submissions to support the sizing of the backup generator.
REQUEST ACTION: Please consider the indicated comment when planning subsequent modifications to the Permit and provide opportunity for the CTUIR and the public to review and comment.

ECOLOGY RESPONSE: Ecology provides the following information for clarification on the backup power system for the DBVS Facility.

The RD&D Permit has the following permit conditions to require the submittal of this information as provided below.

Permit Condition II.C.6. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive written approval from Ecology for incorporation in Permit Attachment FF, of the following, with the exception of II.C.1.a.viii A, which will be incorporated into the Permit Administrative Record. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition II.C.6.a.iv. Mitigate effects of equipment failure and power outages.

Ecology believes that this answers the commenter's concerns on the backup power system.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation.

Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The

purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

Page 2-6, Lines 12 and 13, text stating: "*Quench blowdown =…*"
COMMENT 30: The operating time basis used to estimate liquid waste production is 168 hr/ICV®-batch for the quench blowdown and 200 hr/ICV®-batch for the Tri-Mer Scrubber blowdown. Given these two unit operations are part of the same offgas system, it is not clear why different operating time assumptions are proposed.
REQUEST ACTION: Please justify the use of different operating times in the indicated calculations.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

As explained in the Permit Application, the Tri-Mer scrubber is only planned to be used as a backup in the offgas treatment system for emergency shutdown of the DBVS. The 200 hours of operating time would be a worse case scenario for the Tri-Mer that would maximize the volume of liquid secondary waste for the Tri-Mer. These worse case scenario figures were used to estimate the maximum number of tanks needed for the storage of secondary liquid waste.

Page 2-6, Lines 29-31, text stating: "*Verification sampling to document the absence of characteristic codes will be performed on the first batch of retrieved waste as part of the WRS prior to transfer to the DBVS waste receipt tank*."
COMMENT 31: Tank waste is highly heterogeneous making it difficult to obtain a representative sample.
REQUEST ACTION: Please provide justification for using a single batch of waste to verify the absence of waste with the indicated characteristic codes.

ECOLOGY RESPONSE: Ecology disagrees with the requested action and provides the following clarification as discussed below.

The codes are not being removed from all 177 tanks, only from Tank 241-S-109. Where it is true that the waste contained in the 177 single-shell tanks (SST) and double-shell tanks is heterogeneous, the dissolved saltcake waste to be used for this demonstration from Tank 241-S-109 will be fully characterized. The retrieval methods to be used to dissolve the saltcake waste will promote homogeneity through selective dissolution and mixing.

The following permit condition provides additional justification.

II.B.8.d. Prior to the initial receipt of dangerous and or mixed waste in the DBVS Facility, the Permittees shall submit to Ecology for approval and strictly for this RD&D Permit, documentation, not based solely on process knowledge that shows the removal of the characteristic code D001 and D003 from S-109 tank waste.

COMMENTS TO PERMIT ATTACHMENT BB

Page 6-2, Table 6-1: General comment.
COMMENT 32: It is not evident to this reviewer what the permittee means by an entry of "√" in the indicated table.
REQUEST ACTION: Please clarify in Table 6-1 what is meant by a check mark.

ECOLOGY RESPONSE: Ecology provides the following clarification as discussed below.

The "√" indicates that the waste code listed for the waste feed and the vitrified waste in Phase 1 will be analyzed as specified in Table 6-1. Permit Condition II.B.7.c will be amended to more clearly reflect this as follows:

II.B.7.c Section 6.2, page 6-2, Table 6-1, is revised to include under Phase 1, Header "6" as a superscript and as footnote "6" as follows: "The checkmark indicates that the waste code listed for the waste feed and the vitrified waste in Phase 1 will be sampled/analyzed as specified in Table 6-1.

Page 6-4, Table 6-3: General comments.
COMMENT 33: This table contains the following errors:

- Both sulfate and organic carbon will be destroyed or removed during the IVC process and so should have footnote "3" applied.
- The title of the third column is missing a parenthesis before the word "Land."
- The criteria used to designate a compound as a "key contaminant" are not provided in the table or accompanying text.

REQUEST ACTION: Please correct the indicated deficiencies.

ECOLOGY RESPONSE: Ecology provides the following clarification as discussed below.

Permit condition II.B.7.z will be amended to require that Footnote "3" be added to sulfates and organic carbon and that a parenthesis before the word "Lnad" will be added to the title of the third column as follows:

II.B.7.Z. Section 6.2.3.2, Table 6-3, add D004 through D011 constituents to table, HLVIT LDR treatment standard for D004 through D011, footnote "3" to sulfates and organic carbon, and a parenthesis before the word "Land" in the title of the third column.

- The first paragraph in section 6.2.3.1 "Saltcake Key Chemical and Radiological Contaminants" states that the constituents listed are important for glass performance and are key contaminants in the Tank 241-S-109 saltcake waste.

Page 6-5, Table 6-4, text stating: "*Table 6-4 Key Radionuclide Contaminants in Average Tank 241-S-109 Saltcake Waste*"
COMMENT 34: The criteria used to designate a compound as a "key radionuclide contaminant" is not provided in the table or accompanying text.
REQUEST ACTION: Please correct the indicated deficiency.

ECOLOGY RESPONSE: Ecology provides the following information for clarification as discussed below.

Key radionuclide contaminants drive one of the following three aspects of the Research, Development & Demonstration operations: 1) determines the limiting specifications for waste feed to the Demonstration Bulk Vitrification System, 2) a main contributor to the operational radiation dose and drives shielding requirements or 3) is a contaminant of concern from a performance assessment perspective.

The introduction section of the RD&D Permit (page 5) and the first paragraph in Part VI of the permit states, "Any procedure, method, data, or information contained in this document that relates solely to radionuclides or to the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) is not provided for the purpose of regulating the radiation hazards of such components under the authority of this Permit and Chapter 70.105 RCW."

Page 6-5, Lines 19-22, text stating: "*These retrieval phases will maximize the quantity of dissolution brine retrieved while minimizing the incorporation of the interstitial liquid."*
COMMENT 35: How does the Permittee propose to accomplish the stated goal of dissolving and retrieving the brine without incorporating the associated pore liquid?
REQUEST ACTION: Please provide clarification of the methods that will be used to meet the stated objective.

ECOLOGY RESPONSE: Ecology provides the following clarification as discussed below.

Permit Attachment BB (Section 6.2.3.2, line numbers 13-18) states that water will be added to Tank S-109 to aid in the retrieval of the interstitial (pore) liquid that will be pumped and transferred to the double-shell tank system. After the interstitial liquid has been removed, further addition of water will dissolve the brine that will be retrieved and used for the Demonstration Bulk Vitrification System process.

Page 6-6, Line 30, text stating: "…*on a 7M sodium basis* …."
COMMENT 36: Other values within this attachment are normalized to a 5M sodium basis.
REQUEST ACTION: Please correct this value to reflect the common basis of 5M sodium used in this document.

ECOLOGY RESPONSE: Ecology disagrees with the requested action and provides the following clarification as discussed below.

The Draft Permit referred to "0.05 Ci/L (on a 7 molar basis)" to be consistent with the technical basis for the Waste Treatment Plant Low-Activity Waste developed by the Nuclear Regulatory Commission (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997). The 7 molar basis can be converted to a 5 molar basis by multiplying by a factor of 5/7 so the limit on a 5 molar basis is 0.0357 Ci/L.

Page 6-7, Table 6-5, text stating: General comments.
COMMENT 37: This table contains the following errors:

- No quantitative definition is provided for the "low solubility" label used in the table. A foot note is needed to indicate the cut-off on water solubility that was used to define a material as having a "low solubility."
- The criteria used to designate a compound as "key chemical constituents/contaminants" are not provided in the table or accompanying text.

REQUEST ACTION: Please correct the indicated deficiencies.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology doesn't believe that there are errors in the table. Ecology believes that the term "low solubility in water" is self-explanatory. For further clarification, the species labeled "low solubility in water" are those that form solid oxides and hydroxides that have some solubility in the original alkaline interstitial liquid, but are essentially insoluble in water (e.g., aluminum hydroxide).

It is agreed that "key chemical constituents/contaminants" is not provided in the Table 6-5. However, it is provided in the first paragraph in Permit Attachment BB, Section 6.2.3.1 "Saltcake Key Chemical and Radiological Contaminants" states that the constituents listed are important for glass performance and are key contaminants in the Tank 241-S-109 saltcake waste.

Ecology believes that this addresses the commenter's concerns.

Page 6-8, Table 6-6, text stating: General comments.
COMMENT 38: This table contains the following errors:

- No quantitative definition is provided for the "low solubility" label used in the table. A foot note is needed to indicate the cut-off on water solubility that was used to define a material as having a "low solubility."
- The criteria used to designate these compounds as "key radionuclide contaminants" are not provided in the table or accompanying text.

REQUEST ACTION: Please correct the indicated deficiencies.

ECOLOGY RESPONSE: Ecology disagrees with the requested action as discussed below.

- Ecology has provided a response in Comment 37 in regard to "low solubility".

- It is agreed that "key radionuclide contaminants" is not provided in the Table 6-6. However, it is provided in the first paragraph in Permit Attachment BB, Section 6.2.3.1 "Saltcake Key Chemical and Radiological Contaminants" states that the constituents listed are important for glass performance and are key contaminants in the Tank 241-S-109 saltcake waste.

Page 6-8, Line 17-18, text stating: "*Waste feed verification is part of the testing protocol to verify presence of a bounding waste envelope*."
COMMENT 39: Does the Permittee mean by a "bounding waste envelope" that they are verifying the upper and lower bounds on chemical and physical properties of the waste that must be processed in the DBVS? If so, then please change the text to state this and provide a list of the properties that are to be bounded by the waste characterization.
REQUEST ACTION: Please consider altering the text as indicated.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Simulants will be added to ensure that the range of waste properties used during the DBVS testing properly bounds the projected Waste Treatment Plant waste properties for the constituents reflected in Permit Attachment BB, Tables 6-2, 6-3, 6-4, 6-5 and 6-6.

The reference to the bounding waste envelope indicates that waste feed is analyzed to support generation of a process control strategy that allows information about the waste characteristics, process parameters, and glass additives to be used to determine if the final waste product is acceptable. Thus, if the waste is within a bounding waste envelope, it will produce an acceptable waste form in the bulk vitrification waste system. Section 5.1.2 in Permit Attachment FF describes the three test parameters that are graphically represented in Figure 5-1. This indicates that the waste feed will be sampled and analyzed to support verification that the bounding waste envelope determined through laboratory and/or engineering scale tests is also valid for the large-scale glass samples.

Page 6-9, Lines 20-22, text stating: "…*after which random sampling will take place, as agreed to in the final test matrix*…."
COMMENT 40: No details are provided on how a protocol for random sampling will be developed.
REQUEST ACTION: Please provide details on the statistical approach that will be used to develop the protocol for random sampling.

ECOLOGY RESPONSE: Ecology provides the following clarification.

The Permit revised the Permit Application as described below to explain detail how the sampling protocol will be developed. Per Permit Condition II.B.7.i, Section 6.2.5.1, page 6-9, first paragraph, last sentence is revised as follows: "The frequency of sampling of ICV® packages will be once for the initial ten (10) ICV® packages; subsequent frequency as specified in an Ecology approved Waste Form Qualification (WFQ) plan" plan "random sampling" has been replaced as stated above.

Also, the RD&D Permit requires in Permit Condition V.I.6 (for Phase 1) and V.I.7 (for Phase 2) that the Permittees submit and receive approval from Ecology for the DBVS Facility Campaign Plans prior to receipt of dangerous and/or mixed waste in the DBVS Facility. The campaign plans will detail the protocol for sampling of the treated waste product.

Permit Condition V.I.6. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive approval from Ecology for the Phase 1 DBVS Campaign Plan. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 1 DBVS Campaign Plan shall include the information specified in Sections 5 and Appendix A of Permit Attachment LL in addition to the following: see permit conditions V.I.6.a through V.I.6.i.

Permit Condition V.I.7. Prior to commencement of the Phase 2 DBVS Campaign and prior to commencement of each Phase 2 DBVS Campaign, Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan, except as specified in Permit Condition V.I.8. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 2 DBVS Campaign Plan shall include the information specified in Permit Condition V.I.6. In addition, the Phase 2 DBVS Campaign Plans designed to provide "Feed Envelope Verification and/or Process Improvement," shall include the following:

V.I.7.a. Emission testing for demonstrating performance standards listed in Permit Condition V.I.6.f.

V.I.7.b. Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, planned analytical procedures for sample analysis and a short summary narrative description of each stack sample method with identification of the performance standard(s) identified in Permit Condition V.I.6.f that the method will be used to demonstrate the performance of the DBVS.

Page 8-9, Section 6.3, text stating: "*A variety of secondary wastes will be generated during DBVS operations. This section covers general requirements for management of expected secondary wastes*."
COMMENT 41: Prior to Phase 1 operations, the Permittee should be required to identify all secondary wastes streams that will be generated during the operation of this facility and provide details on how each stream will be managed.
REQUEST ACTION: Please ensure the Waste Analysis Plan is modified prior to the start of Phase 1 operations to ensure all secondary wastes have been identified and management strategies are in place for each waste stream.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request.

In Permit Attachment FF, Page 4-13, all potential secondary waste streams have been identified and the management of each has been described.

Page 6-11, Sections 6.5.2 and 6.5.3: General comment.

COMMENT 42: These sections do not provide specific details on how the Quality assurance/Quality Control (QA/QC) program will use trip blanks, equipment blanks, and duplicate samples to ensure sample purity and measurement accuracy. Please add information on when and how these types of samples will be used.
REQUEST ACTION: Please consider adding the indicated information.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology agrees that Sections 6.5.2 and 6.5.3 do not provide specific details and provides clarification as discussed below.

Ecology has included the following permit conditions to include these details.

Permit Condition II.B.7.K. Section 6.5.1.1, page 6-11, third sentence is revised as follows: "The analytical methods and the associated QA/QC are specified in Appendix D of the Permit Application, Permit Attachment BB."

Permit Condition II.B.7.l. Section 6.5.2, page 6-11, sixth sentence, "At a minimum, at least one trip blank will accompany each shipment per sample type to the laboratory."

Permit Condition V.I.6.b. Sampling, analysis, and QA/QC procedures/methods for any constituents/samples necessary to implement the DBVS Campaign Plan that were not addressed in Permit Attachment BB, as revised pursuant to Permit Conditions II.B.7 and II.B.8.

Ecology believes that this answers the commenter's concerns on the QA/QC program.

Page D-1 through D-6, Tables 9-3 through 9-8: General comment.
COMMENT 43: Are the Permittees proposing to measure all the compounds listed in Tables 9-3 through 9-8? If all these compounds are to be measured then the main body of the Waste Analysis Plan should be modified to reflect this fact. If all these compounds will not be quantified then Tables 9-3 though 9-8 should be modified to reflect only those compounds that will be measured in this work.
REQUEST ACTION: Please make the appropriate corrections.

ECOLOGY RESPONSE: Ecology provides the following clarification as discussed below.

The Permittees are not required to measure all of the compounds listed in Tables 9-3 through 9-8. These tables are provided to establish detection limits and methods for these compounds. Permit Attachment BB, Section 6.2.4, states, "The analytical methods used for measuring concentrations will follow the analytical methods listed in Table 3.3 of the Waste Treatment Plant Waste Analysis Plan (24590-WTP-RPT-ENV-01-003) and the analytical methods listed in Appendix D from the Regulatory data Quality Objectives Optimization Report for the Waste Treatment Plant (WTP) (24590-WTP-RPT-MGT-04-001). Because of the nature of this demonstration project all the constituents that may be tested were included to establish the analytical method and target minimum reportable quantity ranges. The methods identified for this work include several catchall methods. For example, Method 8260B for the analysis of volatile organics and method 6010B for the analysis of metals are methods that are designed to support the analysis of broad lists of analytes.

COMMENTS TO PERMIT ATTACHMENT DD

Page C-8, Line 16, text stating: "*Upon notification of impending high winds,…"*
COMMENT 44: Please quantify what is meant by high winds.
REQUEST ACTION: Add a specific definition of high winds to the text.

ECOLOGY RESPONSE: Ecology agrees to add a definition for "high winds" to the definition section of the RD&D Permit.

High winds are defined as 85 miles per hour as identified in "Demonstration Bulk Vitrification System Specification, Rev. 2" (RPP-17403) that is referenced in the Permit Application.

Pages C-16 through C-17: General comment
COMMENT 45: Section C-8, C-9, C-10, and C-11 are missing numerous details.
REQUEST ACTION: Please ensure that the revision of attachment DD listed in the compliance schedule includes providing all information currently labeled as TBD in the indicated sections.

ECOLOGY RESPONSE: Ecology provides the clarification as discussed below.

Ecology has included the following permit conditions to include all information labeled "TBD".

Permit Condition II.F.4. The following amendment to Permit Attachment DD, is hereby made. The Permittee shall submit the revised page reflecting this amendment to Ecology prior to the initial receipt of dangerous and/or mixed waste. This amendment does not constitute a permit modification pursuant to Permit Conditions I.C.2 and I.C.3.

Page C-10, Figure C-2, Tank Number "32-D74-004" is renumbered Tank Number "32-D74-016."

Permit Condition II.F.5. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall update and resubmit and receive written approval from Ecology of Permit Attachment DD to be consistent with design details and schedule described in Parts III, IV, and V and Permit Attachments JJ, KK, and LL of this Permit. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition II.F.6. After initial receipt of dangerous and/or mixed waste, the Permittees shall review and amend, if necessary, the applicable portions of the Contingency Plan, Permit Attachment DD, in accordance with the provisions of WAC 173-303-350(5) and WAC 173-303-830(4). The amended Contingency Plan shall be submitted to Ecology as a permit modification pursuant to Permit Conditions I.C.2 and I.C.3.

Permit Condition II.F.7. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall revise, resubmit, and receive written approval from Ecology of Permit Attachment DD to include the following. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.:

Permit Condition II.F.7.a. Sections C.8.1, C.8.2, C.8.4, C.11.0, amended to provide the information currently designated "TBD" and/or "(to be determined)."

Permit Condition II.F.7.b. Section C.3.1, page C-4, Table C-1, amended to include a current list of names, addresses, and phone numbers (office and home available through the Hanford Patrol Operation Center) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates.

Ecology believes that this answers the commenter's concerns.

COMMENTS TO PERMIT ATTACHMENT EE

Page 11-1, Lines 8 and 9, text stating: "…*restoration of the site to its pre-RD&D activity state.*"
COMMENT 46: Will base line contaminant data be collected to compare with post operation data to ensure that the site is restored to its pre-operation condition?
REQUEST ACTION: Please clarify where the permit details the pre-test Site Monitoring Plan.

ECOLOGY RESPONSE: Ecology provides the clarification as discussed below.

Soils from the proposed Demonstration Site location will be analyzed for baseline contaminants prior to beginning operations. The closure plan will require post operation sampling to include the site of any spills or releases to ensure that all contamination is removed to pre-operational conditions prior to closure of the facility. Ecology recognizes the importance of returning the site to pre-RD&D conditions as included in the compliance schedule requirements for post-closure sampling. Permit Condition II.H.10 details these requirements.

Permit Condition II.H.10. The following amendment to Permit Attachment EE is hereby made. The Permittee shall submit the revised page reflecting this amendment to Ecology prior to initial receipt of dangerous and/or mixed waste in DBVS Facility. This amendment does not constitute a permit modification pursuant to Permit Conditions I.C.2 and I.C.3.

Section 11.3, second sentence is revised as follows: "Closure will require the removal and disposal of all dangerous and/or mixed waste present, removal of contaminated process equipment and contaminated structural components, and removal of all soil contaminated by the DBVS Facility in accordance with WAC 173-303-610(2)(a).

Page 11-1, Line 24, text stating: "…*HHFACO* …."
COMMENT 47: No definition is provided for HHFACO.
REQUEST ACTION: Please add the definition of HHFACO to the text.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The RD&D Permit includes a list of acronyms on page 11 to 13. HFFACO is included and stands for Hanford Federal Facility Agreement and Consent Order.

COMMENTS TO PERMIT ATTACHMENT FF

Page 2-4, Lines 28-29, text stating: "*Final disposal of treated waste will be at a permitted Hanford Site facility*…."
COMMENT 48: The presence of the ICV® containers should be included in a Hanford site-wide analysis that estimates the long-term impacts of buried contaminants on the Hanford subsurface and the Columbia River. This analysis should be part of the testing program for ICV® since there is the potential for the process to be a technical success, but ultimately not be usable because the disposal of these High Level Waste monoliths at Hanford would represent an unacceptable contaminant burden to the site.
REQUEST ACTION: Please ensure that the indicated analysis is conducted as part of the ICV® testing program.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The purpose of the RD&D Permit is to provide information to help decision makers analyze the question of long-term risk from disposal of Bulk Vitrification waste. It is planned that the testing needed to answer the long-term disposal question is a part of the RD&D test plan.

Ecology also provided the following permit conditions to provide the necessary information on the ICV® containers.

Permit Condition VI.10.c. ICV® Package detailed final limitations for size, durability, compressibility, stacking, handling, retrievability from storage and after final disposal, outside and inside package residual contamination, disposal facility, and testing/acceptance requirements.

The TWRS EIS analyzed the impacts of retrieving tank waste and treating it through a suite of alternative treatment technologies. Among the alternatives that the TWRS EIS evaluated were several that evaluated the impacts to human health and the environment from tank waste treatment and disposal outside of the tanks (ex-situ treatment). See TWRS, Volume 1, Section 3.4.6 Ex Situ Intermediate Separations, Section 3.4.7 Ex Situ No Separations, 3.4.8 Ex Situ Extensive Separations, and Section 3.4.9 Ex Situ/in Situ Combination 1 and 2 Alternatives. The ex-situ alternatives that the TWRS EIS evaluated allowed for separation of the tank waste into high-level waste and low-activity waste (LAW) components to "minimize the waste volume requiring offsite disposal" (TWRS EIS Volume 2, Section B.2.1.1.1, page B-29).

The TWRS EIS evaluated two waste forms resulting from ex-situ treatment, glass that was cast in monoliths and cullet that was formed by quenching the molten glass into gravel (TWRS EIS Volume 1, Section 3.4.1.5, page 3-36). Ex situ alternatives also included opportunities to separate into high-level and low activity fractions (TWRS EIS Volume 2, Appendix B, Section B.2.1.1.1, page B-29). Section B.3.5.3 provided a summary of the tank treatment process that included a step to separate the LAW from the HLW and another to dispose of the LAW onsite.

TWRS EIS Volume 1, Section 5.0 Environmental Consequences documents the analyses of the potential impacts to the environment from implementing each of the alternatives described in TWRS EIS Section 3.0, for 20 separate environmental components. Complex impact assessments were prepared for human ecological health (Volume 3, Appendix D), potential accidents (Volume 4, Appendix E), groundwater quality (Volume 4, Appendix F), Air Quality (Volume Five, Appendix G), and socioeconomic impacts (Volume 5, Appendix H). The environmental consequences of the ex-situ alternatives all assumed that 99% of the total volume of waste would be retrieved from the tanks and the LAW treatment plant would produce 200 metric tones of LAW glass cullet per day.

The Permittees proposed to conduct their RD&D effort using less than 1% of the total tank waste volume, which is to be retrieved from Single Shell Tank 241-S-109. They proposed to vitrify up to 50 containers of waste combined with glass forming agents; however, the system will be constructed and operated to vitrify a single container per campaign. After review of the TWRS EIS alternatives and their impacts, Ecology deemed the TWRS EIS to contain more than sufficient information about ex-situ vitrification to support the determination of non-significance assigned to the DBVS RD&D effort.

The Draft Research, Demonstration and Development Permit does not govern the disposal of the vitrified waste form. The Permit is for treatment and storage. Permit condition II.B.7.b requires that the Waste Analysis Plan develop a sampling approach for the final vitrified waste form to ensure compliance with the waste acceptance criteria of the Integrated Disposal Facility or another permitted disposal facility and the land disposal restrictions listed in WAC 173-303-140. It also requires the Permittee to develop waste feed limitations that will result in the final vitrified waste form meeting the IDF or another permitted disposal facility's waste acceptance criteria and in addition, meeting the performance standards for offgas emissions.

- Permit Condition I.A.1 limits the 241-S-109 waste to be accepted to waste that does not exceed the criteria listed in Permit Attachment BB and Tables V.7 and V.8.
- Permit Condition II.A.7 requires the USDOE and CH2M HILL to design and build the DBVS designs, plans, and specifications required by the Permit and approved by Ecology.
- Permit Condition II.B requires that the USDOE and CH2M HILL maintain knowledge of their wastes before it is accepted into the DBVS Facility, when it is received for treatment, and during treatment and storage of the treated waste form.

Permit Condition II.B.7.b requires the Permittees to modify their Permit Application to develop a sampling approach that will ensure compliance with the waste acceptance criteria of the Integrated Disposal Facility or another permitted facility. That condition also requires them to develop waste feed limitations that will result in the vitrified waste form meeting the IDF acceptance criteria.

As part of SEPA's environmental review, Ecology also evaluated the proposal against the alternatives and impacts in the *Tank Waste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement* (DOE/EIS-0189, August 1996). Ecology sought to determine whether "all or part of the proposal, alternatives, or impacts have been analyzed in a previously prepared environmental document, which can be adopted or

incorporated by reference." See WAC 197-11-30(2)(a). The TWRS EIS addressed the final remediation of 177 underground storage tanks and 60 miscellaneous underground storage tanks (TWRS EIS Volume 2, Appendix B, page B-27). In those tanks were approximately 56 million gallons of radioactive mixed waste in the form of liquid, solids in the form of crystallized salts, and sludges.

Page 4-1, Line 16, text stating: "…*Appendix B* …."
COMMENT 49: There is no Appendix B in Attachment FF.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action.

Ecology will add Appendix B to Permit Attachment FF.

Page 4-1, Line 26, text stating: "…*Appendix F* …."
COMMENT 50: There is no Appendix F in Attachment FF.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action.

Ecology will add Appendix F to Permit Attachment FF.

Page 4-9, Line 35, text stating: "…*Appendix B* …."
COMMENT 51: There is no Appendix B in Attachment FF.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action.

Ecology will add Appendix B to Permit Attachment FF.

Page 4-14, Table 4-5, third column: General comment.
COMMENT 52: The third column should contain quantitative information on the amounts and frequencies that the various secondary wastes will be generated.
REQUEST ACTION: Please add the indicated details to the Permit.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The Permittee provided in their Permit Application the secondary waste generation amounts and frequencies for the mixer/dryer condenser, the mist eliminator drainage, and the scrubber system blow down or bleed in Permit Attachment AA (Section 2.6, line numbers 9-14), therefore it was not necessary to include this information in Table 4-5 of Permit Attachment FF. The wash down water frequency would occur on an irregular basis and would be minimal. The boiler blow down is estimated to be 3 gallons per minute (gpm) during the mixer dryer operation that could occur for 8 hours for each mixer/dryer batch.

The estimated amounts of secondary liquid waste per container listed in the Permit Application are:

- Dryer Condensate 12,900 gallons
- Quench Blowdown 24,100 gallons
- Tri-Mer Scrubber Blowdown 51,500 gallons (only if in operation)

Page 4-15, Table 4-6, third column: General comment.
COMMENT 53: The third column should contain quantitative information on the amounts and frequencies that the various secondary wastes will be generated.
REQUEST ACTION: Please add the indicated details to the Permit.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

The exact amounts of secondary solid waste information requested for Table 4-6 in Permit Attachment FF are not currently known; however, they are expected to be small. These wastes will be properly designated and disposed of in accordance with the *Hanford Site Solid Waste Acceptance Criteria* (HNF-EP-0063). Ecology provided a permit condition that will require that these amounts be determined as part of the RD&D operations in order to calculate a mass balance.

Permit Condition II.B.7.v, Section 6, Figure 6-1, the block entitled "Solid Secondary Waste", the narrative under "Purpose of Waste Sampling", is amended to include the following: "and provide mass balance information."

Page 5-5, Line 5, text stating: "…*(Section 10.0 and Appendix C)*…."
COMMENT 54: There is no Section 10.0 or Appendix C in Attachment FF.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Although Section 10 was not found in Permit Attachment FF, Section 10 is included in Permit Attachment DD which is all part of the RD&D Permit. Ecology does not feel it necessary to include it in Permit Attachment FF.

Page 5-6, Figure 5-1: General comment.
COMMENT 55: This figure suggests that the operating range is a function of one independent variable and two dependent variables. However, this representation is not accurate since each of the indicated variables is not a single variable, but represents groups of parameters. As such, the figure provides no real information and should be omitted.
REQUEST ACTION: Please consider removing Figure 5-1.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Figure 5-1 will not be removed and is intended to provide a general representation of the types or categories of variables/test parameters that influence acceptable operations, and was not intended to represent all of individual and independent variables of importance. Although it does not provide any specific information on single variables, it does help graphically describe the general relationship of the classes of operating parameters of importance as described in section 5.1.2. A graphical representation of the relationship between all of the single variables would be too complex to be of value in describing the general relationship of these classes of parameters. Campaign plans will include more detail on the single variables/test parameters being evaluated and their relationship to acceptable operating envelopes.

COMMENTS TO PERMIT ATTACHMENT JJ

Page 2-3, table title, text stating: "…*Error!* …."
COMMENT 56: The table title has typos.
REQUEST ACTION: Please correct the text as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action and will correct the text.

Page 2-3, sixth paragraph, text stating: "*Secondary containment will provide*…"
COMMENT 57: Details on the capacity of containment structures and sumps should be added to the text along with a discussion of provisions for keeping tank capacity available to allow transfer of material from leaking tanks.
REQUEST ACTION: Please consider making the indicated modifications to the text.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology agrees with this comment and the Draft Permit requires details of the capacity of containment structures and sumps to be provided for Ecology approval in accordance with permit conditions in Part IV and Part V of the RD&D Permit as listed below.

Permit Condition IV.A.8.e.ii. Permit Table IV.2, complete to provide for all secondary containment sumps and floor drains, the information as specified in each column heading.

Permit Condition V.I.5.c. Submit Permit Tables V.2 and V.5 completed to provide for all secondary containment sumps and floor drains, the information as specified in each column heading consistent with information to be provided in V.I.2.a through V.I.2.f above.

The above listed permit conditions are required to populate these tables and will be consistent with the WAC 173-303-640 requirements for tank systems.

Page 2-4, Section 2.4: General Comment.
COMMENT 58: This section should contain a discussion of the design requirements for the ICV® containers and provide details on how the containers will be tested after the vitrification process to ensure they meet the required standards.
REQUEST ACTION: Please provide the indicated information.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Part III (Containers), and Part V, (DBVS) of the Draft Permit contains permit conditions so that details on testing container design and testing requirements will be provided.

Permit Condition III.G.4. Requires the Permittee to submit additional information concerning the ICV® containers prior to accepting dangerous/mixed waste into the Demonstration Bulk Vitrification System Facility. The containers will meet disposal waste acceptance criteria for a permitted disposal facility.

Permit Condition III.G.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall update and submit and receive written approval from Ecology for the following, as specified below, for incorporation into Permit Attachment JJ. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3:

Permit Condition III.G.4.a. Narrative Descriptions, updated;

Permit Condition III.G.4.b. Descriptions of procedures for precluding release of contents of ICV® Package to the environment during the ICV® Package disconnect and sampling the ICV® Package including but not limited to the following:

Permit Condition III.G.4.b.i. Sealing the sampling port.

Permit Condition III.G.4.b.ii. Coring process.

Permit Condition III.G.4.b.iii. External decontamination.

Permit Condition III.G.4.b.iv. ICV® Package disconnect procedures.

Permit Condition III.G.4.c. Descriptions of procedures for handling and transport of containers within the DBVS Facility.

Permit Condition V.I.10.c: ICV® Package detailed final limitations for size, durability, compressibility, stacking, handling, retrievability from storage and after final disposal, outside and inside package residual contamination, disposal facility, and testing/acceptance requirements.

Ecology believes that the above permit conditions address the commenter's concerns.

Page 4-7, Section 4.2.9, text stating: "…*Appendix F*…."
COMMENT 59: There is no Appendix F in Attachment JJ.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action to include Appendix F in Permit Attachment JJ.

As clarification, Permit Condition V.I.4.l requires the submittal of Appendix F, "ICV® Container Refractory Information", in Permit Attachment LL to be provided prior to receipt of dangerous and/or mixed waste in the DBVS Facility.

Page 7-4, Figure title: "…*Error!* …."
COMMENT 60: The table title has typos.
REQUEST ACTION: Please correct the text as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested comment and has corrected the text.

COMMENTS TO PERMIT ATTACHMENT KK

Page 2-3, Table 4-1, text stating: "…*Table 4-1*…."
COMMENT 61: The text refers to this table as Table 2-1.
REQUEST ACTION: Please correct the text as appropriate.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Permit Attachment JJ which are documents incorporated, in their entirety, by reference into the RD&D Permit is an excerpt from the Permittee's DBVS Facility RD&D Permit Application. The text is correct in the original Permit Application, however, an error occurred in the transfer of this information to the permit attachment. Ecology will correct the text as appropriate.

Page 4-1, Line 8, text stating: "…*Section 1.5* …."
COMMENT 62: There is no Section 1.5 in Attachment KK.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action and all of Section 1 of the Permit Application, to include Section 1.5, will be added, for information purposes only, as a separate Permit Attachment.

Page 4-1, Line 16, text stating: "…*Appendix B* …."
COMMENT 63: There is no Appendix B in Attachment KK.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology disagrees with the requested action. Appendix B, Process Flow Diagrams, is included in Permit Attachment KK.

Page 4-1, Line 19, text stating: "…*Section 1.7.3* …."
COMMENT 64: There is no Section 1.7.3 in Attachment KK.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action and all of Section 1 of the Permit Application will be added, for information purposes only, as a separate Permit Attachment.

Page 4-1, Line 26, text stating: "…*Appendix F*…."
COMMENT 65: There is no Appendix F in Attachment KK.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology agrees with the requested action. Appendix F will be added to Permit Attachment KK.

Page 4-9, Line 35, text stating: "…*Appendix B* …."
COMMENT 66: There is no Appendix B in Attachment KK.
REQUEST ACTION: Please correct the attachment as appropriate.

ECOLOGY RESPONSE: Ecology disagrees with the requested action. Appendix B, Process Flow Diagrams, is included in Permit Attachment KK.

Page 7-5, Figure 7-2: General comment.
COMMENT 67: This inspection check list is different from that presented as Figure 7-1 in Attachment JJ, yet both are intended for the same purpose.
REQUEST ACTION: Please ensure consistency in the document.

ECOLOGY RESPONSE: Ecology disagrees and provides clarification as discussed below.

Figure 7-2 is an inspection checklist to be used for the tank waste storage area of the DBVS Facility in Part IV of the RD&D Permit. Figure 7-1 is an inspection checklist to be used for the container storage area of the DBVS Facility in Part III of the RD&D Permit. The checklists are intended for two different storage areas.

COMMENTS TO PERMIT ATTACHMENT KK

Page 4-i, Table of Contents: General comment.
COMMENT 68: This section is identical to Section 4.0 of Attachment FF. It is not apparent why this information must be duplicated.
REQUEST ACTION: Please eliminate the redundant presentation of material within the permit attachments.

ECOLOGY RESPONSE: Ecology intentionally duplicates sections of the Permit Application as incorporated in the Draft Permit Attachments.

The Permit Attachments reference specific regulatory subjects as indicated in the attachment title (e.g., Permit Attachment FF, "Emergency Preparedness and Prevention"). Even though the

Permit sections are duplicated, references to the Permit Attachment refer only to the regulatory subject in the title of the attachment.

Page 5-i, Table of Contents: General comment.
COMMENT 69: This section is identical to Section 5.0 of Attachment FF. It is not apparent why this information must be duplicated.
REQUEST ACTION: Please eliminate the redundant presentation of material within the permit attachments.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology intentionally duplicates sections of the Permit Application as incorporated in the Draft Permit Attachments.

The Permit Attachments reference specific regulatory subjects as indicated in the attachment title (e.g., Permit Attachment FF, "Emergency Preparedness and Prevention"). Even though the Permit sections are duplicated, references to the Permit Attachment refer only to the regulatory subject in the title of the attachment.

Page F-ii, first two lines, text stating: "*Information to be provided*…."
COMMENT 70: This Permit is incomplete and cannot be properly reviewed by the public.
REQUEST ACTION: Please provided a completed permit for CTUIR and the public review and comment.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology believes that this Draft RD&D Permit is complete and includes all terms and conditions that ensures protection of human health and the environment.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the

environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

COMMENTER:
Ron Bourgoin
Edgecombe Community College
Rocky Mount, North Carolina

The commenter states the following.
COMMENT 1: "I understand the Department of Ecology heard public comments at 6:30 P.M. last night at your Richland office regarding the AMEC Earth and Environmental, Inc., London, bulk vitrification project that will fuse silca-rich soil with tank wastes. I was not able to be at the meeting but should like to submit the following question for the record. As we all know, the U.S. District Court in Idaho ruled last July that all 53 million gallons of Hanford's tank wastes are high level. Why then are we paying $1.4 billion for a program that treats the bulk of these high-level wastes as low-level?"

ECOLOGY RESPONSE: Ecology disagrees with the comment as discussed below.

The decision by the U.S. Federal Court for the District of Idaho (Idaho District Court) in *NRDC v. Abraham* invalidated the portion of USDOE Order 435.1 that purported to authorize USDOE to classify high-level radioactive waste as incidental to reprocessing, and to dispose of the waste as low-level or transuranic waste. The court ruled that the Order, as crafted, was inconsistent with the Nuclear Waste Policy Act. On November 5, 2004, the U.S. Court of Appeals for the Ninth Circuit vacated the Idaho District Court's decision and remanded the case with direction to dismiss the action.

In any event, the RD&D Permit is consistent with the Idaho District Court's decision and Ecology's position in the case. The court confirmed that properly retrieved, treated, and solidified waste that no longer contain fission products in sufficient concentrations to require deep geologic disposal are not "high level waste" and may be disposed of in a facility other than a deep geologic repository. Ecology's views concerning whether Hanford's tank wastes may appropriately be disposed of on-site have long been informed by the Nuclear Regulatory Commission letter of 1997 (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction", Letter to J. Kinzer, ORP, June 9, 1997) that specifically addressed the issue of low-activity waste (LAW) at the Hanford Site as outlined in the RD&D Draft Permit. Ecology continues to believe that WTP LAW and bulk vitrification LAW, if properly retrieved, treated and solidified, may, consistent with the Nuclear Waste Policy Act, properly be disposed of on-site at Hanford and that such plans are not dependent on USDOE Order 435.1. The Nuclear Regulatory Commission (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction", Letter to J. Kinzer, ORP, June 9, 1997) outlined a process of pretreatment and treatment that allowed HLW to be separated into LAW that could be disposed in near surface disposal units. The $1.4 billion, as stated, appears to refer to a cost estimate of a production scale (full scale) bulk vitrification facility; the proposed cost for the RD&D facility is less than $50 million.

COMMENTER:
Allyn Boldt
1019 S. Irby St.
Kennewick, WA. 99338

COMMENT 1: The proposed bulk vitrification and demonstration test will treat 300,000 gallons of single-shell tank waste containing 280 metric tons (MT) of sodium and result in the generation of approximately 1,000,000 gallons of concentrated double-shell tank waste containing 700 MT of new sodium. The review of the draft test permit for the proposed test developing these values is in the attached letter.

The generation of 1,000,000 gallons of new waste reducing the contingency tank waste storage space available over the next 10 years is significant. The additional 700 MT of sodium to be treated in 2028 will also result in a significant environmental impact. The attachment letter provides comments that may minimize the impacts on storage and ultimate treatment and disposal of the newly generated secondary wastes.

My comment is:

> Ecology should rescind the current Determination of Non-significance (DNS) and reevaluate the Bulk Vitrification Test and Demonstration Facility following review and revision of the Permit for Dangerous and or Mixed Waste Research, Development, and Demonstration, Permit No: WA 7890008967, Washington State Department of Ecology.

ECOLOGY RESPONSE: Ecology disagrees and provides clarification as discussed below.

As stated in Permit Attachment LL, Section 4.2.15, the Tri-Mer System will predominantly be used as a backup system. Per Permit Attachment LL, Section 4.2.16, if enhancements are required to the offgas treatment system between Phases 1 and 2, Ecology approval will be required for these changes. To assume Tri-Mer scrubber is in constant operation, and the generation of a significant volume of secondary waste is not in keeping with the planned activities as described in the RD&D Permit Application.

The DBVS Facility will not generate 1,000,000 gallons of concentrated double-shell tank waste as stated by the commenter. The DBVS Facility does not plan to generate any double-shell tank waste.

The State Environmental Policy Act (SEPA) DNS is premised on Ecology's requirement that campaign plans for every campaign (i.e., each box) will be submitted for approval, as applicable, prior to initiation of vitrification.

Should the DBVS Facility lead to an Ecology decision to permit a full-scale production facility to treat other single-shell tank waste (should this technology be proven to yield a waste form whose performance is comparable to the WTP glass), then the emissions control system would be an efficient one that would not present a threat to the environment.

COMMENT 2a: The process flow diagrams and stream data in the Draft Permit are inadequate in defining the proposed testing and the compositions of secondary liquid wastes. Table 4-4 Scrubber Blowdown Contaminants, (reference 1, Attachment LL) provides composition for the venturi scrubber blowdown. The compositions of secondary liquid wastes, dryer condensate, venturi scrubber blowdown, and Tri-Mer scrubber blowdown are not defined in the process flow diagrams (reference 1, Attachment KK, Appendix B). The process flow diagrams do give the specific gravity of the Tri-Mer scrubber blowdown as 1.07 and the venturi scrubber blowdown specific gravity as 1.11. The volumes of the secondary wastes per In Container Vitrification (ICV®) batch are provided in Section 2.6 of reference 1, Attachment KK. The volumes for the dryer condensate, venturi scrubber blowdown, Tri-Met scrubber blowdown, and total liquid secondary wastes are 12,900 gallons, 24,100 gallons, 51,500 gallons, and 88,500 gallons per ICV® container, respectively.

ECOLOGY RESPONSE: Ecology disagrees and provides the clarification as discussed below.

Ecology believes that information provided in Permit Attachment AA, Section 2-6 and the Process Flow Diagrams provides data that defines secondary liquid waste volumes as detailed below. Demonstration Bulk Vitrification System secondary liquid wastes will consist of 12,900 gallons of dryer condensate (specific gravity 1.00) and 24,100 gallons of scrubber blow down (specific gravity 1.11). The Tri-Mer scrubber is projected to be operated long enough to shut down a melt should the Selective Catalytic Reduction (SCR) fail. The Tri-Mer would have to operate for eight hours (not 139) and would produce 5,100 gallons which would contain 466 kilogram (kg) sodium.

COMMENT 2b: The venturi scrubber blowdown contains 6,004 kg of sodium per container batch. If the Tri-Met scrubber sodium concentration is assumed to be proportional the specific gravities, the Tri-Met scrubber blowdown may contain 8,100 kg of sodium per container batch. This totals approximately 14,000 kg sodium in liquid secondary wastes per container batch. The process flow diagrams indicate the 20 wt percent sodium oxide loading in the glass is derived from 17.6 wt percent tank waste sodium oxide and 2.4 wt percent sodium oxide from soil and starter path additives. The process flow diagrams indicate a total 15.8 M^3 of glass, 43.8 metric ton (MT) glass, containing 5,700 kg of tank waste sodium per ICV® container with an external volume of approximately 55 M^3. The proposed vitrification demonstration will generate an estimated 2.4 metric tons new sodium in secondary waste per MT of tank waste sodium vitrified.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The proposed vitrification demonstration will generate an estimated 1.05 metric tons of new sodium in secondary waste per metric ton of tank waste sodium vitrified. The assumption that the Tri-Mer will be operated continually is incorrect. Section 4.2.15 (page 4-12) of Permit Attachment LL indicates that the Tri-Mer packed tower scrubber will predominantly be used as a back-up to the SCR. This means that the Tri-Mer is projected to be operated long enough to control emissions while processing is stopped. If this should occur, the process will not be restarted until the SCR is back on line. The estimated amount of secondary waste sodium generated by the proposed vitrification process is estimated to be 1.05 metric tons, without the use of the Tri-Mer, per metric ton of tank waste sodium vitrified. The secondary waste has a

different disposal path than the vitrified tank waste, and as such comparison of the mass of sodium between the two waste streams is not meaningful.

COMMENT 2c: Total quantities of liquid waste for the proposed 50 container test, processing 280 MT of tank waste sodium, are 4,425,000 gallons of liquid secondary waste containing approximately 700 MT of sodium. If the secondary waste sodium was packaged at the Effluent Treatment Facility (ETF) by the new, undefined cementation process (reference 2), the ETF Low Level Waste (LLW) for the demonstration would be 50,000 55 gallon drums assuming a flowsheet similar to previously proposed grout processing.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Total quantities of liquid waste for the proposed 50 container test, processing 280 MT of tank waste sodium, is about 1,850,000 gallons of liquid secondary waste containing approximately 300 MT of sodium. The Effluent Treatment Facility estimates that a maximum of 8,000 55 gallon drums containing a solid waste would be produced from a proposed 50 container test [*Demonstration Bulk Vitrification System (DBVS) Liquid Effluent Treatability Evaluation,* HNF-22442.]

COMMENT 2d: The total 177 tank mission at Hanford proposes to process 34,100 MT of sodium by supplemental treatment (reference 3). Using the vitrified and secondary waste volumes from the Draft Permit, waste volumes can be estimated for the 177 tank Hanford mission. The 34,100 MT of sodium treated with bulk vitrification would result in 6,000 ICV® containers with a burial volume of 330,000 M^3. The liquid secondary waste sent to ETF is 530 million gallons containing 84,000 MT of sodium. The grouted volume would be 1,200,000 M^3 contained in 6,000,000 55 gallon drums. The balance of the LAW (19,800 MT sodium) is vitrified in the immobilized low-activity waste (ILAW) facility and results in 70,000 M^3. The total ILAW and LAW volume for the scenario using bulk vitrification is 1,600,000 M^3 compared to a total volume of 220,000 M^3 for borosilicate glass vitrification in two ILAW facilities or 105,000 M^3 for iron phosphate glass vitrification in the current ILAW vitrification facility.

ECOLOGY RESPONSE: Ecology neither agrees nor disagrees and provides the information as discussed below.

Ecology is proposing to issue an RD&D Permit for the Demonstration Bulk Vitrification System. The RD&D Permit allows for 300,000 gallons of S-109 Tank waste to be treated for this demonstration. Should the DBVS Facility lead to an Ecology decision to permit a full-scale production facility, process enhancements would be included which may not be economical for an RD&D demonstration facility. For instance, the scrubber solution could be slaked lime instead of caustic. The gypsum produced might be evaluated for use as top off material for the In Container Vitrification to reduce the secondary waste disposal volume. Also, dryer condensate could be used as make up water for the scrubber system, reducing the quantity of liquid sent to the Effluent Treatment Facility by approximately one third. Other process enhancements would also be explored.

One of the purposes of the RD&D activity is to gather data and information to determine if this technology would be viable for full-scale production. Until the RD&D activity is completed, it would be premature to make assumptions and calculations as stated by the commenter.

A permit condition for the purposes of better assessing the potential for waste minimization as it relates to secondary liquid waste has been added as follows:

V.I.7.d. One or more campaign plans shall be conducted to generate information to assess the potential for waste minimization as it relates to secondary liquid waste.

COMMENT 2e: It is obvious that the offgas treatment process used for the ICV® demonstration would not be deployed for final treatment of the tank wastes. An offgas treatment system that produces less secondary wastes is required for ICV®. The ICV® demonstration and permit should be revised to include the more efficient offgas treatment system that would be deployed in the production system. This would result in significantly lower secondary waste quantities produced in the ICV® demonstration. If premature to test the production version of the offgas treatment system, it is proposed that the permit restrictions include maximum sodium content in liquid secondary wastes of 100 MT sodium. This would result in a maximum number of seven ICV® tests without improvement of the offgas treatment process or up to 50 ICV® tests with improved processes.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The offgas treatment process includes elements that could be used in a full-scale production facility (high-efficiency particulate air filters, Selective Catalytic Reduction, scrubbers, condensers). The decision to switch from the Tri-Mer scrubbing system to a Selective Catalytic Reduction for the primary NOx removal was made to reduce the amount of secondary liquid waste that would be produced by the DBVS Facility. In addition, efficiencies are desirable and some will be tested during the RD&D Permit operating period. A limit on sodium is not required because the secondary wastes will not be sent to a system that limits the amounts of sodium such as the double-shell tank system. Thus there is no "sodium balance" to calculate. It is not appropriate to compare sodium removed from Tank 241-S-109 to the amount of sodium sent to the Effluent Treatment Facility for processing and disposal since the sodium sent to the ETF has a different disposal path.

COMMENT 3a: The Draft Permit states the Disposition of secondary liquid effluent waste streams will be managed in accordance with reference 4 the acceptance criteria of the receiving facility, as necessary. The reference 4 waste acceptance criteria is not currently valid for secondary wastes derived from tank waste processing. The solid waste Environmental Impact Statement, reference 2, establishes new I-129 concentrations and ETF waste form that are not reflected in the current reference 4. The solid waste Environmental Impact Statement (EIS) (reference 2) establishes the total I-129 inventory in the ETF secondary waste for all 177 tanks at 5 curies I-129 in a cement waste form with a diffusion coefficient of 1 E-12 cm^2s^{-1} for I-129. If the 5 Ci of I-129 were contained in the proposed 500 million gallons of secondary waste, the I-129 concentration would be approximately 2.5 E-09 Ci/L. This value is approximately 1,000 times lower than the current maximum acceptance criteria I-129 concentration of 1.8 E-06 Ci/L

in reference 4. The reference 4 document should to be revised to support the revision of the draft ICV® demonstration permit.

ECOLOGY RESPONSE: Ecology disagrees and provides clarification as discussed below.

The commenter's reference 4 document (*Liquid Waste Processing Facilities Waste Acceptance Criteria*, HNF-3172) is a USDOE document that is not enforceable and/or is not required under this RD&D Permit. Ecology believes that the secondary liquid waste will meet the appropriate ETF waste acceptance criteria for final disposal.

The ETF has performed a treatability evaluation of the DBVS Facility secondary liquid effluent waste streams proposed to be sent to the ETF in accordance with the *Liquid Waste Processing Facilities Waste Acceptance Criteria* (HNF-3172). It concluded that the DBVS Facility waste streams are: (a) within the treatment capabilities of ETF; and (b) result in a dried by-product that is within the disposal criteria for the Hanford Environmental Restoration Disposal Facility – true for all radionuclides (including ^{129}I) and chemical constituents of the liquid effluent. The Effluent Treatment Facility treatability evaluation used effluent stream data consistent with stream numbers 6, 27, and 37 shown in Appendix B of Permit Attachment KK. It should also be clear that this RD&D Permit is for treatment of only the saltcake fraction of one specific tank, Tank S-109, not 177 waste tanks.

Without agreeing or disagreeing with the commenter's arguments, Ecology agrees to include an additional permit condition for the purpose of better assessing the potential for waste minimization as stated in Ecology's response to comment 2d above.

USDOE has also agreed to assess the fate/concentration of potential constituents of concern, in the secondary liquid waste and solid waste produced at the ETF. Information collected will also provide a material balance.

Ecology believes that this addresses the commenter's concerns.

COMMENT 3b: The reference 4 average monthly limits for nitrate as nitrogen and for total dissolved solids are 620 and 250,000 micrograms per liter, respectively. The composite 88,500 gallons of liquid secondary waste has calculated values of 23,000,000 micrograms nitrogen per liter and 32,000,000 micrograms dissolved solids per liter. These values for nitrogen and dissolved solids in the total ICV® liquid secondary waste are 10,000 and 130 times the limits, respectively. It is expected that the projected I-129 concentration in the secondary liquid wastes will be about 10 times the new I-129 concentration limits when they are established in revised criteria.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The monthly limits for nitrogen and total dissolved solids stated in your comment apply to the end of pipe discharges for State Waste Discharge Permit (ST-4502) for the 200 Area Treated Effluent Disposal Facility (TEDF). There are no plans to send secondary liquid waste from the DBVS Facility to the TEDF. These nitrogen and total dissolved solids (TEDF) permit limits do not apply to the incoming waste streams to the ETF. As stated in Ecology response to comment

3a above, the ETF has performed a treatability evaluation of the DBVS secondary liquid effluent waste streams and is in accordance with the *Liquid Waste Processing Facilities Waste Acceptance Criteria* (HNF-3172), including I-129.

COMMENT 3c: The ETF processing of liquids can take advantage of commingling waste liquids in the liquid effluent retention facility basin to dilute some wastes. The draft ICV® demonstration permit proposes to vitrify 50 containers over 400 calendar days / 365 operating days. This results in about 4 container runs per month or a total of 350,000 gallons of liquid secondary waste per month. It is unreasonable to expect other liquid wastes 10,000 times or even 130 times the expected volume of 350,000 gallons per month of ICV® demonstration liquid secondary wastes to dilute the wastes into specification.

The draft ICV® demonstration permit also states that if the secondary liquid wastes do not meet ETF waste acceptance criteria, it will be sent to a double-shell tank (DST) or other approved Hanford Site storage facilities. Total quantities of liquid waste for the proposed 50 container test, processing 280 MT of tank waste sodium, are 4,425,000 gallons of liquid secondary waste containing approximately 700 MT of sodium. If the secondary waste sodium is sent to the double-shell tanks, the wastes will be concentrated by the tank farm evaporator for storage. The 700 MT of sodium will result in 800,000 to 1,600,000 gallons of DST waste (10 molar sodium to 5 molar sodium terminal concentration). Approximately 1,000,000 gallons of new DST waste is produced awaiting treatment in following years. The tank farm evaporator will boil off an additional 3.5 million gallons of water and the 3.5 million gallons of condensate will be treated by ETF for disposal. The one million gallons of new DST waste also reduces the available contingency or spare space available in the future until year 2012 or later. This large volume generation of 1,000,000 gallons of new DST waste for treatment of 300,000 gallons of single-shell tank waste does not qualify as an environmental determination of nonsignificance.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Nowhere in the Permit does it state that we plan to generate 1,000,000 gallons of concentrated double-shell tank waste. The RD&D project does not plan to generate any double-shell tank waste. Also, see comment responses to #1, # 2, and # 3 of this responsive summary.

However, four containers per month will result in approximately 148,000 gallons of liquid secondary waste per month not 350,000 gallons per month. As stated previously, the ETF has performed a treatability evaluation of the DBVS Facility secondary liquid effluent waste streams proposed to be sent to the ETF is in accordance with the *Liquid Waste Processing Facilities Waste Acceptance Criteria* (HNF-3172), including I-129.

The total quantities of liquid waste for the proposed 50 container test, processing 280 MT of tank waste sodium, is 1,850,000 gallons of liquid secondary waste containing approximately 300 MT of sodium. The ETF estimates that a maximum of 8,000 55 gallon drums of solid material would be produced [*Demonstration Bulk Vitrification System (DBVS) Liquid Effluent Treatability Evaluation*, HNF-22442]. Secondary liquid waste consistent with the Permit Attachment KK, Appendix B is within the ETF treatment capabilities. No secondary wastes are expected to be sent to DSTs. Only in an off-normal situation would there be a potential need to send secondary

liquid wastes to DSTs. Such off-normal situations would cause an investigation that would lead to corrective actions, resulting in normal operations. As such, only small volumes of waste would have the potential to be sent to DSTs. This would not approach double-shell tank storage thresholds nor 242-A evaporator capabilities.

COMMENT 3d: The previous section of this letter suggested incorporation of a total secondary waste sodium limit for the ICV® demonstration permit. The suggested sodium limit of 100 MT sodium would result in limiting the amount of new DST waste to approximately 150,000 gallons if the secondary wastes do not meet the ETF waste acceptance criteria. This may be an acceptable value for a determination of nonsignificance if the 280 MT of tank waste sodium is vitrified. If less than 100 MT of tank waste sodium is vitrified, the 100 MT of new sodium waste would no longer be considered a determination of nonsignificance.

ECOLOGY RESPONSE: Ecology disagrees as previously discussed above and as discussed below.

The total quantities of liquid waste for the proposed 50 container test, processing 280 MT of tank waste sodium, is 1,850,000 gallons of liquid secondary waste containing approximately 300 MT of sodium [*Demonstration Bulk Vitrification System (DBVS) Liquid Effluent Treatability Evaluation, HNF-22442*]. The ETF estimates that a maximum of 8000 55 gallon drums of solid waste would be produced. Secondary liquid waste consistent with Permit Attachment KK, and Appendix B (process flow diagrams) is within the ETF treatment capabilities. No secondary wastes are expected to be sent to DSTs. Only in an off-normal situation would there be a potential to send secondary liquid wastes to DSTs. Such off-normal situations would cause an investigation that would lead to corrective actions, resulting in normal operations. As such, only small volumes of waste would have the potential to go to DSTs. This would not approach double-shell tank storage thresholds nor 242-A evaporator capabilities.

COMMENT 3e: The Draft Permit is inadequate in defining the amount, composition, and disposition of the secondary wastes. The draft ICV® demonstration permit should be revised to provide complete definition and material balances of the ICV® demonstration including secondary waste treatment and disposal. The revised draft ICV® demonstration permit should include flow diagrams and material balances including sulfur and sulfur oxides for both ETF and DST options. The DST option should include chemical additions to meet tank farm specifications, tank farm evaporator operation, and final ETF treatment of tank farm evaporator condensate. The revised draft ICV® demonstration permit should also discuss the capability of the tank farm evaporator and the ETF to increase throughput by the proposed 350,000 gallons per month.

ECOLOGY RESPONSE: Ecology disagrees in part as discussed previously and provides additional information below.

The secondary liquid wastes will be treated at ETF using the standard ETF flow sheet and under the ETF state wastewater discharge permit requirements (ST-4500) and the ETF Resource Conservation and Recovery Act (RCRA) Permit. There have been no modifications required to either ETF permit as a result of this Draft RD&D Permit.

As explained previously, the secondary liquid wastes will only be sent to the double-shell tank system in the event of a process upset that would result in a composition that cannot be treated at ETF. The probability is low and 37,000 gallons of secondary waste would be generated from one ICV® vitrification box. This would have a negligible effect on 242-A evaporator operations. There are no plans to use the secondary liquid wastes for double-shell tank chemistry adjustment during the DBVS demonstration. However, this could be considered should the DBVS Facility lead to an Ecology decision to permit a full-scale production facility.

A permit condition for the purposes of better assessing the potential for waste minimization as it relates to secondary liquid waste has been added as follows:

V.I.7.d. One or more campaign plans shall be conducted to generate information to assess the potential for waste minimization as it relates to secondary liquid waste.

COMMENT 4a: In 1996, The United States Department of Energy (USDOE) proposed a waste classification of a low activity fraction of waste separated from the tank wastes. The technical basis for the proposed High Level Waste (HLW) and Low Activity Waste (LAW) fractions was documented in reference 5. Two critical assumptions in the basis were the LAW was vitrified glass and the I-129 inventory was contained in the LAW glass. The technical basis and supporting waste disposal analysis indicated that the LAW disposal system would meet the criteria, "Are to be managed, pursuant to the Atomic Energy Act, so that safety requirements comparable to the performance objectives set out in 10 CFR Part 61 are satisfied."

In November 1996, USDOE requested the Nuclear Regulatory Commission's (NRC) assessment of USDOE's proposed waste classification for the LAW removed from the tanks. USDOE was seeking NRC's technical views and whether NRC agreed with USDOE's proposal.

Reference 6 provided the results of the NRC staff's technical review of USDOE's proposed method for management of USDOE's tank waste at Hanford. The NRC staff concluded that the waste planned for removal from the tanks and disposed on site was incidental waste and, therefore, would not be subject to NRC's licensing authority. However, the staff was also of the view that the preliminary nature of USDOE's performance assessment and other information was not sufficient to allow the staff to provide more than tentative views and listed several instances that would warrant re-evaluation. Thus, the staff "provisionally agreed" with USDOE that the waste it wanted to dispose of on site was incidental waste but, recognizing that significant changes in the information or management program could affect NRC's technical findings, NRC believed that USDOE should consult further with NRC should such changes occur.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The comment, "Two critical assumptions in the basis were the LAW was vitrified glass and the I-129 inventory was contained in the LAW glass" is incorrect. Page 4-22 of the document cited Reference 5 by the commenter, "Technical Basis for Classification of Low-Activity Waste Fraction from Hanford Site Tanks" (WHC-SD-WM-TI-699, Rev 2, September 1996) clearly indicates that, "The path of ^{129}I in the LAW vitrification process is released to the atmosphere and an unknown quantity to the chloride purge stream…20 to 80 percent of the ^{129}I inventory

may accumulate with the chloride and fluoride streams…for purge and disposal as grout". Similarly, Table 5.3 of that technical basis report did not show "…the I-129 inventory was contained in the LAW glass." Rather it showed that the amount in the glass would be less than 51 curies. The technical basis report and the NRC, therefore, anticipated that approximately 40 curies of I-129 would be disposed of as secondary waste grout. Although changes have occurred in the estimated tank waste I-129 inventory since 1996, currently the Best Basis Inventory estimates show a lower total inventory for the I-129.

COMMENT 4b: In 2001, the NRC stated in a summary of NRC involvement with USDOE in the Tank Waste Remediation System (reference 7):

> "Under the present system, unless the NRC determines that this LAW/incidental waste is not HLW, the waste must be disposed of as HLW in a federal repository."

In 2003, the U.S. District Court of Idaho ruled that the USDOE violated the Nuclear Waste Policy Act (NWPA) when it granted itself the authority to reclassify HLW and declared invalid the incidental waste portion of DOE Order 435.1 (reference 8).

ECOLOGY RESPONSE: Ecology disagrees and provides clarification as discussed below.

The commenter quotes NRC as saying, "Under the present system, unless the NRC determines that this LAW/incidental waste is not HLW, the waste must be disposed of as HLW in a federal repository". First, the LAW treatment approach for both waste treatment plant LAW glass and bulk vitrification produced LAW glass remain consistent with the assumptions set forth in the document cited Reference 5 by the commenter, "Technical Basis for Classification of Low-Activity Waste Fraction from Hanford Site Tanks" (WHC-SD-WM-TI-699, Rev 2, September 1996) and the NRC's response to that document in the June 9, 1997, letter to Mr. Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland Operations Office, from Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Subject: Classification of Hanford Low-Activity Tank Waste Fraction. Second, the quoted NRC staff statement refers to USDOE's policy of using the NRC in a consultation role. The 1997 (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997) LAW determination was consistent with USDOE's policy of consulting with the NRC on tank waste determinations. Ecology believes all actions required in the RD&D Permit are consistent with the criteria established in Letter to J. Kinzer, ORP, June 9, 1997, from C. J. Paperiello, *Classification of Hanford Low Activity Tank Waste Fraction*.

COMMENT 4c: In 2004, the NRC clarified the NRC's views regarding the USDOE's accelerated cleanup program at the Hanford site (reference 9). The NRC stated:

> "In its review of the Hanford waste program in SECY-97-083 (reference 6), the NRC was acting in an advisory capacity by providing a technical review of DOE's proposed actions and was not providing any regulatory or licensing approval." and;

> "the decision to consult with NRC is within DOE's discretion …. it is our understanding that DOE does intend to consult with NRC and seek our advice regarding aspects of its tank closure program at a future time."

Thus, the U.S. District Court of Idaho has ruled that USDOE does not have the authority to classify a portion of the tank waste as LAW/incidental waste, and the NRC has not provided any regulatory or licensing action for Hanford tank waste classification. The NRC position is also that the tank waste is HLW until the NRC determines the LAW/incidental waste is not HLW. Without resolution of the waste classification issue, any waste produced by the ICV® demonstration is HLW until the issue is resolved. There may be legal, regulatory, and programmatic issues in surface storage and/or ultimate disposal of the orphan HLW produced by the ICV® demonstration until the classification issue is resolved.

ECOLOGY RESPONSE: Ecology does not agree with the commenter's interpretation of the NRC letter as discussed below.

The commenter states that "Without resolution of the waste classification issue, any waste produced by the ICV® demonstration is HLW until the issue is resolved." That is the commenter's opinion but it is not anchored in fact. The basis for LAW classification, whether vitrified in the waste treatment plant or by bulk vitrification, is a 1997 letter from the NRC (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997), not DOE M 435.1-1. Further, the Idaho District Court's decision in NRDC et. al v. Abraham et. al. was vacated by the U.S. Court of Appeals for the Ninth Circuit on November 5, 2004.

COMMENT 4d: There is also concern with the proposed ICV® demonstration ETF solids for LLW disposal. The proposed ICV® demonstration routes 87 percent of the tank I-129 inventory to the ETF. The resulting ETF waste solids containing the I-129 potentially will not, "be managed, pursuant to the Atomic Energy Act, so that safety requirements comparable to the performance objectives set out in 10 CFR Part 61 are satisfied." If the ETF solids can not meet the performance objectives, the ETF solids are high level waste.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The commenter states that, "If the ETF solids can not meet the performance objectives, the ETF solids are high level waste". As noted in the response to Comment 1, the I-129 inventory that may be disposed as secondary waste was anticipated when the 1997 letter (Paperiello, C. J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997) was issued. Ecology supports partial retrieval of the dissolved salt cake in Single-Shell Tank (SST) 241-S-109 for use as the feed material for treatment in the Demonstration Bulk Vitrification System (DBVS) because use of that waste will ensure that I-129 concentrations are reduced. The concentration of I-129 in the waste is low, based upon data in the best basis inventory (BBI) maintained by the USDOE Office of River Protection and its contractor, CH2M Hill Hanford. The Tank Farm inventory of iodine is approximately 43.9 Ci, which results in an average concentration of 9.3E-7 Ci/kg Na. The inventory of I-129 in 241-S-109 per the BBI is 0.313 Ci, which results in an average concentration of 4E-7 Ci/kg Na (based on estimates, rather than sample results). Estimates vary as to the amount of I-129 that will be contained in the

vitrified waste and in the secondary waste produced by the process; however, if one assumed that 50% to 90% of the I-129 in the waste appeared in the secondary waste, the total amount of iodine in the secondary waste produced by the DBVS as a result of the research, demonstration & development effort would be from 0.015 to 0.06 Ci. The total amount of I-129 in the secondary waste would therefore, constitute only 0.03% to 0.14% of the total tank farm inventory of I-129.

COMMENT 4e: The current project system plan for the 177 tank mission (reference 3) includes the bulk vitrification treatment of 60 percent of the tank waste sodium and produces a new, large volume ETF waste stream containing 87 percent of the I-129. The ICV® glass contains about 13 percent of the I-129. This is a significant change from the reference 5 technical basis for waste classification that processed 100 percent of the LAW in conventional borosilicate glass melters with glass in canisters containing 100 percent of the I-129 in the LAW glass. The NRC recognized that significant changes in the information or management program could affect NRC's technical findings and provisional agreement with the USDOE waste classification analysis. NRC believed that USDOE should consult further with NRC should such significant changes occur (reference 6).

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The Draft RD&D Permit for bulk vitrification is for the treatment of 300,000 gallons of tank waste from one tank; Tank 241-S-109. The purpose of the RD&D Permit is to allow for the Test and Demonstration of the bulk vitrification process to evaluate its potential use for treatment of other Hanford Site tank wastes. The Permit is temporary in duration and limits the quantities of dangerous and/or mixed waste to be treated. WAC 173-303-040 defines a mixed waste as a dangerous, extremely hazardous, or acutely hazardous waste that contains both radioactive and hazardous constituents). The Permit also includes stringent terms to protect public health and the environment.

The treatment process which would be developed under this Permit is a key element of the overall treatment system being developed to retrieve and remediate the mixed waste in the underground storage tanks at Hanford's tank farms. The safety and cleanup of these tanks has been a major public concern for some time.

Under this Permit, the Permittees will evaluate the ability of bulk vitrification to produce immobilized low-activity waste that is comparable to that proposed for the Hanford Site Waste Treatment and Immobilization Plant (WTP) immobilized low-activity waste form. The Permittees will be required to provide data for waste form qualifications, risk assessments, and performance assessments for treatment and near-surface land disposal of low-activity waste.

Page 4-22 of the document cited by the commenter, "Technical Basis for Classification of Low-Activity Waste Fraction from Hanford Site Tanks" (WHC-SD-WM-TI-699, Rev 2, September 1996) clearly indicates that, "The path of ^{129}I in the LAW vitrification process is released to the atmosphere and an unknown quantity to the chloride purge stream…20 to 80 percent of the ^{129}I inventory may accumulate with the chloride and fluoride streams…for purge and disposal as grout". Similarly, Table 5.3 of that technical basis report did not show "…the I-129 inventory was contained in the LAW glass." Rather it showed that the amount in the glass would be less than 51 curies. The technical basis report and the Nonconformance Report (NCR), therefore,

anticipated that approximately 40 curies of I-129 would be disposed of as secondary waste grout. Although changes have occurred in the estimated tank waste I-129 inventory since 1996, currently the Best Basis Inventory estimates show a lower total inventory for the I-129.

The commenter states, "This is a significant change from the reference 5 technical basis for waste classification that processed 100 percent of the LAW in conventional borosilicate glass melters is glass in canisters containing 100 percent of the I-129 in the LAW glass". The commenter misinterpreted WHC-SD-WM-TI-699, Rev 2. We refer the commenter to footnote "a" of Table 5.2 which states, "To be conservative, it is assumed that 100 percent of the ^{99}Tc, ^{79}Se, ^{14}C, ^{3}H, ^{129}I, and ^{126} Sn inventories (soluble and insoluble fractions) are incorporated into the immobilized low-activity waste. See text in Section 4.0 for discussion." In other words, the 100 percent of the 129-I assumption was only intended to conservatively demonstrate that the Class C concentrations would be met for the LAW. The reader is also directed to Section 4, which as previously discussed, indicates that a large fraction of the I-129 would be grouted in secondary waste. The current conditions as specified in the RD&D Permit are consistent with WHC-SD-WM-TI-699, Rev 2.

COMMENT 4f: Ecology should include a provision in the Draft Permit that no ICV® tests can be performed until the waste classification issues are resolved. Ecology should request USDOE to ask NRC for a rulemaking on classification of Hanford Site tank waste fractions; ILAW canisters, ICV® containers, ETF wastes, and other secondary wastes (silver mordenite and activated charcoal absorber beds); for both the ICV® demonstration and the 177 tank mission. The U.S. District Court of Idaho ruled that USDOE does not have the authority to classify a portion of the tank waste as LAW/incidental waste. The U.S. District Court of Idaho was not asked nor made a ruling if the NRC has the authority to classify a portion of the Hanford tank waste as LAW/incidental waste, not HLW.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The commenter states that, "Ecology should request USDOE to ask NRC for a rulemaking…" The NRC has previously indicated (FR, Vol. 58, No. 71, 12342, March 4, 1993) that it does not believe such a rulemaking is warranted.

The commenter states that, "The U.S. District Court of Idaho ruled that USDOE does not have the authority to classify a portion of the tank waste as LAW/incidental waste." The decision by the U.S. Federal Court for the District of Idaho (Idaho District Court) in *NRDC v. Abraham* invalidated a portion of USDOE Order 435.1 that purported to authorize USDOE to classify high-level radioactive waste as incidental to reprocessing, and to dispose of the waste as low-level or transuranic waste. The court ruled that the Order, as crafted, was inconsistent with the Nuclear Waste Policy Act. On November 5, 2004, the U. S. Court of Appeals for the Ninth Circuit vacated the Idaho District Court's decision and remanded the case with direction to dismiss the action.

In any event, the RD&D Permit is consistent with the Idaho District Court's decision and Ecology's position in the case. The court confirmed that properly retrieved, treated, and solidified waste that no longer contain fission products in sufficient concentrations to require deep geologic disposal are not "high level waste" and may be disposed of in a facility other than

a deep geologic repository. Ecology's views concerning whether Hanford's tank wastes may appropriately be disposed of on-site have long been informed by the Nuclear Regulatory Commission letter of 1997 (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction", Letter to J. Kinzer, ORP, June 9, 1997) that specifically addressed the issue of low-activity waste (LAW) at the Hanford Site as outlined in the RD&D Draft Permit. Ecology continues to believe that WTP LAW and bulk vitrification LAW, if properly retrieved, treated and solidified, may, consistent with the Nuclear Waste Policy Act, properly be disposed of on-site at Hanford and that such plans are not dependent on USDOE Order 435.1. The Nuclear Regulatory Commission (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997) outlined a process of pretreatment and treatment that allowed HLW to be separated into LAW that could be disposed in near surface disposal units.

COMMENT 5: Revise the process flow diagrams and stream data to include the principal constituents and provide a mass balance adequate for third party review. Include flow diagrams and stream data for treatment of secondary wastes. Include both options for routing/disposal of the secondary ICV® wastes; 1) directly to ETF and 2) routed to DSTs (chemical adjustment for tank waste specifications, tank farm evaporator operation, and ETF treatment of evaporator condensate).

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The appropriate level of detail on the secondary waste streams was provided in Permit Attachment LL, Appendix B of the Permit Application. An objective of this RD&D project is to evaluate the secondary waste streams and to provide engineering information that will assist in designing a full-scale facility, should the DBVS Facility lead to an Ecology decision to permit a full-scale production facility.

The secondary liquid wastes will be treated at Effluent Treatment Facility using the standard Effluent Treatment Facility flow sheet and under the Effluent Treatment Facility permit requirements. There have been no modifications required to the Effluent Treatment Facility as a result of this Research, Development & Demonstration activity.

Secondary liquid wastes will only be sent to the double-shell tank system in the event of a process upset that results in a composition that cannot be treated at Effluent Treatment Facility. There are no plans to use the secondary liquid wastes for double-shell tank chemistry adjustment during the RD&D Permit period.

Ecology disagrees with the commenter's request for third party review. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation.

Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The

purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

COMMENT 6: Secondary waste generation by the offgas treatment system is excessive. Revise the offgas treatment system to use the more efficient process and equipment that are intended for the 177 tank mission production system.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

As responded to in previous comments, Ecology disagrees with the premise that the Tri-Mer will be used as the primary offgas treatment system as suggested by the commenter. It should also be clear that this RD&D Permit is for treatment of only the saltcake fraction of one specific tank, Tank 241-S-109.

It was recognized that use of the Tri-Mer would result in a significant amount of secondary liquid waste, which is why the Selective Catalytic Reduction was selected as the primary NOx reduction technology. It should also be noted that Selective Catalytic Reduction is the baseline NOx reduction process to be used by the Waste Treatment Plant. The Tri-Mer Scrubber would only be used as a backup as previously discussed. Each campaign plan (one In Container Vitrification box) will generate approximately 13,000 gallons of dryer condensate and 24,000 gallons of quench blowdown.

The Draft RD&D Permit for bulk vitrification is for the treatment of 300,000 gallons of tank waste from one tank, Tank 241-S-109. The purpose of the RD&D Permit is to allow for the Test and Demonstration of the bulk vitrification process for potential future use in the treatment of other Hanford Site tank wastes. The Permit is temporary in duration and limits the quantities of dangerous and/or mixed waste to be treated. (Mixed waste is defined as a dangerous, extremely hazardous, or acutely hazardous waste that contains both radioactive and hazardous constituents). The Permit also includes stringent terms to protect public health and the environment.

The treatment process which would be developed under this Permit is a key element of the overall treatment system being developed to retrieve and remediate the mixed waste in the underground storage tanks at Hanford's tank farms. The safety and cleanup of these tanks has been a major public concern for some time.

Under this Permit, the Permittees will evaluate the ability of bulk vitrification to produce immobilized low-activity waste that is comparable to that proposed for the Hanford Site Waste Treatment and Immobilization Plant immobilized low-activity waste form. The Permittees will be required to provide data for waste form qualifications, risk assessments, and performance assessments for treatment and near-surface land disposal of low-activity waste.

COMMENT 7: Include a permit condition that sets a maximum total quantity of sodium in the secondary wastes for the total demonstration series. A maximum of 100 MT sodium is suggested for consideration.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology does not agree a permit condition is required for maximum sodium limits. A condition on sodium is not required because the secondary wastes will only be sent to the double-shell tank system in a severe upset condition and in limited volumes, as discussed in many previous responses. Therefore, a comparison of sodium removed from Tank 241-S-109 in this RD&D Permit to the amount of secondary waste sodium sent to the ETF for processing and disposal (under the ETF RCRA and State Waste Discharge Permits) is not necessary. ETF can accept and treat all proposed DBVS Facility secondary waste under its current permits.

However, Ecology will add permit conditions that will require one or more of the campaign plans address how future recycle waste from the WTP could be incorporated into a bulk vitrification waste stream. These campaign plans would be specifically designed to observe, record, and analyze impacts related to waste loading and potential constituents of concern, such as sulfate, sodium, metals, iodine, and technetium. The permit condition is as follows:

V.I.7. Prior to commencement of the Phase 2 DBVS Campaign and prior to commencement of each Phase 2 DBVS Campaign, Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan, except as specified in Permit Condition V.I.8. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 2 DBVS Campaign Plans shall include the information specified in Permit Condition V.I.6. In addition, the Phase 2 DBVS Campaign Plans shall be designed to collect the information specified in Permit Conditions V.I.7.c through V.I.7.e below, and the Phase 2 DBVS Campaign Plans designed to provide "Feed Envelope Verification and/or Process Improvement," shall also include the information specified in Permit Conditions V.I.7.a and V.I.7.b, below:

V.I.7.a. Emission testing for demonstrating performance standards listed in Permit Condition V.I.6.f.

V.I.7.b. Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, planned analytical procedures for sample analysis and a short summary narrative description of each stack sample method with identification of the performance standard(s) identified in Permit Condition V.I.6.f that the method will be used to demonstrate the performance of the DBVS.

V.I.7.c. One or more test campaigns shall be conducted to generate mass balance information sufficient to addresses the fate/concentration of potential constituents of concern, such as Iodine-129 and Technetium-99, within the ICV® Package and its various components, the offgas systems, offgas systems' secondary liquid waste, solid and secondary semi-solid waste.

V.I.7.d. One or more test campaigns shall be conducted to generate information to assess the potential for waste minimization as it relates to secondary liquid waste.

V.I.7.e. One or more test campaigns shall be conducted to generate information to assess how potential future recycle waste from the WTP could be incorporated into a Bulk Vitrification full-scale production facility waste stream, should Ecology make the decision to permit a full-scale production facility, and the impacts related to including these recycles into the DBVS Facility waste stream. These test campaigns would be specifically designed to observe, record and analyze impacts related to waste loading and potential constituents of concern, such as sulfate, sodium, metals, iodine, and technetium.

COMMENT 8: Revise the ETF waste acceptance specifications to reflect the findings of the Hanford Solid Waste EIS (reference 2). Include a comparison of the ICV liquid secondary wastes to the ETF acceptance specifications in the ICV® demonstration permit.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The *Liquid Waste Processing Facilities Waste Acceptance Criteria* (HNF-3172) is a USDOE document that is not enforceable and/or is not required under this RD&D Permit.

Ecology believes the secondary liquid waste will meet the appropriate waste acceptance criteria for the Effluent Treatment Facility. The Effluent Treatment Facility has performed a treatability evaluation of the Demonstration Bulk Vitrification System secondary liquid effluent waste streams proposed to be sent to the Effluent Treatment Facility in accordance with the *Liquid Waste Processing Facilities Waste Acceptance Criteria* (HNF-3172), and found that these waste streams are: (a) within the treatment capabilities of Effluent Treatment Facility; and (b) result in a dried by-product that is within the disposal criteria for Environmental Restoration Disposal Facility-true for all radionuclides (including ^{129}I) and chemical constituents of the liquid effluent. The Effluent Treatment Facility treatability evaluation used effluent stream data consistent with stream numbers 6, 27, and 37 shown in Appendix B of Permit Attachment KK.

The secondary liquid wastes will be treated at Effluent Treatment Facility using the standard Effluent Treatment Facility flow sheet and under the Effluent Treatment Facility permit requirements. There have been no modifications required as a result of this Research, Development & Demonstration project. The Effluent Treatment Facility permit and flow sheet are outside the scope of the RD&D Permit.

COMMENT 9: Add a permit restriction that precludes demonstration operation without resolution of the waste classification issue. Ecology should request USDOE to ask NRC for a rulemaking on classification of Hanford Site tank waste fractions to expedite resolution of the issue. The rule making request should include ILAW canisters, ICV® containers, ETF wastes, and other secondary wastes (silver mordenite and activated charcoal absorber beds) for both the ICV® demonstration and the 177 tank mission.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request. See Ecology's response to Comment 4f.

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COMMENTER:

Liebler, Ivey, Connor, Berry & St. Hilaire
1141 North Edison, Suite C
P.O. Box 6125
Kennewick, WA 99336-0125

COMMENT 1: The DBVS has the potential to treat F001-F005 coded waste as listed in Appendix B, Table 6.1, yet there is not a permit condition requiring an equivalency demonstration to the performance standards of an incinerator as required by LDRs. Will a requirement to demonstrate equivalency be added to the Permit?

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology disagrees with the need for a determination of equivalent treatment with incinerator performance standards. Incinerator performance standards are not applicable to this waste stream for the purpose of meeting the land disposal requirements in 40 CFR 268.40.

Under 40 CFR Part 268.40 Treatment Standards for hazardous waste the only F001-F005 solvent waste which have a treatment standard as the specified technology code CMBST, which includes incinerators, are (1) F005 solvent waste containing 2-Nitropropane as the only listed F001-5 solvent, and F005 solvent waste containing 2-ehyoxyethanol as the only listed F001-5 solvent . As specified on Appendix B, Table 6-1, the waste to be treated under this RD&D is not limited to these hazardous constituents and is consequently not limited to the CMBST treatment technology. An equivalency determination is therefore not required.

COMMENT 2: What is the total amount of secondary wastes (Type, e.g., hazardous, mixed, and form, e.g., debris, liquid) produced by the RD&D project? For example, Appendix FF, Sections 4 and 5, estimate the secondary liquid waste alone produced from processing a total of 50 containers at approximately 2.6M gallons. Do existing Hanford site treatment facilities such as ETF have the excess capacity to manage this additional volume of waste? What is the projected composition of the secondary liquid wastes? The flow diagram shows the scrubber solution downstream of the sintered metal filter being sent to the ETF. This scrubber should adsorb large quantities of nitrates. Can the ETF handle such large quantities of nitrates?

ECOLOGY RESPONSE: Ecology provides the following clarification on the commenter's analysis of secondary wastes quantities as discussed below.

The Permittee provided in the Permit Application the secondary waste generation amounts and frequencies for the mixer/dryer condenser, the mist eliminator drainage, and the scrubber system blow down or bleed in Permit Attachment AA (Section 2.6, line numbers 9-14) The wash down water frequency would occur on an irregular basis and would be minimal. The boiler blow down is estimated to be 3 gpm during the mixer dryer operation that could occur for 8 hours for each mixer/dryer batch.

The estimated amounts of secondary liquid waste per container listed in the Permit Application are:

- Dryer Condensate 12,900 gallons
- Quench Blowdown 24,100 gallons
- Trimer Scrubber Blowdown 51,500 gallons (only if in operation)

These wastes will be properly designated and disposed of in accordance with the *Hanford Site Solid Waste Acceptance Criteria* (HNF-EP-0063). Ecology provided a permit condition that will require that these amounts be determined as part of the RD&D operations in order to calculate a mass balance.

Section 2.6 of Permit Attachment AA of the Draft RD&D Permit describes the types and estimated amounts of secondary liquid waste. As detailed in the Permit Application, the Tri-Mer Scrubber is only planned to be used as a backup in the off gas treatment system for emergency shutdown of the DBVS Facility. However, if the Tri-Mer is in operation during the total time it takes to vitrify a container, the total estimated secondary waste produced from vitrifying one container is 88,500 gallons. The current planned operation of the DBVS Facility as detailed in the Permit Application will produce 37,000 gallons of secondary waste for each container of vitrified waste when using the Selective Catalytic Reduction (SCR) in the offgas treatment system and not the Tri-Mer. In accordance with Hanford Liquid Waste Acceptance Criteria (HNF-EP-0063, Rev. 9), ETF facility personnel have performed a treatability analysis of the secondary waste and have confirmed that this waste stream and the DBVS Facility projected waste stream volumes can be treated in the ETF through the life of the RD&D Permit.

COMMENT 3: There are significant informational gaps in the Application which results in the need for compliance schedules in the Permit. The lack of specifics such as waste feed concentrations, automatic waste feed cut-off set points, and clearly defined sampling plans indicates the technology may not be sufficiently developed to allow permit issuance. Without a complete application package, how can the project's impacts be completely and fairly evaluated?

ECOLOGY RESPONSE: Ecology disagrees in part as discussed below.

Ecology is in agreement with the commenter that the level of detail provided in the RD&D Permit Application would not be sufficient to support the issuance of a long-term treatment permit or a full-scale facility. However, Ecology has determined that the level of detail provided in the Permit Application combined with the additional information required by the compliance schedules is adequate to authorize RD&D testing activities consistent with the flexibility allowed under WAC 173-303-809.

Automatic waste feed cut-off set points are addressed in the following permit conditions:

Permit Condition V.I.4.k. Ecology has required that the Permittees' submit for Ecology review and approval information concerning emergency parameter limit values and responses to these limit values which may include automatic waste feed cut-off as all or part of the response to reaching these limit values. In addition, Permit Condition V.I.4.j requires that the Permittees'

submit for Ecology review and approval detailed procedures for controlling and minimizing emissions in the event of an equipment malfunction.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6, and V.8 are to be completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS Facility offgas systems to recover emissions from the areas, systems or units, loss of DBVS Facility subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS Facility. Appendix E shall include a narrative description and information to support the parameters and limit values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

Waste feed concentrations and sampling plans are addressed in the following permit conditions:

Permit Condition II.B.7. COMPLIANCE SCHEDULES.

The following amendments to Permit Attachment BB are hereby made. The Permittee shall submit the revised pages reflecting these amendments to Ecology prior to initial receipt of dangerous and/or mixed waste in the DBVS Facility. These amendments do not constitute a permit modification pursuant to Permit Conditions I.C.2 and I.C.3.

Ecology has modified the Permittees' Waste Analysis Plan to clarify requirements for constituents to be analyzed for in the wastes and the secondary waste and to clarify the frequency that this analysis will be performed. The Permittees' are required to resubmit for approval the Waste Analysis Plan modified to reflect Ecology's clarifications.

Permit Condition II.B.8. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, Permittees shall submit and receive written approval from Ecology for the following revisions of Permit Attachment BB. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. Ecology has required the Permittees' to submit for Ecology review and approval further details on sampling and analysis and quality assurance and quality control procedures, limitation on the ICV® packages and documentation that the waste are not ignitable or reactive.

Permit Condition V.I.6.b. Sampling, analysis, and QA/QC procedures/methods for any constituents/samples necessary to implement the DBVS Campaign Plan that were not addressed in Permit Attachment BB, as revised pursuant to Permit Conditions 11.B.7 and II.B.8.

COMMENT 4: What are the risks to the environment, workers, and the public from the DBVS RD&D project? For example, what is the plan for disposal of a full scale waste container that does not meet the long term disposal, (10,000 years) requirements of the Hanford site for this type of waste?

ECOLOGY RESPONSE: Ecology provides additional information as discussed below.

Ecology believes the risks from the DBVS Facility will be minimal due to the limited inventories of hazardous and radioactive constituents associated with the RD&D operations.

The treatment objectives are designed to ensure that waste acceptance criteria for the proposed 50 ICV® containers meet the permitted final disposal site. In the unlikely event than an out of specification ICV® container is produced, the limited inventory of dangerous mixed waste being processed will not result in, or cause adverse environmental impacts from the disposal facility. The RD&D Permit requires in Permit Condition V.I.10.c that the "ICV® Package detailed final limitations for size, durability, compressibility, stacking, handling, retrievability from storage and after final disposal, outside and inside package residual contamination, disposal facility, and testing/acceptance requirements", be provided to Ecology for review and approval prior to acceptance of waste feed into the DBVS Facility.

SPECIFIC COMMENTS

COMMENT 1: II.A.1.A. Tank 241-S-109 that does not exceed the criteria listed in Permit Attachment BB, as specified in the Ecology approved campaign plan, and as specified on Permit Tables V.7 and V.8.

Permit Tables V.7 and V.8 do not contain values from which an evaluation of the effectiveness of the system may be assessed. When the information is submitted to Ecology for approval, will these and other required permit submittals be made available for public comment prior to incorporation?

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that these tables in the Draft Permit and Permit Attachment LL need to be completed. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous or mixed waste into the facility.

Permit Condition V.I.4.b. Detailed Description of an Emergency Parameter Control/Response System addressing operating parameters specified in Permit Tables V.7 and V.8, as approved pursuant to Permit Conditions V.I.4.k and V.I.6.c.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6 and V.8, completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS Facility offgas systems to recover emissions from the areas, systems or units, loss of DBVS Facility subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS Facility. Appendix E shall include a narrative description and information to support the parameters and limits values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

Permit Condition V.I.5.a. Permit Tables V.3 and V.6 shall be completed for DBVS leak detection system instruments and parameters, to provide the information as specified in each

column heading.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the

list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

COMMENT 2 : II.A.4. Air pollution control devices and capture systems in the DBVS Facility shall be maintained and operated so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the above equipment is properly operated and maintained, so as to minimize the emission of air contaminants and process upsets, shall be established and followed in accordance with the Ecology approved DBVS Campaign Plan.

What is the definition of…"minimize the emission of air contaminants and process upsets."? Don't you mean "… to minimize the emission of air contaminants and minimize *adverse environmental effects* of process upsets."

ECOLOGY RESPONSE: Ecology disagrees with the commenter, This condition is intended to be broad and encompassing in scope with respect to operations and maintenance of air pollution control devises in contrast to the more explicit requirements of for example, permit condition V.C.1.a which requires the operation of systems and process parameters within specified set points. Broadly speaking, an upset would be operation outside of the projected range and not be limited to an upset which has been determined to result in increased emissions with an adverse environmental effect.

COMMENT 3: Appendix B Section 6.4 Offgas Treatment System – The main offgas treatment system exhaust will be monitored continuously for radionuclides contributing greater than 0.1 mrem/year using a record sample collection system. The offgas treatment system will also be continuously monitored for criteria pollutants (i.e., particulate matter, CO, NOx, SOx).

What other criteria pollutants will be continuously monitored? What is the limit for radionuclides contributing greater than 0.1 mrem/year? The flow diagram does not show a thermal oxidizer. How will VOCs and CO be oxidized to meet MACT compliance limits if there is no oxidizer?

ECOLOGY RESPONSE: Ecology provides the clarification as discussed below.

Criteria Pollutants are regulated under Washington Administrative Code 173-400, -401 and -460, air regulations and not Chapter 173-303-WAC, Dangerous Waste Regulations. Ecology has received a toxics air Notice of Construction Application, and issued a Draft Approval Order and Conditions to regulate these constituents; a 30-day public comment period for the Draft Notice of Construction was held from September 29, 2004, to October 28, 2004.

Radioactive emissions are regulated by the Washington State Department of Health under Washington Administrative Code 246-247. The Department of Health issued on September 23, 2004, a Notice of Construction Approval order which regulates the radioactive emissions for the DBVS Facility.

COMMENT 4a : II.A.5. The Permittees shall ensure that for all dangerous and/or mixed waste areas, systems, and units contained in the DBVS Facility that the DBVS Facility offgas treatment systems shall be in operation prior to waste being introduced into these dangerous and/or mixed waste areas, systems, and units contained in the DBVS Facility. At any time the offgas treatment system ceases to operate or produces insufficient vacuum to recover emissions from the areas, systems, or units, the Permittees shall not commence any new treatment activities within the dangerous and/or mixed waste areas, systems, or units contained in the DBVS Facility and take measures to minimized evolution of emissions from on-going treatment, and shall not receive new dangerous and/or mixed waste shipments into the DBVS Facility. The Permittees shall not re-commence new treatment activities until the DBVS Facility offgas treatment system are operational and producing sufficient vacuum to recover emissions.

This permit condition would allow ongoing treatment operations to continue in the event of an offgas treatment system failure. If the offgas treatment system fails during operations, shouldn't the treatment operation cease until the off gas treatment system is fully operational?

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology disagrees with the interpretation of the Draft Permit Condition II.A.5. The permit requires that, upon offgas treatment system failure, no new treatment activities shall be initiated. This prevents new feed into the melter.

Permit Condition II.A.5 also requires, "…and takes measures to minimize evolution of emissions from on-going treatment, and shall not receive new dangerous and/or mixed waste shipments into the DBVS Facility."

The RD&D Permit Application was deficient in specifying the specific actions which would be taken if the offgas treatment system failed to minimize the impacts of this event (e.g., releases of constituents, etc.). Ecology included compliance schedules under the following permit conditions in the RD&D Permit to require that the Permittees specifically identify measures it will implement to respond to this event and submit this information for Ecology review and approval. These measures may include shutdown of treatment systems as all or part of the response.

Permit Condition II.C.6. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive written approval from Ecology for incorporation in Permit Attachment FF, of the following, with the exception of II.C.6.a.viii.A (listed below) which will be incorporated into the Permit Administrative Record. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition II.C.6.a.iv. Mitigate effects of equipment failure and power outages.

Permit Condition II.C.6.a.vi. Prevent releases to the atmosphere.

Permit Condition II.C.6.a.vii. Test and maintain equipment to assure proper operation in the event of an emergency pursuant to WAC 173-303-340(1).

Permit Condition II.C.6.a.viii. A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with WAC 173-303-395, including documentation demonstrating compliance with WAC 173-303-395 (1)(c), to include at a minimum the following:

> A. USDOE "Final Hazard Analysis (FHA) for Demonstration Bulk Vitrification System (DBVS)". If the FHA is not completed prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility the Preliminary Hazard Analysis (PHA) shall be submitted and the FHA shall be submitted to replace it when its is completed.

Permit Condition V.I.4. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive Ecology approval of the following, as specified below, for incorporation into Permit Attachment LL. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions V.I.2 and V.I.3, as approved by Ecology:

Permit Condition V.I.4.j. Detailed description of procedures for startup and shutdown of waste feed and controlling and minimizing emissions in the event of an equipment malfunction including off-normal and emergency shutdown procedures, procedures for switching to back-up systems and tie into Permit Tables V.7 and V.8 and Appendix E of Permit Attachment LL.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6, and V.8 completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS offgas systems to recover emissions from the areas, systems or units, loss of DBVS subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS. Appendix E shall include a narrative description and information to support the parameters and limit values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

Also, as specifically reflected in Permit Condition II.A.4, "Air pollution control devices and capture systems in the DBVS Facility shall be maintained and operated so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the

above equipment is properly operated and maintained, so as to minimize the emission of air contaminants and process upsets, shall be established and followed in accordance with the Ecology approved DBVS Campaign Plan". Permit Condition VI.6.c requires that the DBVS Campaign Plans include a narrative description and information to support any updated Emergency Parameters and Limit values (Emergency Parameters and Limit Values originally required under Permit Condition V.I.4.k.).

Ecology believes that the commenter's concerns have been addressed.

COMMENT 4b: If the offgas system were to fail during operation, how quickly could the system be brought to a safe shutdown condition?

ECOLOGY RESPONSE: Ecology provides the additional information as discussed below.

It could take up to eight hours to bring the system to a safe shutdown condition depending on the time in the cycle where the upset condition occurs. If the offgas system fails near the end of the 139 hour melt cycle, the unreacted feed in the melter may continue to generate offgases because there will be sufficient residual heat in the molten vitrified product to cause the reaction even without power applied to the melter. The maximum unreacted feed at any one time in the melter is one dry waste silo full (1/3 dryer batch). In actual operations, this will be lower because waste feed to the melter will be metered in, not batched in, which means less unreacted waste.

Ecology included compliance schedules under the following permit conditions in the RD&D Permit to fully identify specific actions that should be taken if the offgas treatment system failed to minimize the impacts of this event (e.g., releases of constituents, etc.). It is required that the Permittees provide this information for Ecology review and approval.

Permit Conditions V.I.4.j. Detailed description of procedures for startup and shutdown of waste feed and controlling and minimizing emissions in the event of an equipment malfunction including off-normal and emergency shutdown procedures, procedures for switching to backup systems and tie into Permit Tables V.7 and V.8 and Appendix E of Permit Attachment LL.

Permit Condition II.C.6. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive written approval from Ecology for incorporation in Permit Attachment FF, of the following, with the exception of II.C.6.a.viii.A, which will be incorporated into the Permit Administrative Record. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition II.C.6.a.iv. Mitigate effects of equipment failure and power outages.

Permit Condition II.C.6.a.vi. Prevent releases to the atmosphere.

Permit Condition II.C.6.a.vii. Test and maintain equipment to assure proper operation in the event of an emergency pursuant to WAC 173-303-340(1)."

COMMENT 4c: What emissions might occur during the shutdown transient? How robust is the offgas system to prevent environmental releases from unplanned shutdowns or upsets?

ECOLOGY RESPONSE: Ecology provides the additional information as discussed below.

During the shut down transient, the gases are expected to include the same types of emissions (i.e., organics, metals, particulate matter, halogens) as produced during normal operations at varying concentration levels dependant at what stage in the melting cycle the shutdown transient occurred.

The RD&D Permit requires that the Permittees' provide documentation of projected compliance with the performance standards for emissions (i.e., organics, metals, particulate matter, halogens) for each campaign plan based on the following conservative assumptions for the efficiencies of operation:

Third paragraph of Permit Condition V.I.6.e. Fifty percent (50%) of the metals specified in Table V.7, as fed to the DBVS Waste Dryer from the DBVS Waste and Simulant Staging Tank Feed System are retained in the ICV® Melt and the remainder of the metals enter the main offgas treatment system (as specified on Permit Tables V.1 and V.4 and Permit Attachment LL), with the exception of mercury which would be assumed to enter the main offgas treatment system (as specified on Permit Tables V.1 and V.4 and Permit Attachment LL) at one hundred percent (100%) of the concentration as fed to the DBVS Dryer from the DBVS Waste and Stimulant Staging Tank Feed System.

Zero percent (0%) of the organics as fed to the DBVS Waste Dryer from the DBVS Waste and Simulant Staging Tank Feed System are retained in the ICV® Melt. One hundred percent (100%) of the volatile organics, and fifty percent (50%) of the semi-volatile organics as fed to the DBVS Waste Dryer from the DBVS Waste and Simulant Staging Tank Feed System enter the Dryer Offgas Treatment System, which includes the Main Offgas Treatment System subsystems downstream of mist eliminator #3 (36-N24-041). Fifty percent (50%) of the semi-volatile organics and one hundred percent (100%) of nonvolatile organics as feed to the DBVS Waste Dryer from the DBVS Waste and Simulant Staging Tank Feed System enter the Main Offgas Treatment System (as specified on Permit Tables V.1 and V.4 and Permit Attachment LL).

Zero percent (0%) of the constituents that contribute to the formation of HCL NOx, and SOx as fed to DBVS Waste Dryer from the DBVS Waste and Simulant Staging Tank Feed System are available to form HCL, NOx, and SOx in ICV® melt or in Main Offgas Treatment System (as specified on Permit Tables V.1 and V.4 and Permit Attachment LL).

> *Dryer Offgas Treatment System and the Main Offgas Treatment System operation at or below lower bounds of expected efficiencies, as specified on Permit Tables V.1 and V.4 and Permit Attachment LL."*

Ecology has also included other requirements in the RD&D to limit the emission of organics including requiring continuous emission monitoring for measuring organic breakthrough of the DBVS Facility carbon filter (Permit Condition V.E.), tracking organics into the DBVS Facility and change-out of carbon filter so as not to exceed fifty percent (50%) of the organic design

capacity of the carbon filter (Permit Conditions V.C.1.h and V.C.1.i), monitoring carbon monoxide as an indicator of the organics in the DBVS Facility emissions (V.E.), and requiring as specified above in Permit Condition V.I.6.e, that the Permittees take no credit for retention of organics in the melt in determining projected compliance with performance standards (Permit Condition V.I.6.e). Other continuous monitoring required under the RD&D Permit includes NOx, SOx, and particulate matter. The RD&D Permit also requires the Permittee to perform emission testing to document the capability of the treatment system to meet the performance standards specified in Permit Condition V.I.6.f.

These requirements (performance standards, treatment efficiency, emission testing and monitoring) are conservative and appropriately specific, consistent with the RD&D nature of the activities covered under this Permit. It is expected that the testing and monitoring under the RD&D Permit will provide information to support the development of projections for emissions during normal and off-normal operations to support a Permit Application for a long-term treatment permit, if the RD&D activities are determined to be successful.

COMMENT 4d: Can the offgas system handle potentially flammable or explosive gases in such a shutdown condition where gases are still being produced but the offgas system is not functional? What levels of flammable or explosive gases are generated in this situation? How are such flammable and explosive conditions prevented or contained, i.e. is equipment all explosion proof?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology included compliance schedules under the following permit conditions in the RD&D Permit to require that the Permittees specifically identify procedures and design features that have been incorporated for the treatment system to prevent the formation of explosive gases and submit this information for Ecology review and approval.

Permit Condition II.C.6. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive written approval from Ecology for incorporation in Permit Attachment FF, of the following, with the exception of II.C.6.a.viii.A, which will be incorporated into the Permit Administrative Record. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3.

Permit Condition II.C.6.a.iv. Mitigate effects of equipment failure and power outages.

Permit Condition II.C.6.a.vi. Prevent releases to the atmosphere.

Permit Condition II.C.6.a.viii. A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with WAC 173-303-395, including documentation demonstrating compliance with WAC 173-303-395(1)(c), to include, at a minimum, the following:

USDOE "Final Hazard Analysis (FHA) for Demonstrating Bulk Vitrification System (DBVS)." If the FHA is not completed prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility the Preliminary Hazard Analysis (PHA) shall be submitted and the FHA shall be

submitted to replace it when it is completed. Operating Procedures and/or waste feed limitations that will be followed and incorporated into Permit Attachment BB and/or Permit Attachment FF (Preparedness and Prevention) to assure flammable/toxic gases will not accumulate in any of the DBVS Facility storage or treatment units/systems at hydrogen gas levels above the lower explosive limits.

Operating parameters to be monitored/controlled and limitations for these parameters addressing each DBVS Facility storage and treatment unit for waste compatibility, safe operation, and compatibility with unit materials of construction. Amend Permit Attachment BB to include these parameters and monitoring frequency.

Permit Condition V.I.3. For subsystems that are not marked with an asterisk on Permit Tables V.1 and V.4, shall provide design information including: design drawings (General Arrangement Drawings in plan and cross section, references to codes and standards, updated Appendix B of Permit Attachment LL process flow diagrams, piping and instrumentation diagrams [including pressure control systems and mass and energy balances]), projected performance documentation, instrumentation/control loops for each subsystem, materials of construction, analysis/design methodology, fan curves for exhaust fan 1 (36-N31-025) and exhaust fan 2 (36-N31-026), physical and chemical tolerances of equipment, carbon filter organic (volatile, semi-volatile and non-volatile) design capacity and typical design details to support the subsystems and projected operational capability [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B))]:

Permit Condition V.I.3.e. Subsystem design to prevent escape of vapors and emissions of acutely or chronically toxic (upon inhalation) extremely hazardous waste (EHW) and to prevent the build-up of explosive gases/vapors [WAC 173-303-640(5)(e), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B))].

Ecology believes that this addresses the commenter's concerns.

COMMENT 5 : II.B.1. The Permittees shall maintain adequate knowledge of any waste to be managed properly by the DBVS Facility before acceptance, after receipt, and during treatment and storage of these wastes. The Permittees will ensure this knowledge through compliance with the requirements of WAC 173-303-3000 and with the provisions of the Waste Analysis Plan (WAP), Permit Attachment BB, [WAC 173-303-806(4)(a)(iii) and WAC 173-303-300(1)].

Permit Condition II.B.8.d. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit to Ecology for approval, and strictly for this RD&D Permit, documentation, not based solely on process knowledge that shows the removal of the characteristic codes D001 and D003 from S-109 tank waste.

Appendix B, Table 6-1. Dangerous Waste Designation and Sampling/Analysis Strategy lists constituents in the feed and process which may be sampled and analyzed. The table indicates a check mark for a number of constituents yet there is no foot note to indicate the meaning of the mark. At what frequency will these constituents be sampled and analyzed? What corrective action will be taken should the waste feed designate for characteristic codes D001 and D003?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

There is not an Appendix BB in the Draft Permit. However, there is a Table 6.1 in Permit Attachment BB. This response is based on this change.

The "√" indicates that the waste code listed for the waste feed and the vitrified waste in Phase 1 will be analyzed as specified in Table 6-1. Permit Condition II.B.7.c will be amended to more clearly reflect this as follows:

II.B.7.c. Section 6.2, page 6-2, Table 6-1, is revised to include under Phase 1 Header "6" as a superscript and as foot note "6" as follows: "The checkmark indicates that the waste code listed for the waste feed and the vitrified waste in Phase 1 will be sampled/analyzed as specified in Table 6-1.

The frequency of sampling and analysis for both Phase 1 and Phase 2 will be detailed in each campaign plan as required in the following permit conditions:

Permit Condition V.I.6. Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive approval from Ecology for the Phase 1 DBVS Campaign Plan. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 1 DBVS Campaign Plan shall include the information specified in Sections 5 and Appendix A of Permit Attachment LL in addition to the following:

Permit Condition V.I.6.a. Updated Demonstration Test Matrix, as appropriate to the DBVS Campaign and identification of the portions of the information expected to be collected during this campaign and to be included in this DBVS Campaign Summary Report, that are critical to development of subsequent DBVS Campaign Plan(s), including clearly identifying which DBVS Campaign Plan(s) the information is projected to be critical to.

Permit Condition V.I.7. Prior to commencement of the Phase 2 DBVS Campaign and prior to commencement of each Phase 2 DBVS Campaign, Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan, except as specified in Permit Condition V.I.8. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 2 DBVS Campaign Plan shall include the information specified in Permit Condition V.I.6. In addition, the Phase 2 DBVS Campaign Plans designed to provide "Feed Envelope Verification and/or Process Improvement", shall include the following:

Permit Condition V.I.7.b. Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, planned analytical procedures for sample analysis and a short summary narrative description of each stack sample method with identification of the performance standard(s) identified in Permit Condition V.I.6.f that the method will be used to demonstrate the performance of the DBVS.

Permit Condition II.B.8.d. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the permittee shall submit to Ecology for approval and strictly for this RD&D Permit, documentation, not based solely on process knowledge that shows the removal of the characteristic codes D001 and D003 from Tank 241-S-109 tank waste.

COMMENT 6a: Appendix B Section 6.2.5.1 Treated Waste Sampling and LDR Compliance. The final vitrified waste will be sampled to provide data for waste form qualification, risk assessment, performance assessment, and regulatory compliance. The vitrified waste will be tested for waste constituents on the SST Part A, which are LDR restricted for disposal in WAC 173-303-140 and 40 CFR 268.40. The constituents analyzed for are based on documented process knowledge, analysis of the waste feed, and are reasonably expected to be present in the final waste form. A composite vitrified waste core sample will be analyzed for the dangerous waste constituents that were detected in the tank waste feed to determine compliance with LDR requirements. The frequency of sampling the treated waste will be once per vitrified container of waste for an initial 10 sample set, after which random sampling will take place, as agreed to in the final test matrix. Table 6-7 lists some of the physical properties that the treated waste will be analyzed for in order to determine waste form qualifications. Will the composite vitrified waste core samples be timed to coincide with the waste feed samples to support a mass and energy balance and determine the treatment efficiency?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Sampling processes and protocol for the bulk vitrification process will allow a direct correlation between the feed materials and the final waste form. The eight batches of dry feed material required to produce a single bulk vitrification box are from the same waste feed tank so all dried materials will have the same composition. There is also significant mixing of the feed materials during melting so the glass in a given box is expected to be homogenous. The energy used during the melting of a single box and the waste feed information from the initial waste feed tank can be directly correlated to the core sample taken from a bulk vitrification box to complete a mass and energy balance.

In addition, Ecology is modifying and adding permit conditions concerning LDR compliance associated with the RD&D disposal requirements.

II.B.7.z. Section 6.2.3.2, Table 6-3, add D004 through D011 constituents to table and add HLVIT LDR treatment standard for D004 and D011.

II.L.2. The Permittees' must meet LDR standards for disposal of final waste forms for waste codes on the SST Part A Form 3 as listed in Permit Attachment BB, Table 6-1. All waste forms subject to LDR standards must be demonstrated to meet all applicable treatment standards and requirements (WAC 173-303-140/40 CFR Part 268). For waste that has dangerous/hazardous constituents shall be analyze in accordance with this Permit and WAC 173-303-140/40 CFR 268. For waste that has treatment standards that are not concentration based, the generator and/or treatment facility must demonstrate that the waste meets the applicable treatment standards using process knowledge and/or by waste analysis, as required by this Permit and the applicable sections of WAC 173-303-140/40 CFR 268.

V.I.6.b. Sampling, analysis, and QA/QC procedures/methods for any constituents/samples necessary to implement the DBVS Campaign Plan that were not addressed in Permit Attachment BB, as revised pursuant to Permit Conditions II.B.7 and

II.B.8. These sampling, analysis, and QA/QC procedures/methods must explicitly address data needed to demonstrate LDR compliance for constituents in Tables 6-1 and 6-3 of Permit Attachment BB.

COMMENT 6b: Why does Table 6-7 list some of the physical properties that the treated waste will be analyzed for to determine waste form qualifications? What other tests will be performed to determine waste form qualifications and will those tests methods be included as requirements in future modifications to this Permit?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Table 6-7 only listed potential examples of additional tests that might be conducted on the final waste form if they cannot be verified on laboratory simulant glass, and was never intended to be an all encompassing list. The treated waste sampling for each box will be determined and documented in the Ecology approved waste form qualification plan and Demonstration Bulk Vitrification System Campaign Plans which will not require permit modifications as defined in WAC 173-303-830(4).

However, Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this Permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

COMMENT 6c: A composite sample will not result in the detection of more volatile constituents which may have migrated to the outer edges of the melt. Constituents such as technicium-99 existing in sufficient concentrations as to present a potential leachability concern may go undetected. Discrete sampling of the melt and refractory liner would ensure the effectiveness of the treatment process and provide data useful in subsequent evaluations. Past test results for this process showed significant migration of some radionuclides into the refractory and into a foam layer on top of the melt. How will a composite sample accurately reflect the real risk of the accumulation of leach prone radionuclides in these known problem areas? How will the refractory/melt boundary and inner areas in the refractory be accurately sampled? How will the location of the core sample be chosen, (e.g., will the sample location be selected such that tests can confirm that potential radionuclide migration does not adversely affect the waste form long term disposal performance)?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The composite core sample discussed in the Permit Application will include portions of the refractory to capture the more volatile constituents that could migrate to the outer edges of the melt. Treating this sample as a composite will allow a compliance determination for all LDR constituents.

The potential for migration of constituents of concern (e.g., technetium-99) into other areas of the bulk vitrification container is one of the primary reasons for conducting the Demonstration Bulk Vitrification System operations under an RD&D Permit. This was recognized as a main objective and developmental work began immediately to explore methods to reduce the amount of residual soluble Tc-99 that may potentially migrate to the bulk vitrification container. Process changes as described in the RD&D Permit Application have eliminated the foam layer at the top of the melt, and effective methods have been developed to determine the amount of soluble material in the refractory. The following permit conditions have been established in the Draft RD&D Permit to develop this information, and require Ecology approval prior to initial receipt of waste.

Permit Condition III.G.4.b. Descriptions of procedures for precluding release of contents of ICV®-Package to the environment during the ICV® Package disconnect and sampling the ICV®-Package including but not limited to the following:

Permit Condition III.G.4.b.i. Sealing the sampling port.

Permit Condition III.G.4.b.ii. Coring process.

In addition, Ecology is adding new permit conditions as follows:

V.I.7. Prior to commencement of the Phase 2 DBVS Campaign and prior to commencement of each Phase 2 DBVS Campaign, Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan, except as specified in Permit Condition V.I.8. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 2 DBVS Campaign Plans shall include the information specified in Permit Condition V.I.6. In addition, the Phase 2 DBVS Campaign Plans shall be designed to collect the information specified in Permit Conditions V.I.7.c through V.I.7.e below, and the Phase 2 DBVS Campaign Plans designed to provide "Feed Envelope Verification and/or Process Improvement," shall also include the information specified in Permit Conditions V.I.7.a and V.I.7.b, below:

V.I.7.a. Emission testing for demonstrating performance standards listed in Permit Condition V.I.6.f.

V.I.7.b Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, planned analytical procedures for sample analysis and a short summary narrative description of each stack sample method with identification of

the performance standard(s) identified in Permit Condition V.I.6.f that the method will be used to demonstrate the performance of the DBVS.

V.I.7.c. One or more test campaigns shall be conducted to generate mass balance information sufficient to addresses the fate/concentration of potential constituents of concern, such as Iodine-129 and Technetium-99, within the ICV® Package and its various components, the offgas systems, offgas systems' secondary liquid waste, solid and secondary semi-solid waste.

V.I.7.d. One or more test campaigns shall be conducted to generate information to assess the potential for waste minimization as it relates to secondary liquid waste.

V.I.7.e. One or more test campaigns shall be conducted to generate information to assess how potential future recycle waste from the WTP could be incorporated into a Bulk Vitrification full-scale production facility waste stream, should Ecology make the decision to permit a full-scale production facility, and the impacts related to including these recycles into the DBVS Facility waste stream. These test campaigns would be specifically designed to observe, record and analyze impacts related to waste loading and potential constituents of concern, such as sulfate, sodium, metals, iodine, and technetium.

COMMENT 7a: Appendix B, Table 6-7. Physical Properties Sampling and Analysis1 Property Requirement Citation, footnote: [1]Not all tests will be performed on all treated waste results from stimulant tests may be used where applicable.

Why will all tests not be performed on all wastes? Simulant testing provides valuable data from which to evaluate whether or not to proceed to actual waste treatment operations. It does not provide proof of treatment on actual waste, nor would simulant data support a mass and energy balance.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The RD&D Permit does not require that all tests be performed on all wastes. All the major chemical components of the tank waste are readily simulated, and will provide a complete energy balance. Extensive Waste Treatment Plant and bulk vitrification laboratory tests have shown that glasses made with simulants are representative of glasses made with actual waste, as long as the chemical composition of the glasses are the same. Thus, confirmation of the chemical composition of the bulk vitrification glasses produced in Demonstration Bulk Vitrification System is required, but only limited glass performance testing is necessary once the composition has been established. Laboratory-scale and engineering-scale tests have provided sufficient information to justify a proposal to conduct a pilot full-scale RD&D activity.

COMMENT 7b: There has been no data made public to show how Tc might behave in a full-size bulk vitrification system and especially in how it might accumulate in the foam layer on top of the glass. Also, no data has been made public on how Tc and other radioactive materials of concern might migrate into the refractory liner. There is no full-scale data to show how this

critical performance measure will actually behave in the full-scale system. In fact, according to newspaper accounts, there is concern on the part of the technical people working on this project that a glaze may be required to prevent migration of radioactive material in to the refractory material of the vitrification container. The refractory layer (sides and bottom) surely must be sampled to develop process knowledge during this demo program. Otherwise there will be no data on Tc and other radionuclide migration into materials of concern in a production bulk vitrification system.

ECOLOGY RESPONSE: Ecology provides the following for information and clarification.

The evaluation of the fate and behavior of constituents of concern (e.g., Tc-99) is one of the primary purposes for permitting this RD&D to use actual tank waste and to operate the DBVS Facility using a full-sized container. The operation of the DBVS Facility will provide the information necessary to verify the extent of immobilization for the constituents of concern in the glass, refractory, and other components of the ICV® Containers. As required in Permit Condition II.B.7.e: the level of testing for each box will be defined in campaign plans, as information becomes available. The composite core sample discussed in the Draft Permit will include portions of the refractory to capture the more volatile constituents that could migrate to the outer edges of the melt. Treating this sample as a composite will allow a compliance determination for all LDR constituents.

The potential migration of constituents of concern (e.g., Tc-99) into other areas of the bulk vitrification disposal box is one of the primary reasons for conducting the Demonstration Bulk Vitrification System. This was recognized as a main objective and developmental work started immediately to explore methods to reduce the amount of soluble Tc-99 that remains in the bulk vitrification disposal container. Process changes as described in the RD&D Permit Application (Section 4.2.10 of Permit Attachment FF) have eliminated the foam layer at the top of the melt and effective methods have been developed to determine the amount of soluble material in the refractory. The following permit conditions require Ecology approval prior to initial receipt of waste:

Permit Condition III.G.4.b. Descriptions of procedures for precluding release of contents of ICV® Package to the environment during the ICV® Package disconnect and sampling the ICV® Package including but not limited to the following:

Permit Condition III.G.4.b.i. Sealing the sampling port.

Permit Condition III.G.4.b.ii. Coring process.

In addition, Ecology is adding new permit conditions as follows:

V.I.7. Prior to commencement of the Phase 2 DBVS Campaign and prior to commencement of each Phase 2 DBVS Campaign, Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan, except as specified in Permit Condition V.I.8. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 2 DBVS Campaign Plans shall include the information specified in Permit Condition V.I.6. In addition, the Phase 2 DBVS Campaign Plans shall be designed to collect the

information specified in Permit Conditions V.I.7.c through V.I.7.e below, and the Phase 2 DBVS Campaign Plans designed to provide "Feed Envelope Verification and/or Process Improvement," shall also include the information specified in Permit Conditions V.I.7.a and V.I.7.b, below:

V.I.7.a. Emission testing for demonstrating performance standards listed in Permit Condition V.I.6.f.

V.I.7.b Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, planned analytical procedures for sample analysis and a short summary narrative description of each stack sample method with identification of the performance standard(s) identified in Permit Condition V.I.6.f that the method will be used to demonstrate the performance of the DBVS.

V.I.7.c. One or more test campaigns shall be conducted to generate mass balance information sufficient to addresses the fate/concentration of potential constituents of concern, such as Iodine-129 and Technetium-99, within the ICV® Package and its various components, the offgas systems, offgas systems' secondary liquid waste, solid and secondary semi-solid waste.

V.I.7.d. One or more test campaigns shall be conducted to generate information to assess the potential for waste minimization as it relates to secondary liquid waste.

V.I.7.e. One or more test campaigns shall be conducted to generate information to assess how potential future recycle waste from the WTP could be incorporated into a Bulk Vitrification full-scale production facility waste stream, should Ecology make the decision to permit a full-scale production facility, and the impacts related to including these recycles into the DBVS Facility waste stream. These test campaigns would be specifically designed to observe, record and analyze impacts related to waste loading and potential constituents of concern, such as sulfate, sodium, metals, iodine, and technetium.

COMMENT 8 : II.B.7.c. Section 6.2, page 6-2, Table 6-1, is revised to include under Phase1, Vitrified Waste Header "4) as a superscript and as footnote" 4) as follows: "All constituents checked will be sampled/analyzed for each ICV® package generated during Phase 1."

The table currently contains a "4" footnote. If this footnote is added only to the vitrified waste header, what frequency will all other checked items be sampled/analyzed?

ECOLOGY RESPONSE: Ecology agrees and provides clarification as discussed below.

Ecology will change the footnote number to "6" in Table 6-1.
Footnotes 1 and 2 of Table 6-1, checked items (√), provide the frequency of items to be sampled/analyzed.

COMMENT 9: II.C.6 Compliance Schedules. Prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility, the Permittees shall submit and receive written approval from Ecology for incorporation in Permit Attachment FF, of the following, with the exception of II.C.6.a.viii.A, which will be incorporated into the Permit Administrative Record. II.C.6.a.viii. A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with WAC 173-303-395, including documentation demonstrating compliance with WAC 173-303-395(1)(c), to include, at a minimum, the following:

A. USDOE "Final Hazard Analysis (FHA) for Demonstration Bulk Vitrification System (DBVS)." If the FHA is not completed prior to the initial receipt of dangerous and/or mixed waste in the DBVS Facility the PHA shall be submitted and the FHA shall be submitted to replace it when it is completed.

Will the USDOE "*Final Hazard Analysis (FHA) for Demonstration Bulk Vitrification System (DBVS)"* be submitted for Ecology approval? Will it be available for public comment if submitted to Ecology?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The Final Hazard Analysis will be submitted to Ecology, and it will be incorporated into the RD&D Permit administrative record.

COMMENT 10 – Isn't WAC 173-303-692, air emission standards for tanks, surface impoundments, and containers applicable to the project? This requirement is negated by the allowed continued operation of the melter (to the continued offgassing of the melt) when the offgas system is inoperative (see concern discussed in [4] above).

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

WAC 173-303-692(b)(vi) states that the requirements of 40 CFR Part 264 Subpart CC do not apply to waste management units at a facility that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act. The Final Hazard Analysis for the Demonstration Bulk Vitrification Facility will be completed in early 2005.

COMMENT 11 : V.C.1.a. The Permittee shall operate the DBVS in order to maintain the systems and process parameters listed in Permit Tables V.3, V.6, V.7, and V.8, within the set-points specified in Permit Tables V.7 and V.8.

The tables are substantially reserved and therefore do not provide enough information to evaluate the system performance capability or the applicable permit conditions. Will the submittals required under permit condition V.B be available for public comment prior to incorporation into the permit?

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that these tables in the Draft Permit and Permit Attachment LL need to be completed. The permit conditions listed below identify the requirement to submit this information for Ecology review and approval prior to accepting dangerous or mixed waste into the facility.

Permit Condition V.I.4.b. Detailed Description of an Emergency Parameter Control/Response System addressing operating parameters specified in Permit Tables V.7 and V.8, as approved pursuant to Permit Conditions V.I.4.k and V.I.6.c.

Permit Condition V.I.4.k. Emergency Condition Parameter Limit Values as Appendix E of Permit Attachment LL and Permit Tables V.3, V.6 and V.8, completed to include this information. These emergency condition parameters should include parameters to warn of potential for fire, explosion, loss of sufficient vacuum in the DBVS offgas systems to recover emissions from the areas, systems or units, loss of DBVS subsystem vessel integrity, and off-normal operating conditions that could lead to potential for release from DBVS. Appendix E shall include a narrative description and information to support the parameters and limits values, parameter loop narratives, along with their process functions, the response required when they trip, and instrument fail safe condition.

V.I.5.a. Permit Tables V.3 and V.6 shall be completed for DBVS leak detection system instruments and parameters, to provide the information as specified in each column heading.

Ecology disagrees with the commenter's request for another public comment period. The regulations for permitting RD&D facilities allow Ecology some discretion when determining which permitting requirements governing dangerous waste treatment facilities should apply to RD&D facilities. However, the Permit must include such terms and conditions as will assure protection of human health and the environment.

Pursuant to WAC 173-303-809(2), Ecology has modified the Permit Application and issuance requirements in order to expedite review and issuance of the RD&D Permit. Nonetheless, the process for issuance of this Permit has included significant opportunities for public participation. Ecology published public notice of the publication of the Draft Permit on July 26, 2004, provided a 45-day comment period, and held a public meeting on August 31, 2004.

Ecology's RD&D Permit has authorized operation of the Bulk Vitrification Test and Demonstration Facility for a maximum of 400-operating days, which includes a 365-day initial operating period and a 35-operating day renewal. No other renewals of this permit are allowed. Limiting the duration of operations will help minimize any potential risk to human health and the environment, and will help ensure that use of the facility will be limited to the demonstration activities defined in the Permit.

In order to enable the demonstration activities authorized by this Permit to proceed in a timely manner, the Permit includes a schedule for the submission of specified information for Ecology approval prior to commencing certain construction activities, prior to receipt of dangerous or mixed wastes in the facility, and prior to closure. Such information, once approved, will be incorporated into the Permit.

The three-tiered permit modification process outlined in WAC 173-303-830(4) will be required for revisions to the Contingency Plan after the RD&D Permit is initially issued, and for updating the Closure Plan prior to conducting the actual closure of the facility. It will also be required for any significant change to the original RD&D permit terms.

The Permit specifies numerous anticipated updates, revisions and/or changes that will *not* be made via the three-tiered permit modification process (e.g., DBVS campaign specific plans, substitution of equivalent or superior equipment or procedures, equipment design and configuration updates, etc.). Instead the RD&D Permit will require that the Permittee submit this updated, revised and/or changed information for Ecology review and approval prior to its incorporation into the issued permit.

This process of incorporating specified information into the RD&D Permit will provide the flexibility needed for expedited review and permitting decisions throughout the short-term operation of the RD&D facility, while maintaining continuing regulatory review to assure protection of human health and the environment.

Ecology will continue to share information about the RD&D facility with the public by immediately posting on the NWP website documents that are not business sensitive, placing a hard copy in the administrative record, and notifying the Hanford-Info email distribution list of public contacts via email (600 public contacts are on the list). Individuals may sign up for the list at http://listserv.wa.gov/cgi-bin/wa?SUBED1=hanford-info&A=1 or by calling the Hanford Information line at 800-321-2008. In addition, Ecology will provide the public a 30 day notice of its intent to approve the Permittee's commencement of Phase 1 DBVS operations and commencement of Phase 2 DBVS operations, which are two critical stages in the RD &D project. These approvals will be based on for Phase 1, the Permittee's submittal of all information required by the RD &D permit for initial receipt of dangerous and/or mixed waste in the DBVS and commencement of Phase 1 DBVS operations and for Phase 2, all information required by the RD &D permit for commencement of the first DBVS Campaign under Phase 2. This notice will be shared with the public as described above. Ecology will consider comments it receives regarding such updates, revisions and changes, and these approvals, but it does not intend to conduct a formal public comment period nor prepare a responsiveness summary. The purpose and function of the RD&D facility would be impaired if all such changes required formal comment periods. As noted, Ecology will process any significant changes to the original RD&D permit terms pursuant to the three-tiered permit modification process set forth in WAC 173-303-830(4). Questions or comments concerning any submittal should be directed to Kathy Conaway, 3100 Port of Benton Road, Richland, WA 99354; (509) 372-7890; kcon461@ecy.wa.gov.

COMMENT 12 : V.1.6.f. Performance Standards (as referenced in Permit Condition V.I.6.e)

Without values in table V.7, how were the performance standards contained in this permit condition set?

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology has determined that it is appropriate to apply the hazardous waste combustion numerical emission standards for incinerators under 40 CFR Part 63 Subpart EEE to the DBVS as a thermal treatment system under the RD&D Permit.

The basis for this determination is that like an incinerator processing organics, metals, and halogens (i.e., chlorine, fluorine, etc.), DBVS will: (1) volatilize organics; (2) breakdown organics (i.e., destroy); (3) promote formation of products of incomplete destruction; (4) remove organics and metals and transfer to liquid, solid and/or gas media; and (5) collect and remove acid gases and particulate matter.

COMMENT 13 – V.I.6.f.iv. Dioxin and Furan toxicity equivalence (TEQ) emissions from the DBVS offgas exhaust stack (36-N26-024) prior to release to the atmosphere not exceeding 0.2 nanograms (ng)/dscm [40 CFR 63.1203(b)(1), in accordance with WAC 173-303-680(2)].

What contaminant(s) in the waste feed stream prompt this performance standard? Does tank 241-S-109 contain Polychlorinated Biphenyl (PCBs), and if so, at a sufficient concentration to require Toxic Substances Control Act (TSCA) treatment standards?

ECOLOGY RESPONSE: Ecology provides additional information as discussed below.

Ecology has determined that it is appropriate to apply the hazardous waste combustion numerical emission standards for incinerators under 40 CFR Part 63 Subpart EEE, which includes this emission standard for dioxins and furans, to the DBVS as a thermal treatment system under the RD&D Permit.

The basis for this determination is that like an incinerator processing organics, metals, and halogens (i.e. chlorine, fluorine, etc.), DBVS will: (1) volatilize organics; (2) breakdown organics (i.e. destroy); (3) promote formation of products of incomplete destruction; (4) remove organics and metals and transfer to liquid, solid and/or gas media; and (5) collect and remove acid gases and particulate matter.

Tank 241-S-109 was placed into use in December 1952 and last received waste in September 1974, prior to the effective date of the TSCA regulations of 1978. Analytical results have been reported for samples taken from S-109 and indicate that PCB levels are well below the regulated level of 50 ppm.

COMMENTER:
Gerald Pollett, JD; Executive Director
Heart of America Northwest
1305 Fourth Ave. #208
Seattle, WA 98101

COMMENT 1: Taken from the Overview section on page 1.

The commenter states, "The proposed Bulk Vitrification Test and Demonstration Facility is not eligible under federal and state hazardous waste laws for a research, development and

demonstration permit, as proposed. This extensive project –with a price tag of over $100 million – is not eligible for a State Environmental Policy Act (SEPA) Determination of Non-Significance, nor does it qualify for an exclusion from the federal National Environmental Policy Act's requirement that the project have an environmental impact statement."

"The uncontrolled and inexplicable escalation of costs for this project warrant the strictest of scrutiny. The project will now cost so much as to be an irreversible commitment of resources – diverting resources from other necessary Hanford Clean-Up programs – triggering the requirement for an environmental impact statement under federal and state laws."

"When first proposed, USDOE stated that this demonstration bulk vitrification facility would be a $15 million test – including both capital and operation. The price tag has now grown to $102 million. These are dollars that USDOE has had to divert from other important Hanford Clean-Up programs. $102 million would pay for a year of soil cleanup in the River Corridor, would exhume large amounts of transuranic waste that USDOE says it can not afford to exhume, would pay for a licensed and safe storage facility for Remote Handled TRU, would pay for a legally compliant groundwater monitoring network at all burial grounds and tank farms …. $100 million would have been more than adequate to pay for a third melter in the first phase Low Activity Waste Vitrification Plant, providing capacity to treat the same wastes with a proven technology and with a final waste form that USDOE says meets environmental protection criteria."

"USDOE has improperly failed to inform Congress of either the price for this capital project or the massive escalation in cost. Despite the massive cost, USDOE failed to include any mention or line item for this facility in its Congressional Budget Request. Washington Ecology must not condone or be complicit in this fundamental failure to inform Congress, lest Congress respond by imposing restrictions on a wide range of Hanford Clean-Up projects or cutting the budget for tank waste retrieval and construction of the TPA required Waste Treatment Facility (Vitrification Plant)."

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

First, the DBVS Facility is eligible under state and federal laws for an RD&D Permit. The Washington State Hazardous Waste Management Act, Chapter 70.105 Revised Code of Washington (RCW) and the regulations promulgated there under in Chapter 173-303 of the WAC, regulate the management of dangerous waste in Washington. Ecology may issue an RD&D permit to any dangerous waste treatment facility that proposes to utilize an innovative and experimental dangerous waste treatment technology or process as specified in WAC 173-303-809. Any such permit will include such terms and conditions as will assure protection of human health and the environment.

The purpose of this RD&D Permit is to allow for the Test and Demonstration of the bulk vitrification facility. The Permit is temporary in duration and limits the quantities of dangerous and/or mixed waste to be treated. (Mixed waste is defined as a dangerous, extremely hazardous, or acutely hazardous waste that contains both radioactive and hazardous constituents). The Permit also includes stringent terms to protect public health and the environment. The general permit conditions under WAC 173-303-810, and final facility standards under WAC 173-303 as set forth in WAC 173-303-600, are incorporated as specified in this Permit and shall be adhered to by the Permittees.

The treatment process which would be developed under this Permit is a key element of the overall treatment system being developed to reduce the volume of mixed waste in the underground storage tanks at Hanford's tank farms. The safety and cleanup of these tanks has been a major public concern for some time.

Under this Permit, the Permittees will evaluate the ability of bulk vitrification to produce ILAW that is equivalent to the Hanford Site WTP immobilized low-activity waste form. The Permittees will be required to provide data for waste form qualifications, risk assessments, and performance assessments for treatment and near-surface land disposal of low-activity waste.

This RD&D project is a key step in the design of a full scale bulk vitrification facility in the 200 Area Waste Treatment Immobilization Plant. The permitted RD&D activity would take place at one location within the Hanford Facility. This RD&D project is identified as milestone M-45-00 and M-62-00 in the *Hanford Federal Facilities Agreement and Consent Order* (HFFACO).

Second, cost is not a criteria to determine if a project is eligible for a Research, Development & Demonstration Permit under WAC 173-303-809 or The Office of Solid Waste and Emergency Response (OSWER) Guidance Manual Research, Development and Demonstration Permits under 40 CFR Section 270.65 (OSWER Policy Directive #9527.00-1A). The OSWER Guidance Manual, Section 2 provides the following, "Criteria for Research, Development, and Demonstration Permits" states that "…Research, Development & Demonstration proposal will include a variety of demonstration and experimental activities such as small-scale original research, state-of-the-art technologies and processes, and modifications of existing technologies or processes, which may have been used for treating non-hazardous wastes or other hazardous wastes. Furthermore, the Agency recognizes that Research, Development & Demonstration facilities will involve testing of one or more technologies or processes at laboratory-scale, bench-scale, pilot-scale, and/or full-scale."

Third, USDOE has concluded that this RD&D Permit does qualify for National Environmental Policy Act (NEPA) exclusion and Ecology has determined that it is eligible for a SEPA determination of non-significance. USDOE regulations state that for a pilot-scale demonstration, the appropriate NEPA document is a Categorical Exclusion (CX). 10 CFR 1021, "National Environmental Policy Act (NEPA) Implementing Procedures," Subpart D, Appendix B (61 Federal Register 36222, July 9, 1996) provide the following Categorical Exclusions (CX) that was determined to apply to this project:

> "B6.2 Siting, construction, and operation of temporary (generally less than two years) pilot-scale waste collection and treatment facilities, …"; and "B1.15 Siting, construction (or modification) and operation of support buildings and support structures (including but not limited to, trailers and prefabricated buildings) within or contiguous to an already developed area…" This information is explained in greater detail in DOE/ORP-2003-24, "Categorical Exclusion for Treatability and Demonstration Testing of Supplemental Technologies, Hanford Site, Richland, Washington, December 2003."

A *Washington State Environmental Policy Act* (SEPA) environmental checklist was submitted in support of the Permit Application for an RD&D Permit May 10, 2004. Ecology reviewed the SEPA environmental checklist and prepared a DNS. SEPA regulations require Ecology to review the proposal and determine if an Environmental Impact Statement is required. Ecology

performed the determination and issued a Mitigated Determination of Nonsignificance, based upon planned mitigation measures included in the design of the DBVS Facility.

The Washington State Department of Ecology respectfully disagrees with the premise that an Environmental Impact Statement is required to evaluate the action to issue a RD&D Permit for the DBVS Facility.

Lastly, information on the cost is provided for clarification only. Financial responsibility and requirements under this RD&D Permit pertain to facility closure as outlined in WAC 173-303-620. The statement, "When first proposed, USDOE stated that this demonstration bulk vitrification facility would be a $15 million test – including both capital and operation" is confusing. The $15 million estimate was for the original surrogate (nonradioactive) waste testing, not an RD&D Facility, and no portion of it was capital funds. It is incorrect to say that USDOE diverted funds from other cleanup programs. This funding was earmarked to address priority cleanup activities that could significantly accelerate Office of River Protection cleanup activities.

The commenter states, "At the escalated cost for this project, there is no longer a reasonable belief that bulk vitrification offers any significant budgetary advantage over the use of proven vitrification technology and construction of a second phase Low Activity Vitrification Plant. *USDOE is substituting bulk vitrification with unproven final waste performance for a well proven waste form – a gamble that offers no significant savings, and diverts necessary funds from vitrification, installation of groundwater monitoring or a plethora of other projects*."

As noted in the permit Fact Sheet: "Under this permit, the Permittees will evaluate the ability of bulk vitrification to produce immobilized low-activity waste (ILAW) that is comparable to that proposed for the Hanford Site Waste Treatment and Immobilization Plant (WTP) immobilized low-activity waste form. The Permittees will be required to provide data for waste form qualifications, risk assessments, and performance assessments for treatment and near-surface land disposal of low-activity waste".

The commenter states, "Indeed, for the cost of this project on a per gallon basis, it would cost billions and billions to treat Low Activity High-Level Waste. (300,000 gallons for a cost of $102 million plus decommissioning and cleanup of the bulk vitrification facility translates to $18 billion to treat 53 million gallons of waste in the tanks; or, $8 billion to bulk vitrify 24 million gallons of LAW that may not go to the first phase LAW vitrification plant. In comparison, a second phase LAW vitrification plant would be expected to have capital costs of $1 billion and operational costs of $2 billion (current dollars) through the end of treatment."

The original cost estimate for the DBVS Facility was approximately $46 million. The cost has increased due to (1) more detailed design and construction cost estimates, (2) Operation of Pilot Scale Facility (3) Tank 241-S-109 retrieval costs, (4) Extensive Waste Form Qualification testing and analysis to ensure ILAW comparability and (5) Additional engineering-scale testing with low-activity tank waste**.** The life-cycle costs will be provided in January 2005 as a requirement of the HFFACO milestone M-62.

COMMENT 2a: Page 2, beginning with <u>EIS Required.</u>

The commenter states, "If a proposed project diverts funds from environmentally beneficial or legally required activities, and the funding level becomes significant, the funding is an irreversible commitment of resources triggering an environmental impact statement. In this case, $102 million is being diverted from the same budget pool that would be available to pay for legal compliance for groundwater monitoring, leak detection during tank waste retrieval, or for vitrification of the same wastes."

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Financial responsibility and requirements under this RD&D Permit pertain to facility closure as outlined in WAC 173-303-620. Ecology appreciates your comments but does not concur with the conclusions reached. A similar comment to this one has already been responded to. WAC Chapter 197-11-330(1)(d) requires agencies to determine if a proposal is likely to have a significant environmental impact. Ecology does not agree that a direct correlation can be made between the use of federal funds for the DBVS and a significant adverse environmental impact on groundwater monitoring, leak detection during tank waste retrieval, or vitrification of wastes in the WTP.

COMMENT 2b: EIS Required (continued)

The commenter states, "Bulk vitrification involves risks of releases of hazardous wastes and process upsets that would have clearly significant human health and environmental impacts. Indeed, the lack of legally required characterization of these wastes prior to treatment or construction of a TSD unit also creates a per se potentially significant set of impacts. USDOE has no reasonable, quantifiable knowledge of the composition of the tank sludges. When an agency fails to determine the probability of known highly significant potential impacts because it has not bothered to study and quantify those known risks, it can not claim an exemption – based on that ignorance – from SEPA or NEPA requirements for an environmental impact statement that discloses and considers these risks."

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The RD&D Permit for the DBVS Facility only allows the Permittees to retrieve saltcake waste from Single-Shell Tank 241-S-109, not the sludge fraction of Tank S-109 as explained in Permit Attachment KK, Section 2.3.3 listed below.

2.3.3 Waste Transfer

> "Waste transfer will be in the form of waterborne salt solution. Waste left in a waste receipt tank at the end of a campaign may be transferred to another tank and mixed with incoming waste for processing. A waste transfer line water flush may be made after each batch transfer of waste feed, as needed. Waste transfer will occur only after verification that all systems are ready for the transfer/receipt of waste. The vitrification station will be located beneath the dried waste hoppers for gravity feed of waste to the container. The mixer/dryer, vitrification, cooldown, and top off/survey stations will be provided with radiation shielding and spill containment curbs.

Secondary containment will be provided for liquid waste transfer operations in the form of hose-in-hose or pipe-in-pipe transfer lines. Dried waste transfer from the mixer/dryer to the hipper will have secondary containment. Dried waste transfer from the hopper to the container will be conducted inside a removable hood sealed to the container top. Cleanup of spills within the hood will be performed using a containment system."

Therefore, the Draft RD&D Permit does not address retrieval and treatment of sludge from Tank S-109. This RD&D Permit does qualify for NEPA exclusion and is eligible for a SEPA determination of non-significance, and USDOE has concluded that it qualifies for a NEPA exclusion, as discussed in comment 1.

COMMENT 2c: EIS Required (continued)

The commenter states, "Attachment 2 states that permit conditions will require "emergency response actions planned." Yet, this is entirely lacking. (The lack of consideration of SARA planning requirements for emergency response is another forgotten lesson). The public is entitled to see a description of those potential emergency conditions, to understand the potential consequences, and to comment on proposed specific emergency response and mitigation measures."

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The Superfund Amendments & Reauthorization Act (SARA) is intended for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities and is not applicable to RCRA treatment activities. The RD&D Permit is for RCRA treatment activities. The RD&D Permit requires submittal of Emergency Preparedness information as defined in Permit Condition II.C of the RD&D Permit, and in accordance with WAC 173-303-340. Permit Condition II.F addresses the updated contingency plan.

Permit Condition II.C. PREPAREDNESS AND PREVENTION

Permit Condition II.F. CONTINGENCY PLAN

Ecology believes that this addresses the commenter's concerns.

COMMENT 2d – EIS Required (continued)

The commenter states, "The need to supply one full Megawatt of electricity to operate the bulk vitrification facility is, in and of itself, a potentially significant environmental and health impact. This is a very large amount of additional electrical generation capacity that would be required, and USDOE has failed to show any mitigation for the impacts. Saying that another facility (such as the LAW vitrification facility, which did have an EIS) will also require a large amount of electricity is not a legal excuse for failing to consider the impacts (and mitigation) from this proposed facility."

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

It is an inaccurate statement that, "additional electrical generation capacity would be required." The power requirements for the DBVS Facility are being met by the existing Hanford electrical utilities without additional electrical generation capacity. An Environmental Impact Statement (EIS) is not required.

COMMENT 2e: EIS Required (continued)

The commenter states, "Retrieval of waste from Tank S-109 is an integral part of this project. It is not permissible under SEPA for Ecology to piecemeal consideration of the potential impacts of the project, by pretending that the bulk vitrification is a stand alone project. Ecology and USDOE's documents make clear that retrieval of the waste is an integral part of this project. There are significant potential impacts from retrieval, including the potential for further leaks and releases. The public is entitled to know those risks and whether they will be mitigated by use of legally required best available technology for leak detection before retrieval begins.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that retrieval of Hanford tank waste could present the potential for a significant adverse environmental impact and is an integral part of the RD&D; however, it is not part of the RD&D Permit. The Tank Waste Remediation System EIS evaluated the risk associated with retrieval of tank waste. See Vol. 4, Appendix E, Tables E.1.0.1 "*List of Evaluation Basis Accident Analyses in Accelerated Safety Analysis"* and E.1.1.1 *"Summary of Potential Accidents"*. Retrieval of waste from SSTs has been addressed under the Tank Waste Remediation System EIS.

In addition, the transfer of waste from Tank 241-S-109 to the DBVS Facility will be regulated by an Ecology approved Functions and Requirements document, not the RD&D Permit, and will address any potential 241-S-109 leaks during retrieval. The RD&D Permit is not part of the Dangerous Waste Portion of the *Resource Conservation and Recovery Act of 1976* (RCRA) Permit for the Treatment, Storage, and Disposal of Dangerous Waste Permit issued to USDOE March 28, 2000. It is a stand-alone permit. Ecology does not agree with the commenter that the SEPA DNS constitutes segmentation of the proposal through omission of retrieval.

COMMENT 2f: EIS Required (continued)

The commenter states, "Temporary storage" of the bulk vitrification product is not legally permissible. (DNS at 7). These wastes are Mixed Wastes, and any storage facility must be permitted, and limited to legally applicable time periods for "storage".

The lack of any available permanent disposal facility for bulk vitrified wastes automatically triggers both SEPA and NEPA. Indeed, if USDOE wishes to create a significant quantity of bulk vitrified waste (and there is no denying that the massive blocks of waste from this facility will be significant), it must disclose and consider the impacts, and alternatives, in the upcoming Tank Waste Retrieval, Treatment and Closure EIS. Prior to issuing that EIS, neither USDOE nor

Ecology can legally proceed to authorize a project that will create such large High-level Waste blocks that can never leave the Hanford site. We must point out that there is still legal uncertainty – which USDOE repeatedly cites in other forums (and the Government Accountability Office [GAO] recently cited as well) – over whether these wastes can legally be left forever at Hanford. However, unlike with the retrievable glass frit that would result from the approved LAW Vitrification facility, bulk vitrification results in a High-Level Waste form that is simply not retrievable, or movable to a repository. This is a significant potential impact which the DNS and USDOE's application fail to consider. A Determination of Non-Significance is not available when the project will result in waste forms that can never leave and which have clear potential significant impacts if they are left at the surface in a Hanford landfill.

ECOLOGY RESPONSE: Ecology disagrees and provides clarification as discussed below.

The Draft RD&D Permit for the DBVS Facility is for treatment and storage, not disposal. WAC 173-303-809, OSWER Guidance allow for an RD&D to store quantities of treated waste until the permit expires and closure of the facility begins as required under Permit Condition II.H and WAC 173-303-610.

The United States Environmental Protection Agency (EPA) OSWER Guidance for RD&D permits further allows treatment of limited quantities of waste at a scale of operation sufficient to conduct an experiment. In addition, the guidance states, "Although RD&D permits are intended for treatment of hazardous waste, the storage of hazardous waste at an RD&D facility, incident to the treatment is permitted under the RD&D Permit."

Ecology does not agree with the commenter that treated Tank 241-S-109 waste cannot be stored at the DBVS Facility. Permit Condition III.A.2 requires waste generated at the facility and placed in containers to be managed according to those requirements, including WAC 197-303-200(1).

The DBVS Facility containers are to be filled with treated waste. Containers of treated waste are subject to the requirements of WAC 173-303-630 Use and Management of Containers.

The ICV® containers are expected to be disposed of onsite in a RCRA permitted disposal facility. Ecology anticipates that the DBVS treated waste will meet the same technical criteria contemplated for pre-treatment and vitrification of Hanford LAW at the Waste Treatment Plant, and therefore may be disposed of as low activity waste. As noted in the permit Fact Sheet: "Under this permit, the Permittees will evaluate the ability of bulk vitrification to produce immobilized low-activity waste (ILAW) that is comparable to that proposed for the Hanford Site Waste Treatment and Immobilization Plant immobilized low-activity waste form. The Permittees will be required to provide date for waste form qualifications, risk assessments, and performance assessments for treatment and near-surface land disposal of low-activity waste."

The commenter says that the HLW form can never leave the Hanford Site and further states that the bulk vitrification results, "in a waste form that is simply not retrievable or movable to a repository" This is incorrect; This Research, Development & Demonstration facility will vitrify pretreated tank waste. If the Research, Development & Demonstration waste packages are not ultimately accepted for final disposal as low-activity waste at Hanford, the borosilicate glass

waste form will be suitable for disposal in a repository or for long-term storage as provided for under the Nuclear Waste Policy Act.

The Draft RD&D Permit allows for the treatment of 50 ICV® containers. Permit Condition V.I.10.c requires ICV® Package detailed final limitations for size, durability, compressibility, stacking, handling, retrievability from storage and after final disposal, outside and inside package residual contamination, disposal facility, and testing/acceptance requirements.

Permit Condition II.A.1. The Permittees are authorized to accept dangerous and/or mixed waste only from:

Permit Condition II.A.1.a. Tank 241-S-109 that does not exceed the criteria listed in Permit Attachment BB, as specified in the Ecology approved campaign plan, and as specified on Permit Tables V.7 and V.8.

Permit Condition II.B.7.a. Requires that the Waste Analysis Plan objectives include developing a sampling approach for the final vitrified waste form to ensure compliance with the waste acceptance criteria (WAC) of the permitted facility.

In addition, the WAP plan objectives are intended to develop a sampling approach that will be used to support waste feed limitations that will result in the waste forming meeting the disposal facility's WAC.

COMMENT 2g: EIS Required (continued)

"Again, if this were a lab scale test, it would be truly Research, Development and Demonstration… and, the final waste forms would not be so massive that they must stay at the surface at Hanford regardless of what the future environmental impacts are from these wastes. The State has repeatedly asserted that it would not allow any waste form to be used for Hanford's High-Level Wastes that did not beat the performance of glass from the approved vitrification plants. Approval of this permit and project would result in massive monoliths of waste whose performance is unknown. Nor will the performance be determined by any requirement of this permit, since the permit totally fails to specify what tests of performance will be legally required. (It is not adequate to have a list of proposed tests, without any minimum enforceable standards for the testing of the final waste form. Nor has USDOE ever shown why it must "demonstrate" for research purposes a waste form of this size, rather than produce smaller, retrievable bulk vitrification forms. Ecology and USDOE are legally required under SEPA and NEPA to consider this alternative."

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

An RD&D Permit is not restricted to a "lab-scale size" demonstration. WAC 173-303-809 and the OSWER Guidance Manual allow for the waste quantity proposed in this RD&D Permit. OSWER, Section 2. "Criteria for Research, Development, and Demonstration Permits" states that, "…Research, Development & Demonstration proposal will include a variety of demonstration and experimental activities such as small-scale original research, state-of-the-art technologies and processes, and modifications of existing technologies or processes, which may

have been used for treating non-hazardous wastes or other hazardous wastes. Furthermore, the Agency recognizes that Research, Development & Demonstration facilities will involve testing of one or more technologies or processes at laboratory-scale, bench-scale, pilot-scale, and/or full-scale."

The purpose of the RD&D Permit is to allow for the Test and Demonstration of the bulk vitrification facility. The proposed facility will be used to evaluate the ability to produce immobilized low activity waste (ILAW) that is equivalent to WTP ILAW; the compatibility of the technology with actual tank waste; the safety, efficiency, and potential cost-effectiveness of the bulk vitrification process; and the feasibility of full-scale Permit Application. The proposed DBVS Facility is designed to investigate requirements for feed material handling, equipment operation, residual material handling, production and control of secondary wastes, and potential environmental impacts associated with the process. Second, the general performance standards set forth in the Permit apply to each RD&D campaign plan performed at the DBVS Facility. Each Ecology approved DBVS campaign plan will provide documentation to support that the DBVS campaign plan design and operation during the campaign is projected to meet the performance standards specified in the Permit.

Performance will be determined by enforceable permit conditions and campaign plans required in the RD&D Permit as listed below:

Prior to initial receipt of dangerous and/or mixed waste in the DBVS, the Permittees shall submit and receive approval from Ecology for the Phase 1 DBVS Campaign Plan. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 1 DBVS Campaign Plan shall include the information specified in Section 5 and Appendix A of Permit Attachment LL in addition to the following:

V.I.7. Prior to commencement of the Phase 2 DBVS Campaign and prior to commencement of each Phase 2 DBVS Campaign, Permittees shall submit and receive approval from Ecology for the Phase 2 DBVS Campaign Plan, except as specified in Permit Condition V.I.8. Such approval shall not require a permit modification under Permit Conditions I.C.2 and I.C.3. The Phase 2 DBVS Campaign Plans shall include the information specified in Permit Condition V.I.6. In addition, the Phase 2 DBVS Campaign Plans shall be designed to collect the information specified in Permit Conditions V.I.7.c through V.I.7.e below, and the Phase 2 DBVS Campaign Plans designed to provide "Feed Envelope Verification and/or Process Improvement," shall also include the information specified in Permit Conditions V.I.7.a and V.I.7.b, below:

V.I.7.a. Emission testing for demonstrating performance standards listed in Permit Condition V.I.6.f.

V.I.7.b Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, planned analytical procedures for sample analysis and a short summary narrative description of each stack sample method with identification of the performance standard(s) identified in Permit Condition V.I.6.f that the method will be used to demonstrate the performance of the DBVS.

V.I.7.c. One or more test campaigns shall be conducted to generate mass balance information sufficient to addresses the fate/concentration of potential constituents of concern, such as Iodine-129 and Technetium-99, within the ICV® Package and its various components, the offgas systems, offgas systems' secondary liquid waste, solid and secondary semi-solid waste.

V.I.7.d. One or more test campaigns shall be conducted to generate information to assess the potential for waste minimization as it relates to secondary liquid waste.

V.I.7.e. One or more test campaigns shall be conducted to generate information to assess how potential future recycle waste from the WTP could be incorporated into a Bulk Vitrification full-scale production facility waste stream, should Ecology make the decision to permit a full-scale production facility, and the impacts related to including these recycles into the DBVS Facility waste stream. These test campaigns would be specifically designed to observe, record and analyze impacts related to waste loading and potential constituents of concern, such as sulfate, sodium, metals, iodine, and technetium.

COMMENT 2h: EIS Required (continued)

The commenter states, "The claim that the final waste form will meet the waste acceptance criteria for the disposal facility (DNS at 7) is simply ludicrous!!! There is no final disposal facility for these wastes, and there is no waste acceptance criteria for the proposed landfill. Washington State is in federal court challenging the Hanford Solid Waste EIS as being legally inadequate. Thus, Ecology and USDOE can not claim that disposal of the bulk vitrified waste (with unknown constituents and performance) will meet the unknown future waste acceptance criteria for a not yet existing landfill, the impacts of which Washington State believes have not been adequately determined."

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The RD&D Permit is for treatment and storage, not disposal. The containers will be stored within the DBVS Facility until completion of the RD&D project. Final disposal of the treated waste will be at an approved permitted disposal facility. Prior to final disposal, containers of vitrified wastes will be stored within the DBVS Facility, or other on-site permitted container storage areas, such as the Central Waste Complex. The vitrified waste form in each container will be sampled and analyzed in accordance with the Ecology approved DBVS Facility campaign plan. Some secondary wastes will be generated from the process. The secondary wastes will be analyzed, treated, and properly disposed of onsite at a permitted facility.

As indicated in the Permit Condition II.A.1.a, Tank 241-S-109 waste cannot exceed criteria listed in Permit Attachment BB and Permit Tables V.7 and V.8. Permit Condition II.B.7.a requires that the Waste Analysis Plan objectives include developing a sampling approach for the final vitrified waste form to ensure compliance with the waste acceptance criteria (WAC) of the Integrated Disposal Facility (IDF) or another permitted facility. In addition, the WAP plan

objectives are intended to develop a sampling approach that will be used to support waste feed limitations that will result in the waste forming meeting the disposal facility's WAC.

COMMENT 2i: EIS Required (continued)

The DNS states that, "Final disposal of treated waste will be at a permitted disposal facility." Exactly what "permitted disposal facility" will "final disposal of treated waste" occur at? The proposed facility has no waste acceptance criteria, and the impact statement supporting it was legally inadequate. This statement can not be made.

USDOE and Ecology describe the bulk vitrification facility as, "a key element of the overall treatment system." (See overview). USDOE and Washington acknowledge that the full treatment system can not proceed without the upcoming EIS. Since this is a key element (interrelated proposal) of that system, it can not be broken off and receive a Determination of Non-Significance.

The DNS must be withdrawn and either the USDOE must scale back the bulk vitrification facility dramatically (including limiting the scale to true research and limiting the wastes that will be generated); or, it must be put on hold pending the issuance of a final EIS on Tank Waste Retrieval, Treatment and Closure and, reissuance of a legally adequate EIS for the proposed disposal landfill.

There is no SEPA or NEPA categorical exclusion from EIS requirements available when a RDD facility (which has no exemption in state law) will be operated for three years, rather than the one year maximum specified for an RD&D permit in federal and state laws.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The SEPA requirement to review reasonable alternatives to the proposed action appears in the general requirements for an environmental impact statement [WAC 197-11-401(1)]. Ecology issued a Mitigated Determination of Nonsignficance (MDNS) per WAC 197-11-350. The MDNS included Attachment 2 that contained mitigation measures included in the RD&D Permit. Unless substantial changes are made that would result in a significant adverse environmental impact or significant new information indicates a proposal's significant adverse environmental impact, Ecology will not initiate scoping for an EIS. Ecology will comply with the provisions of WAC 197-11-240(2)(b)(f), to consider timely comments.

Treatment of tank waste through vitrification was the subject of the Tank Waste Remediation System (TWRS) EIS. The TWRS EIS evaluated vitrification of the low activity wastes in the Waste Treatment Plant. The engineered controls on the DBVS Facility and the selection of Tank 241-S-109 waste, (which has already undergone some treatment and which will undergo selective dissolution during retrieval) will ensure that the potential for significant adverse environmental impact from the final vitrified waste is far less than the risk from leaving the untreated waste in the SST.

A threshold determination based on the SEPA checklist provided with the Permit and the Permit Application was appropriate. That determination led to a mitigated determination of nonsignificance.

Ecology's permit conditions will mitigate potential adverse environmental impacts of the DBVS operation and storage of vitrified waste. Ecology maintains that operation of the DBVS does not require preparation of an EIS because of the engineered components and administrative controls that will control operation and closure of the facility. WAC 173-303-809(1)(a) allows for the operation of an RD&D facility for not longer than one year unless renewed. An RD&D permit may be renewed not more than three times and each renewal for a period of not more than one year. This RD&D Permit allows for 365-operating days (in accordance with the OSWER Guidance) with an additional 35-operating days (a total of 400-operating days) to be used within three years allowed by this Permit.

COMMENT 3: Waste Retrieval System Triggers Both SEPA and Missing Permit Requirements

The commenter states, "Attachment 1 to the Determination of Non-Significance describes "Facility Components" as including the "Waste retrieval system. However, neither the permit nor the DNS include the waste retrieval system. Retrieval of waste from the tanks is not legally covered by any exclusion in NEPA or SEPA from requirements for an environmental impact statement. Indeed, the fact that retrieval from a non-compliant tank system is required shows that there is a legally per se significant potential impact from retrieval actions."

The permit can not be truncated – otherwise there is no permit in place for retrieval of the waste from Tank S-109. Operation of a retrieval system without a permit will violate both federal and state hazardous waste laws.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology does not agree that retrieval of tank waste has not been evaluated. Retrieval of the single-shell tanks was evaluated in the *Tank Waste Retrieval System Environmental Impact Statement* DOE/EIS-0189. EIS Section 1.1.3 stated that the USDOE decided to perform additional development and characterization before making decisions on final disposal of SST waste when the agency issued the *Record of Decision for the Hanford Defense Waste EIS* (6450-01-P, 1997). Section 1.1.4 listed changes that affected planning for the TWRS EIS, including retrieval of waste from the SSTs and treatment of SST waste in combination with DST Waste. On page 1-13 of the TWRS EIS, in a box devoted to a discussion of the relationship of the Safety Interim Storage EIS to the TWRS EIS, the USDOE stated that several TWRS EIS alternatives would involve transfers of waste from 200 West Area to the 200 East Area for waste separation and immobilization, using the replacement cross-site transfer system to move the waste. The text stated that the TWRS EIS examined the potential environment impacts associated with those waste transfers.

TWRS EIS Section 3.4.1.4 table 3.4.1 listed major assumptions for ex situ alternatives, including retrieval efficiency (percent recovered from the tanks (page 3-32). Page 3-32 discussed assumptions made about retrieval of the SSTs, including the assumption that each of the SST retrievals would cause leaks of 4,000 gallons of waste to the soil. The assumptions also included

waste released at the maximum predicted concentrations; no dilution of the waste during retrieval was assumed.

Evaluation of the impacts to the vadose zone and groundwater appeared in Section 5.0 Environmental Consequences. Section 5.2.1.2 Results discussed contamination releases to the vadose zone from retrieval for the Ex Situ Intermediate Separations Alternative (pp 5-35ff), Ex Situ Extensive Separations Alternative (pp 5-40 and 5-41), Ex Situ/In Situ Combination 1 Alternative (pp. 5-41ff) Ex Situ/In Situ Combination 2 Alternative (pp. 5-43ff), Phased Implementation Phase 2 (page 5-51).

Air emissions from retrieval were also evaluated in the TWRS EIS. Table 5.3.1 shows the major pollutants released by alternative, as well as the calculated maximum concentration for each alternative (page 5-67) Risk from the alternatives is then discussed in Section 5.11 Anticipated Health Effects for both the remediation (Section 5.11.1) and post-remediation (Section 5.11.2).

Retrievals have been conducted as part of interim stabilization and to remove wastes from SST 241-C-106. As was stated in response to previous comments, the retrieval of SST 241-S-109 will occur only after Ecology approves a Functions and Requirements document that will address retrieval, including leak detection and monitoring. With Ecology approval of SST 241-S-109 plans for retrieval required, the risks of retrieval will be addressed appropriately.

COMMENT 4a: The project fails to meet the following criteria to be eligible for an RD&D permit; the commenter provides the following:

- Under federal hazardous waste law, pursuant to which Washington Ecology is delegated authority to administer RCRA permits, RD&D permits must be limited to one year. Extension provisions are not complied with in the draft.
- RD&D permits are limited to research, development or demonstration of technology; this project is a full scale facility. USDOE admits that this may be the full scale of additional facilities, if it chooses to use a modular engineering approach.

Research, Development and Demonstration permits, as the name implies, are only available for a proposed dangerous waste treatment facility or process:

> "which proposes to utilize an innovative and experimental dangerous waste treatment technology or process for which permit standards for such experimental activity have not been promulgated under WAC 173-303-500 through 173-303-695."
> - WAC 173-303-809(1)

A $102 million bulk vitrification facility – sized large enough for 300,000 gallons of processing over several years, fails to meet this test. There are already applicable vitrification performance and treatment operating standards that the Department is applying to the Hanford Waste Vitrification Plants.

Bulk Vitrification is not an innovative and experimental treatment technology. Ecology officials have repeatedly stated that selection of an alternative to the current Tri-Party Agreement (TPA)

required vitrification plant and process must meet or exceed the same standards for performance. Those standards exist.

Prior experiments have already been conducted on bulk vitrification at Hanford – which now requires cleanup actions under CERCLA. Since there have previously been vitrification "demonstrations" at Hanford, this project is not an "experimental activity". Indeed, the scale of this is described by USDOE as a potential full scale bulk vitrification facility and operation. Without any enforceable requirements for testing long-term performance of the waste product, it is clear that this facility is NOT an experiment for purposes of testing the bulk vitrification form. Given the experience that the prior demonstration sites are now CERCLA cleanup sites, it is also clear that this full scale facility can not receive a Determination of Non-Significance.

> "Congress clearly intended that RD&D permits be used for: (1) the purpose of generating new information to evaluate the technical or economic feasibility of an innovative and experimental waste management technology, process, method, or device; (2) treating hazardous waste in a unit or device made primarily from non-earthen materials; (3) treating limited quantities of waste at a scale of operation necessary to conduct the experiment; and, (4) operation for a period of time necessary to adequately prove the feasibility of the technology or process."
> RDD Guidance.

The bottom line is that the proposed Bulk Vitrification facility (cost $102 million) is not designed or intended to treat quantities of waste limited to the scale needed to conduct an experiment to determine if the process is technically or economically "*feasible*".

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

The full text of the cited Washington State Dangerous Waste Regulations as they apply to a Research, Development and Demonstration Permit. [WAC 173-303-809 (1) and (4)] provides that operation of an RD&D facility is limited to one year (based on 365 separate "operating days" which may be non-consecutive from the OSWER Guidance) unless renewed by Ecology. An issued RD&D permit may not be renewed more than three times, each time for one year.

As stated in the RD&D Permit Fact Sheet, "The purpose of the RD&D Permit is to allow for the Test and Demonstration of the bulk vitrification facility for treatment of Hanford Site tank wastes. The Permit is temporary in duration and limits the quantities of dangerous and/or mixed waste to be treated. The Permit also includes stringent terms to protect public health and the environment."

As stated in the foreword of the OSWER Guidance Manual for RD&D Permits (EPA/530-SW-86-008) "RD&D permits will allow testing of new and modified technologies and processes at lab-scale, pilot-scale, and full-scale."

As previously explained, the state and federal regulations for RD&D permits do not establish cost as a discriminator to a final decision for issuing an RD&D permit. The total amount of waste proposed to be treated under this Draft RD&D Permit (300,000 gallons) is less than 1% of the total volume of wastes in the Hanford tanks (approximately 54,000,000 gallon). Also, as stated in the Draft RD&D Fact Sheet, it is Ecology's expectation that the proposed DBVS

Facility will be used to evaluate the ability to produce immobilized low-activity waste (ILAW) that is comparable to that proposed for the Waste Treatment ILAW.

The purpose of the Demonstration project is to evaluate the compatibility of the technology with actual Hanford tank waste; the safety, efficiency, and potential cost-effectiveness of the bulk vitrification process; and the feasibility of full-scale Permit Application.

Ecology believes that these criteria and the Permit Application meet the requirements for an RD&D Permit.

COMMENT 4b: The project fails to meet the following criteria to be eligible for an RD&D permit. The commenter provided the following:

If the RD&D permit is not available due to scale, then neither can the project receive a DNS under SEPA.

Contrary to fact sheets, summaries and other public information materials, which state the basis for providing an RD&D Permit is that the Permit is limited to a one year research and demonstration project, the Draft Permit reads:
"This Permit shall not exceed 400 operating days of the Dangerous Waste Research, Development, and Demonstration Activity authorized by this permit."

Cf: WAC 173-303-809(1) (a) requires the operation of the facility "for no longer than one year".

A check of all desk and wall calendars in our office and homes has determined that most years do not exceed 365 days.

The Permit defines "operating day" in a manner that would illegally allow this RD&D facility to "operate" for years. The permit's allowance for "operating" 399 days is neither consistent with the RCRA or the WAC, nor consistent with the purpose of RD&D permits.

If issued at all (which it should not be without being scaled back in size, waste volume and, only after the EIS is completed), the Permit must only be issued for one year.

> "Because an RD&D permit is intended to develop and test a technology or process, it is inherent in RD&D activities that such a test is temporary, or short-term, in relation to the commercial use of the process. By statute, RD&D permits are limited to a permit term of one year, which is defined as 365 days of actual operation".
> - OSWER Policy Directive #9527.00-1A.

"Actual operation" for any TSD facility includes all days in which hazardous waste is stored, not just the days during which a particular experiment or process is underway:

> "If an RD&D unit or process is used to store or treat hazardous waste for any reason other than the hazardous waste management experiment, then these activities must be permitted, and operated, in accordance with all applicable sections of 40 CFR Parts 264 and 270."
> - OSWER Policy Directive #9527.00-1A.

Any fraction of a day during which the "experiment" is run, also counts as a full "operating day" under the law. (OSWER Policy Directive #9527.00-1A.)

Permit Condition I.I allows the permit to "remain in effect until the expiration of 400 operating days or three (3) years, whichever is earlier."

WAC 173-303-809(1)(a) allows operation of an RD&D facility "for no longer than one year". The condition exceeds the maximum allowed by the WAC.

The publicly available description of a one year test is also misleading. In fact, the parties propose to allow multiple renewals. This increases potential impacts, and further obviates the claim that the facility does not require an environmental impact statement.

> "Any permit issued under this section may be renewed not more than three times. Each such renewal will be for a period of not more than one year." WAC 173-303-809(4).

Consistent with WAC and OSWER Policy Directive 9527.00-1A, the Permit must specify that accumulation or storage of waste products must not exceed the maximum allowable time period prior to disposal. If there is no disposal facility available, the Permit must require the operator to cease production of waste in a manner that would exceed applicable accumulation limits. Again, because of the tie between the retrieval, treatment and disposal, the EIS for disposal (Solid Waste Disposal) and a SEPA adequate EIS on a disposal facility, specifically considering disposal of bulk vit wastes, must be available prior to proceeding.

The permit must bar "storage", as opposed to "accumulation" of waste produced during the testing/experiment prior to final disposal. Condition III.A.4 states, "The Permittees may store dangerous and/or mixed wastes…" Storage requires a dangerous waste permit – this is not supposed to be a storage facility. The permit condition should be re-written to clearly and correctly describe only waste accumulation as the dangerous waste management activity being permitted by Condition III.A.

ECOLOGY RESPONSE: Ecology agrees in part as discussed below.

Ecology agrees that Permit Condition I.I should have been clearer with respect to the proposed permit duration of 400-operating days or three (3) years, whichever is earlier" which was intended to reflect the Permit duration with respect to the initial permit for a duration of 365-operating days and a maximum permit renewal for a duration of 35-operating days. The proposed permit language intended to emphasize this total cap on duration with the more stringent requirement that this Permit could not be reissued versus the allowance in the regulations for three potential renewals which reflects a potential total of 1460-operating days. Permit Condition I.I has been revised to make it clear that the permit duration of 400-operating days does include the initial permit for a duration of 365-operating days and a maximum permit renewal for a duration of 35-operating days.

Permit Condition I.I. "PERMIT EXPIRATION" will be modified as follows:

Permit Condition I.I. This Permit and all conditions herein are in effect as of the "effective date" as defined in the definitions of the Permit and will remain in effect:

Permit Condition I.I.1. for 365-operating days with a maximum permit renewal for a duration of 35-operating days or

Permit Condition I.I.2 for three (3) years, whichever is earlier.

With respect to the use of a DNS that a lead agency (Ecology for the DBVS DNS) issues after conducting its threshold determination per WAC 197-11-330 Threshold Determination Process, the process does not preclude issuance of a mitigated DNS for proposals based on a certain dollar cost or for Research, Demonstration and Development proposals. [See WAC 197-11-330(1)(b)].

This RD&D proposal is limited to constructing, operating, and closing a miscellaneous treatment and storage unit, as defined in WAC 173-303-680. The unit is not designed and will not be operated as a large-scale treatment and storage facility that will treat every form of waste in the SSTs.

The OSWER Guidance Manual defines the term of RD&D permits as "…365 days of actual operation using hazardous waste; it does not refer to calendar days when treatment of hazardous waste is not occurring, to periods of construction, or to operation using materials other than hazardous waste." The DBVS Facility will not be used to store or treat hazardous waste that is not a part of this "hazardous waste management experiment".

As noted in the DNS, the Permittees will install engineered systems to mitigate environmental impacts. Those engineered systems include containment for tanks (Condition IV.A.4.f), corrosion protection for tanks (Condition IV.A.3.k), container storage areas constructed to comply with WAC 173-303-630(7) (see Condition III.B.2), secondary containment systems for the DBVS that comply with WAC 173-303-640(4), leak detection systems for tanks and the DBVS Facility that will be incorporated in Table IV.2 per Condition IV.A.8.e, and offgas treatment systems (see Table V.1).

The permit requires the Permittees to submit campaign plans for every campaign prior to filling an ICV® container in accordance with Permit Conditions V.1.6 for Phase 1 and V.1.7 for Phase 2. A Campaign is defined in the RD&D Permit as the receipt, processing, and vitrification into a single ICV® container.

In addition, the Permittees must take additional actions to protect against spills and releases, such as inspections of containment systems for tanks (Permit Condition IV.A.4.h). Other permit conditions govern DBVS operating conditions (Permit Condition V.C), tank management (Permit Condition IV.A), container management (Permit Condition III.C),

The RD&D Permit Conditions II.A.1 and II.A.1.a does not allow the Permittees to treat waste from other Hanford SSTs. In addition, the Permit does not grant the Permittees the right to treat all of the waste in SST 241-S-109. (See Permit Attachment AA, Section 2.1 and Permit Attachment BB Section 6.2.3.1).

The ICV® System will be used to treat only the dissolved saltcake fraction of the waste in S-109. Permit Condition II.A.1 a requires that the waste must be meet three conditions to be treated in the Demonstration Bulk Vitrification System (DBVS): the waste must not exceed the criteria in

Permit Attachment BB, it must be treated as specified in the campaign plan for each DBVS container that Ecology will approve, and as specified in Permit Tables V.7 and V.8.

By authority in WAC 197-11-350(3), Ecology can [and did] specify mitigation measures in the Permit that were intended to protect the environment from a significant adverse environmental impact. A Mitigated DNS is therefore appropriate to close SEPA actions for the proposal.

As noted in previous comments, Ecology has explained why this RD&D Permit can receive a DNS under SEPA.

Permit Condition II.A.1.	The Permittees are authorized to accept dangerous and/or mixed waste only from:
Permit Condition II.A.1.a.	Tank 241-S-109 that does not exceed the criteria listed in Permit Attachment BB, as specified in the Ecology approved campaign plan, and as specified on Permit Tables V.7 and V.8.

COMMENT 5b: The commenter states the following below.

"The permit fails to require that any specific tests will be required to prove that the final product is as good as vitrified glass, or otherwise to demonstrate performance (continued)

To meet the State's stated goal of ensuring that the product performs "as good as glass", the long term performance (leaching, cracking, off gas, imperfections…) of the bulk vitrification product must be specified as a sampling requirement of this RD&D permit.

Table 6-7 does not specify <u>any</u> sampling which must be performed, or have any enforceable sampling/testing requirements (table footnote: "Not all tests will be performed on all treated waste. Results from stimulant tests may be used where applicable."). The "Waste Analysis Plan" (WAP) does not include any enforceable provision to ensure that USDOE evaluate glass performance according to any standards set by the State.

The Permit should specify methods by which the glass will be evaluated for: 1) solid inclusions, 2) gaseous inclusions, 3) vitreous inhomogenieties, and 4) contamination by unintentional components. The terminology applied to these defects includes: stones, batch stones, devit, refractory stones, secondary refractory stones, scum stones, seeds, seed with condensate, blisters, airlines, knots, cord, striae, and ream. Glass coloration can also result from composition contamination. For solid defects, the petrographic microscope has traditionally been the primary tool for identification, relying on the well-known optical properties of many crystals. Petrographic microscope inspection/evaluation of the glass for defects should be added to the WAP and to table 6-7 of the WAP. The WAP should clearly identify defects (by industry terminology) that will be evaluated. Laboratory tests, inspection, corrosion rate measurement etc. to evaluate defects caused by glass/refractory reactions Determining bulk vit glass performance is supposed to be a fundamental objective of the RD&D permit – if this is not going to be specified, then what is the research and demonstration qualifying this for an RD&D permit? The WAP, as currently written, is significantly deficient and does not satisfy the most fundamental objectives.

Finally, the Permit must specify what level of defects or other standard will be used to determine if the waste can be disposed and if further waste may be produced under the RD&D Permit.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

The RD&D Permit requires in Permit Condition V.I.10.c that the "ICV® Package detailed final limitations for size, durability, compressibility, stacking, handling, retrievability from storage and after final disposal, outside and inside package residual contamination, disposal facility, and testing/acceptance requirements", be provided to Ecology for review and approval prior to acceptance of waste feed into the DBVS Facility.

The intent of Table 6-7, Permit Attachment BB, was to identify some of the physical properties that the treated waste will be analyzed for. The specifics for the analyses to be performed will be provided as required under Permit Condition II.B.7 that states, "The following amendments to the Permit Attachment BB are hereby made. The Permittee shall submit the revised pages reflecting these amendments to Ecology prior to initial receipt of dangerous and/or mixed waste in the DBVS Facility. These amendments do not constitute a permit modification pursuant to Permit Conditions I.C.2 and I.C.3.

Ecology agrees that the WAP was deficient in the Permit Application. Permit Condition II.B.7 requires a series of amendments to the Waste Analysis Plan with the objective to develop a sampling approach that complies with WAC 173-303-300. This is a research, development, and demonstration activity that is designed to provide information through campaign plans that will evaluate many of these data points. Each campaign plan will be approved by Ecology prior to each box vitrification. Glass performance will be evaluated as described in Permit Conditions V.I.6.f and V.I.7. The WAP will be a complete document prior to any tank waste going to the DBVS Facility and it will be fully enforceable under WAC-173-303-300 and the RD&D Permit.

The Permit does not require any sampling associated with "1) solid inclusions, 2) gaseous inclusions, 3) vitreous inhomogenieties, and 4) contamination by unintentional components." These defects are important when determining the quality of finished glass ware but are not important in determining the durability of a final glass waste product. Therefore, criteria for these types of defects will not be included in the RD&D operations or campaign plans and petrographic microscope inspection/evaluation of the glass is not necessary.

Laboratory-scale tests of the glass formulations planned for DBVS Facility have met the same requirements as WTP glass. The RD&D operations are being conducted to gather the information required to verify that a full-scale system can generate the same glass as that produced in the laboratory scale tests. The required information will change over the several boxes produced in the RD&D operations so the specific measurements are specified in the campaign plans that are approved by Ecology. The Permit does require core sampling of at least the first ten boxes and analyses as specified in the campaign plans. This will be conducted to determine if the waste packages are acceptable for disposal under the waste acceptance criteria of the final disposal facility.

The treatment objectives are designed to ensure that the waste acceptance criteria for the permitted final disposal site will be met. The RD&D Permit requires in Permit Condition

V.I.10.c, that the "ICV® Package detailed final limitations for size, durability, compressibility, stacking, handling, retrievability from storage and after final disposal, outside and inside package residual contamination, disposal facility, and testing/acceptance requirements", be provided to Ecology for review and approval prior to acceptance of the waste feed into the DBVS Facility.

Ecology believes that the commenter's concerns have been addressed.

COMMENT 6a: The commenter states the following about emissions.

"Attachment BB, Section 6.4. Hanford high-level waste tank offgas emissions include far more hazardous substances which must be continuously monitored, (not limited to ammonia; HCl and HF). Monitoring must include the gases which are the subject of increased surveillance for worker health in the tank farms. The incidence of increased worker exposure and health impacts belies any possibility that the potential impacts from increased emissions (including from releases) are not a significant impact – especially when considering the cumulative impacts from retrieval and other tank farm operations. Ecology can not ignore these cumulative impacts and issue a DNS."

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Ecology will regulate tank offgas emissions; however, not as a part of this RD&D Permit. The tank offgas emissions are included and regulated by other permits that the DBVS Facility is required to have prior to initial receipt of waste. WAC 173-400, -401, -460 regulates air emissions for various toxic gases. A Notice of Construction was submitted to Ecology for these activities. A public comment period on a Draft Notice of Construction Approval Order was conducted from September 29, 2004, to October 28, 2004. This Notice of Construction states that monitoring for fugitive organic emissions will occur as a part of the Hanford Industrial Hygiene program. Ecology did not ignore cumulative impacts when it issued the DNS.

COMMENT 6b: The commenter states the following about retrieval of waste.

"As discussed earlier, retrieval of waste is an essential activity under the Permit and the bulk vitrification demonstration; and, legally (under NEPA) retrieval is an inter-related activity. The Permit must specify all Tank 241-S-109 components that will be used to transfer waste to the DBVS Facility and clearly identify which components belong to which units. Examples of system components and activities which must have enforceable permit conditions for this demonstration include, but are not limited to: transfer lines and requirements for transfer of retrieved waste; and, leak detection for transfers and retrieval (real time leak detection for the tanks during retrieval, rather than relying on old, defunct level gauges or groundwater monitoring wells). For enforcement purpose, definitions must clearly state which activities and system components fall under which permit. And, components and requirements may fall under both this Permit and the conditions of another permit (i.e. another chapter of the sitewide RCRA permit)."

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology disagrees that retrieval is a necessary component of the RD&D Permit. 1) NEPA coverage for tank waste retrieval is provided by the *Tank Waste Remediation System, Final Environmental Impact Statement* issued in 1996 and the accompanying Record of Decision issued in 1997; and 2) the RD&D Permit Application, while providing an overview of retrieval activities, clearly states that in Permit Attachment AA, "the retrieval detail for Tank 241-S-109 is presented in RPP-18812, *Tank S-109 Partial Retrieval Functions and Requirements*, and has been submitted to Ecology for approval of the retrieval process." Therefore, retrieval requirements do not fall under this Draft RD&D Permit that Ecology has provided for public review and comment.

Submittal of the *Tank S-109 Partial Retrieval Functions and Requirements* document to Ecology is required by Tri-Party Agreement Milestone M-45, as detailed in the *Hanford Federal Facility Agreement and Consent Order*. This document provides information and details on transfer lines, transfer components, leak detection and ground water monitoring requirements. The document is not a requirement of the RD&D Permit.

COMMENTER:
Andrea Spencer, Acting Director
Department of Natural Resources
Confederated Tribes and Bands of the Yakama Nation

EXECUTIVE SUMMARY

The pending Permit Application should be denied for four reasons.

First, the Application should be denied because it is contrary to the District Court's Order in NRDC and Yakama Nation v. Abraham, 271 F. Supp. 1260 (Idaho 2003) (appeal pending). The violation is that the Application would unlawfully allow "highly radioactive waste" (HLW) to be disposed of at Hanford in near-surface burial rather than in a deep geologic repository as required by the Nuclear Waste Policy Act. 42 USC § 10101 et seq.

Second, the Application should be denied because the Nuclear Regulatory Commission (NRC) has not issued a formal determination that the wastes to be processed in the permit application are not high-level radioactive wastes. A June 9, 1997, NRC staff letter (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997), which USDOE cites as justification for this project, makes it clear that HLW processing at Hanford "is not sufficient to make an absolute determination at this time." See Appendix A. A formal NRC determination prior to approval is also required by the NRC disposition for Washington's and Oregon's petition for rulemaking in case FRM-60-04 and the NRC staff letter of March 1993 implementing that process. See Appendix B. Approval of the Application would also be contrary to the policy set out in Governor Locke's May 5, 2004, letter of "careful review by the Nuclear Regulatory Commission" of any tank waste to be "disposed of at Hanford", and it would be contrary to the positions and hard work of Washington's U.S. Senators opposing USDOE's efforts to statutorily reclassify HLW.

Third, the Application should be denied because an Environmental Impact Statement (EIS) has not been prepared and because the Agency's Mitigated Determination of Non-Significance dated July 22, 2004, is insufficient to eliminate the need for an EIS.

Fourth, the Application should be denied because of data discrepancies regarding the radionuclides in tank S-109, and the fact that there has been no National Academy of Sciences guidance on safe disposal practices for waste incidental to reprocessing of spent nuclear fuel in tanks such as S-109.

COMMENT 1: REASON FOR DENIAL #1 – VIOLATION OF COURT ORDER

The pending Permit Application should be denied because it is contrary to the District Court's Order in *NRDC and Yakama Nation v. Abraham*, 271 F. Supp. 2d 1260 (Idaho 2003) (appeal pending, oral argument October 5, 2004). The application violates the District Court's Order because it would unlawfully allow "high level radioactive waste" to be disposed of in other than a deep geologic repository. 42 USC § 10101(12)(A), 10107.

The radioactive waste in tank S-109 has been judicially determined to be both 1) "highly radioactive material" and 2) to "result from the reprocessing of spent nuclear fuel." *NRDC and Yakama Nation v. Abraham*, 271 F. Supp. At 1265. ("It is undisputed that the waste stored at Hanford, INEEL and Savannah River is highly radioactive and the result of reprocessing"). Such radioactive waste can only be disposed of in a deep geologic repository. *id*. At 1263 ("DOE does not have discretion to dispose of defense HLW [high level waste] somewhere other than a [deep geologic] repository established under the NWPA [Nuclear Waste Policy Act]").

Under the Application, some waste in tank S-109 would be removed, separated from other S-109 waste, bulk vitrified [turned into glass] and permanently buried in a near-surface disposal area at Hanford, rather than in a deep geologic repository. This is lawful only if the bulk vitrified material is no longer "highly radioactive material" 42 USC § 10101(12)(A), §10107.

The Permit Application must be denied because it provides no assurance or process for assuring that the material to be bulk vitrified for disposal in a near surface repository is no longer "highly radioactive material". In other words, this Permit violates the District Court's Order in *NRDC and Yakama Nation v. Abraham* because S-109 waste, which has already been determined to be HLW, would be disposed of at a near-surface burial site without first verifying that the waste in question was no longer "highly radioactive material" and therefore no longer HLW.

The Permit Application should be denied.

At a minimum, consideration should be withheld until the Court of Appeals has ruled in *NRDC and Yakama Nation v. Abraham*, which is anticipated to be within the next six months.

ECOLOGY RESPONSE: Ecology disagrees as discussed below.

Ecology disagrees with the commenter's request to deny the Permit Application. The decision by the U.S. Federal Court for the District of Idaho (Idaho District Court) in *NRDC v. Abraham* invalidated the portion of USDOE Order 435.1 that purported to authorize USDOE to classify

high-level radioactive waste as incidental to reprocessing, and to dispose of the waste as low-level or transuranic waste. The court ruled that the Order, as crafted, was inconsistent with the Nuclear Waste Policy Act. On November 5, 2004, the U.S. Court of Appeals for the Ninth Circuit vacated the Idaho District Court's decision and remanded the case with direction to dismiss the action.

In any event, the RD&D Permit is consistent with the Idaho District Court's decision and Ecology's position in the case. The court confirmed that properly retrieved, treated, and solidified waste that no longer contain fission products in sufficient concentrations to require deep geologic disposal are not "high level waste" and may be disposed of in a facility other than a deep geologic repository. Ecology's views concerning whether Hanford's tank wastes may appropriately be disposed of on-site have long been informed by the Nuclear Regulatory Commission letter of 1997 (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction", Letter to J. Kinzer, ORP, June 9, 1997) that specifically addressed the issue of low-activity waste (LAW) at the Hanford Site as outlined in the RD&D Draft Permit. Ecology continues to believe that WTP LAW and bulk vitrification LAW, if properly retrieved, treated and solidified, may, consistent with the Nuclear Waste Policy Act, properly be disposed of on-site at Hanford and that such plans are not dependent on USDOE Order 435.1. The Nuclear Regulatory Commission (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction", Letter to J. Kinzer, ORP, June 9, 1997) outlined a process of pretreatment and treatment that allowed HLW to be separated into LAW that could be disposed in near surface disposal units. Delaying bulk vitrification testing will result in delaying tank waste cleanup and extending the risk it poses to humans and the environment. This Research, Development & Demonstration facility will vitrify pretreated tank waste. If the Research, Development & Demonstration waste packages are not ultimately accepted for final disposal as low-activity waste at Hanford, the borosilicate glass waste form will be suitable for disposal in a repository or for long-term storage as provided for under the Nuclear Waste Policy Act.

COMMENT 2a: REASON FOR DENIAL #2 – NO PRIOR NUCLEAR REGULATORY COMMISSION APPROVAL

Prior NRC Approval Required for Application Process – The pending Permit Application should be denied because prior NRC approval has not been obtained. Approval would be contrary to 1) longstanding legal and regulatory requirements for HLW disposal, 2) the policy announced in the attached May 5, 2004, letter of Governor Locke of prior NRC approval, and 3) the hard work of Washington's U.S. Senate delegation this Spring opposing USDOE's efforts to statutorily reclassify HLW.

The following chronology informs the requirement for prior NRC approval and underscores both the regulatory authority of the NRC over HLW disposal and Washington State's efforts to strengthen that authority.

1974 – Under the Energy Reorganization Act (ERA) of 1974. Congress gave regulatory authority for long term storage and disposal of HLW. The NRC definition of high-level waste is at 10 CFR 60.2, (which is consistent with the definition of high-level radioactive waste in 10 CFR Part 50, Appendix F).

1982 – The Nuclear Waste Policy Act of 1982, as amended, (NWPA) reinforced the regulatory authority of the NRC over disposal of defense high-level radioactive wastes, by providing a statutory definition for these wastes, which the USDOE is now aggressively seeking to overturn.

1986 – The NRC explicitly spelled out its regulatory authority to the USDOE in comments on the USDOE draft environmental impact statement (DEIS), Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes by stating:

> "…under Section 202(4) of the Energy Reorganization Act of 1974, any facilities expressly authorized for disposal of defense high-level wastes are subject to the licensing and related regulatory authority of the Commission. Whether the express authorization for particular facilities is legislative or administrative in our judgment has no bearing upon the concerns that led Congress to provide for licensing by NRC."

1989 – In 1989, after withdrawing a rulemaking to establish a concentration-based standard for HLW, the NRC concluded:

> "At Hanford, the question of waste classification (and NRC licensing authority) has been complicated by the mixing of waste from various sources over the past 45 years…."

1990 – On December 17, 1990, the states of Washington, Oregon, and the Yakama Nation petitioned the NRC for a rulemaking to amend 10 CFR 60 "to clarify the definition of HLW and the definition of a HLW facility." The petition was made because of the high degree of uncertainty regarding characterization of HLW in Hanford tanks; and because of USDOE's policy, at the time, to defer action on removal and disposition of wastes from Hanford's single-shell tanks for several decades.

1993 – On February 26, 1993, the NRC denied the petition on the grounds that the existing framework for regulating defense high-level waste disposal was adequate and did not require change. The NRC ruled that the petition was not necessary because its existing regulation of defense HLW disposal was appropriate and comported with historical practice. NRC also found that its regulatory approach provided flexibility, by making incidental waste classifications on a case-by-case basis – using criteria stipulated to USDOE in 1989. Moreover the NRC did not rule it has no regulatory authority.

NRC's denial did not extend to wastes in Hanford's single-shell tanks, because their disposition had been deferred by USDOE. The NRC stated, "it should be noted that the appropriate classification of some Hanford wastes remain to be determined – specifically, any single-shell tank wastes, and any empty but still contaminated waste tanks DOE might dispose of in-place for both types of wastes, a case-by-case determination of the appropriate waste classification might be necessary."

1997 – With the approval of the Commission, the NRC staff entered into a provisional agreement with USDOE for plans to decontaminate and dispose of soluble materials in Hanford's high-level waste tanks onsite as "incidental" wastes. This provisional staff agreement was based on the processing and disposal of wastes from all of Hanford's 177 high-Level Waste tanks. Specifically, the agreement was premised on a "Technical Basis Report" submitted by USDOE. This report was based on the Tank Waste Remediation System, which spelled out detailed steps,

involving multiple ion-exchange processes, that were expected to result in the removal of at least 98 percent (98%) of the radioactivity in soluble wastes prior to onsite disposal.

However, the NRC staff made it clear to USDOE in this letter that this provisional agreement did not constitute a formal approval to dispose of these wastes as "incidental" to reprocessing. The 1997 letter specifically states that USDOE's plan, "is not sufficient to make an absolute determination at this time." [emphasis added] Furthermore, NRC staff stipulated that, "if the Hanford Tank waste is not managed using a program comparable to that set forth in the Technical Basis Report, or current characterization of tank contents is not confirmed, the incidental waste classification must be revisited by DOE and NRC consulted."

2001 – In 2001, the NRC staff underscored its regulatory authority to the Commission in June 2001 regarding high-level waste processing at Hanford by stating:

> "*From a regulatory perspective, LAW [low activity waste] is still HLW and has high radiation levels requiring handling within shielded structures… Under the present system, unless the NRC determines hat this Law/incidental waste is not HLW, the waste must disposed of a HLW in a federal repository*."

2004 – A recent article, soon to be published in a scientific journal at Princeton University, reviewed the processing and disposal of high-level wastes at Hanford. It concludes, among other things, that USDOE is in violation of the 1997 provisional staff agreement. According to this analysis:

- USDOE's "Accelerated Cleanup Plan" will result in more than twice the amount of radioactivity stipulated by NRC staff in 1997 for onsite disposal as "incidental waste."
- Tank waste inventories, particularly long-lived and highly toxic transuranic materials, are nearly three times higher than submitted to the NRC in 1997;
- Bulk vitrification, now under consideration for permitting, falls outside of the boundary of "technical Basis Report, which was limited only to the Waste Treatment Plant as designed in 1996;
- USDOE's waste performance assessment requirements for onsite disposal are not being met.

This chronology, and the documents cited in it, established the basis for the requirement of prior NRC approval before this Permit Application can be considered. Since no NRC approval has been obtained, the Application should be denied or held until such approval has been obtained.

ECOLOGY RESPONSE: See Ecology's response to Comment 1. Although Ecology has encouraged USDOE to consult with the NRC regarding the RD&D facility, USDOE has chosen not to do so. Ecology is persuaded that the performance of the RD&D facility will remain within the parameters outlined by the NRC in its 1993 denial of the Petition for Rulemaking and its 1997 letter to Mr. Kinzer. Therefore, Ecology disagrees with the commenter's request to deny issuance of the RD&D Permit .

COMMENT 2b: Application Contrary to Governor Locke Letter

Governor Gary Locke's May 5, 2004, letter to the Chairman and Ranking Member of the U.S. Senate Committee on Armed Services expressed his opposition to legislation authorizing the USDOE to reclassify high-level radioactive wastes without NRC review. According to Governor Locke:

"Let me be clear: the state of Washington has agreed that "low activity" tank waste, as defined after careful review by the Nuclear Regulatory Commission [emphasis added] and included in our Tri-Party cleanup agreement, can be disposed of at Hanford … I strongly oppose any congressional attempt to preempt the Ninth Circuit's consideration of issues. Current law does not allow, and Congress should not sanction DOE's claimed authority to unilaterally re-define what is high-level waste and what is not."

Unfortunately, the issuance of a permit by the State Department of Ecology to allow the disposal of high-level wastes from Hanford tank S-109 would allow USDOE to implicitly assume illegal authority to redefine these wastes, in the complete absence of a formal determination by the NRC. A permit from Ecology flies in the face of the policy of Washington's Governor. It also creates a dangerous precedent, which according to Governor Locke, "would allow significant volumes of additional high-level nuclear waste to be disposed at Hanford – near the Columbia River – rather than at a geologic repository as required by current law." The permit Application should be denied.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request to deny issuance of the RD&D Permit as discussed below.

Ecology disagrees with the commenter statement that "The application is contrary to the Governor Locke letter cited. Governor Locke's letter states, "the state of Washington has agreed that "low activity" tank waste, as defined after careful review by the Nuclear Regulatory Commission and included in our Tri-Party cleanup agreement, can be disposed of at Hanford." The waste planned for bulk vitrification subject to this RD&D Permit meets this requirement and falls within the parameters of what Governor Locke indicated the State would accept.

COMMENT 2c: Application Contrary to Washing Senators' HLW Reclassification Position

Issuance of the Permit Application would also be inconsistent with the strong position taken by Washington's Senators opposing legislative reclassification of HLW by USDOE. Over the past year, the USDOE has been aggressively seeking authorizing legislation in the U.S. Congress to reclassify high-level radioactive wastes as "incidental" for permanent onsite disposal. This is because USDOE intends to dispose of approximately 90 percent (90%) of Hanford's high-level wastes onsite, process the remainder into glass for geological disposal, and permanently close 177 large tanks, and related infrastructure.

As mentioned, Governor Locke and several members of the Washington State Congressional delegation have strenuously opposed USDOE's efforts to change existing law in the Department of Energy National Security Act for Fiscal Year 2005 passed by the U.S. Senate (S. 2403, Section 3116, Defense Sit Acceleration Completion).

There was extended debate over a provision offered by Senator Graham (SC) to allow USDOE to redefine high-level wastes for onsite disposal at the Savannah River Plant. Opposition to this provision was led by the Senators Cantwell and Murray, on the grounds that it would set a dangerous precedent and that existing law was adequate to address defense HLW disposal. The provision won on a tie vote of 49 to 49, hardly an overwhelming endorsement for the USDOE. The U.S. House of Representatives did not include such a provision when it enacted a similar bill.

Nonetheless, the provision passed by the Senate requires that any change in definition of high-level wastes at Savannah River be done through rule making and with the approval of the Nuclear Regulatory Commission.

Now it appears that the Department of Ecology is considering issuance of a permit which would be in direct contradiction to the positions taken by the State of Washington's highest elected officials. Doing so would significantly lower the threshold requirements for protection of human health and the environment for this matter of national controversy, by proceeding to permit HLW disposal in the absence of formal approval by the NRC. The June 9, 1997, letter (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997) from the NRC staff made it clear that the Commission was not making an "absolute determination" through a staff-level agreement.

The issuance of a permit to allow disposal of high-level wastes by the Department of Ecology undermines the hard fought efforts by Governor Locke, and Washington's Senators to prevent an irreversible precedent from being created by allowing USDOE to unilaterally determine that high-level wastes can be disposed of in near surface burial.

The situation is clear: The Department of Ecology's authority is limited to non-radioactive hazardous materials. Ecology does not have legal authority over disposal of radioactive constituents in high-level radioactive wastes. The Energy Department does not have this authority, and any such determination of 'waste incidental to reprocessing' rests with the NRC. Current legislation passed by the U.S. Senate to reclassify HLW, which was hotly contested by Washington's Senators requires a significantly higher standard than being applied by the Department of Ecology – namely NRC approval. Issuance of the subject permit by Ecology would effectively undermine efforts by the Governor and Washington's U.S. Senators to prevent self-regulation by USDOE for critical HLW disposal decisions.

The Permit Application should be denied.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request to deny issuance of the RD&D Permit as discussed below.

See Ecology's response to Comments 1, 2.a, and 2.b. Ecology disagrees with the commenter's statement that, "the Application is contrary to Washington Senators' HLW reclassification position regarding S. 2403, Section 3116 of the Department of Energy National Security Act for Fiscal Year 2005." Washington's concern about S-2403 was that USDOE would use it as a basis for leaving unretrieved, untreated tank waste in place, rather than removing it from Hanford's tanks and converting it to a more stable form via vitrification. The waste to be treated in the demonstration will be treated in a manner consistent with the U.S. Nuclear Regulatory

Commission letter from Carl J. Paperiello, Director Office of Nuclear Material Safety and Security, to Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland Operations Office (June 9, 1997). The NRC agreement was provisional because the Performance Assessment was interim and because USDOE had not yet conducted the proposed program. The NRC listed changes that would necessitate USDOE re-evaluation and further consultation with NRC. Since 1997, USDOE has submitted updated Performance Assessments to the NRC[1,2] and the planned treatment and immobilization of the S-109 waste is comparable to the program set forth in the Technical Basis Report.

COMMENT 3: REASON FOR DENIAL #3 – NO EIS

Second, the Application should be denied because an EIS has not been performed. Washington law generally requires an EIS to be performed in situations like this. WAC 197-11-010 et. seq. A Mitigated Determination of Non-Significance can eliminate the need for an EIS unless the "proposal continues to have a probable significant adverse environmental impact, even with the mitigations measures." In such cases an EIS is still required.

In this matter a Mitigated Determination of Non-Significance was issued on July 22, 2004. The mitigation measures in that document are insufficient to negate the "probable significant adverse environmental impact" from disposing of S-109 tank waste at Hanford. Furthermore, the District Court in *NRDC and Yakama Nation v. Abraham* determined that the waste in all of the tanks at Hanford, including S-109, was "high level radioactive waste." In light of that judicial determination, mitigation measures in the Mitigation Determination of Non-Significance under WAC 197-11-250(2) cannot eliminate the need for an EIS. The Mitigated Determination of Non-Significance is legally insufficient to justify non-performance of an EIS.

The Permit Application should be denied.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request to deny issuance of the RD&D Permit as discussed below.

First, the Idaho District Court ruling that the comment relied upon was overturned by the Ninth Circuit Court of Appeals as previously noted in responses to other comments by this commenter. State of Washington SEPA regulations require Ecology to review the proposal and determine if an Environmental Impact Statement is required. Ecology performed the determination and issued a Mitigated Determination of Nonsignficance, based upon planned mitigation measures included in the design of the DBVS.

The Department of Ecology respectfully disagrees with the premise that an Environmental Impact Statement is required to evaluate the action to issue a dangerous waste Research,

[1] Letter,*Submittal of March 1998 Report, Hanford Immobilized Low-Activity Tank Waste Performance Assessment,* J.E. Kinzer, Assistant Manager, Tank Waste Remediation System, U.S. Department of Energy, to C.J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, dated August 28, 1998

[2] Letter, *Submittal of Annual Summary of ILAW Performance Assessment, DOE/ORP-2000-19, Rev. 0,* Richard. T. French, Manager, Office of River Protection, U.S. Department of Energy to Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, dated July 13, 2000

Demonstration and Development Permit for the Demonstration Bulk Vitrification System under WAC 173-303-809. As will be explained in greater detail below, the Permit will be issued for a design that incorporates several different engineering features to protect against significant adverse impacts to the environment and human health from releases to the environment. In addition, the Permit requires the operator to conduct operations in such a manner as to be protective of the environment.

The Draft Research, Demonstration and Development Permit does not govern the disposal of the vitrified waste form. The Permit is for treatment and storage. Permit condition II.B.7.b requires that the Waste Analysis Plan develop a sampling approach for the final vitrified waste form to ensure compliance with the waste acceptance criteria of the Integrated Disposal Facility or another permitted disposal facility and the land disposal restrictions listed in WAC 173-303-140. It also requires the Permittee to develop waste feed limitations that will result in the final vitrified waste form meeting the IDF or another permitted disposal facility's waste acceptance criteria and in addition, meeting the performance standards for offgas emissions.

- Permit Condition I.A.1 limits the 241-S-109 waste to be accepted to waste that does not exceed the criteria listed in Permit Attachment BB and Tables V.7 and V.8.
- Permit Condition II.A.7 requires the USDOE and CH2M HILL to design and build the DBVS designs, plans, and specifications required by the Permit and approved by Ecology.
- Permit Condition II.B requires that the USDOE and CH2M HILL maintain knowledge of their wastes before it is accepted into the DBVS Facility, when it is received for treatment, and during treatment and storage of the treated waste form.

Permit Condition II.B.7.b requires the Permittees to modify their Permit Application to develop a sampling approach that will ensure compliance with the waste acceptance criteria of the Integrated Disposal Facility or another permitted facility. That condition also requires them to develop waste feed limitations that will result in the vitrified waste form meeting the IDF acceptance criteria.

As part of SEPA's environmental review, Ecology also evaluated the proposal against the alternatives and impacts in the *Tank Waste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement* (DOE/EIS-0189, August 1996). Ecology sought to determine whether "all or part of the proposal, alternatives, or impacts have been analyzed in a previously prepared environmental document, which can be adopted or incorporated by reference." See WAC 197-11-30(2)(a). The TWRS EIS addressed the final remediation of 177 underground storage tanks and 60 miscellaneous underground storage tanks (TWRS EIS Volume 2, Appendix B, page B-27). In those tanks were approximately 56 million gallons of radioactive mixed waste in the form of liquid, solids in the form of crystallized salts, and sludges.

The TWRS EIS analyzed the impacts of retrieving tank waste and treating it through a suite of alternative treatment technologies. Among the alternatives that the TWRS EIS evaluated were several that evaluated the impacts to human health and the environment from tank waste treatment and disposal outside of the tanks (ex-situ treatment). See TWRS, Volume 1, Section 3.4.6 Ex Situ Intermediate Separations, Section 3.4.7 Ex Situ No Separations, 3.4.8 Ex Situ

Extensive Separations, and Section 3.4.9 Ex Situ/in Situ Combination 1 and 2 Alternatives. The ex-situ alternatives that the TWRS EIS evaluated allowed for separation of the tank waste into high-level waste and low-activity waste (LAW) components to "minimize the waste volume requiring offsite disposal" (TWRS EIS Volume 2, Section B.2.1.1.1, page B-29).

The TWRS EIS evaluated two waste forms resulting from ex-situ treatment, glass that was cast in monoliths and cullet that was formed by quenching the molten glass into gravel (TWRS EIS Volume 1, Section 3.4.1.5, page 3-36). Ex situ alternatives also included opportunities to separate into high-level and low activity fractions (TWRS EIS Volume 2, Appendix B, Section B.2.1.1.1, page B-29). Section B.3.5.3 provided a summary of the tank treatment process that included a step to separate the LAW from the HLW and another to dispose of the LAW onsite.

TWRS EIS Volume 1, Section 5.0 Environmental Consequences documents the analyses of the potential impacts to the environment from implementing each of the alternatives described in TWRS EIS Section 3.0, for 20 separate environmental components. Complex impact assessments were prepared for human ecological health (Volume 3, Appendix D), potential accidents (Volume 4, Appendix E), groundwater quality (Volume 4, Appendix F), Air Quality (Volume Five, Appendix G), and socioeconomic impacts (Volume 5, Appendix H). The environmental consequences of the ex-situ alternatives all assumed that 99% of the total volume of waste would be retrieved from the tanks and the LAW treatment plant would produce 200 metric tones of LAW glass cullet per day.

The Permittees proposed to conduct their RD&D effort using less than 1% of the total tank waste volume, which is to be retrieved from Single Shell Tank 241-S-109. They proposed to vitrify up to 50 containers of waste combined with glass forming agents; however, the system will be constructed and operated to vitrify a single container per campaign. After review of the TWRS EIS alternatives and their impacts, Ecology deemed the TWRS EIS to contain more than sufficient information about ex-situ vitrification to support the determination of non-significance assigned to the DBVS RD&D effort.

COMMENT 4a: Lack of Adequate Waste Characterization Data

There are significant discrepancies in the data officially used by the USDOE, Washington State Department of Ecology and the EPA to inform decisions and changes in the Hanford Tri-Party environmental compliance agreement. These data are assembled into the Tank Waste Inventory Network System (TWINS), which are maintained by PNNL and are analyzed by CH2M HILL for the implementation of its contract work. The TWINS data are cited in regulatory documents as USDOE's "best estimate" of the radioactive and non-radioactive constituents in Hanford's 177 tanks.

There appears to be major discrepancies in the data being used by the Department of Ecology to consider a permit for the disposal of high-level wastes from tank S-109. Based on data recently provided by the Department of Ecology, Tank S-109 is estimated to contain a total of 43,600 curies of cesium-137 and 49,600 curies of strontium-90. However, it is not clear if this estimate includes the highly radioactive decay products of cesium-137 (Cs-137) and Sr-90 (barium 137m, and Yttrium-90) which must be added to the total, as they are in equilibrium, and would be disposed of as well.

ECOLOGY RESPONSE: Ecology provides clarification as discussed below.

Significantly more has been learned about the tank waste and it's processing since the National Academy of Sciences (NAS) report in 1996. The waste to be treated under this Permit Application (i.e. only the saltcake fraction from Tank 241-S-109) will be a homogeneous solution that will be sampled and analyzed prior to being fed to the bulk vitrification system.

Permit Attachment BB, Table 6-4 in the permit documentation did (for simplification) omit the daughter radioisotopes of Ba-137m and Y-90. However, the process flow sheet and process design take into account daughter radioisotopes and all the species in the Best Basis Inventory maintained on Tank Waste Information Network System. Thus, the technical specifications and safety of the project are not impacted.

The Draft Research, Demonstration and Development Permit does not govern the disposal of the vitrified waste form. The Permit is for treatment and storage. Permit condition II.B.7.b requires that the Waste Analysis Plan develop a sampling approach for the final vitrified waste form to ensure compliance with the waste acceptance criteria of the Integrated Disposal Facility or another permitted disposal facility and the land disposal restrictions listed in WAC 173-303-140. It also requires the Permittee to develop waste feed limitations that will result in the final vitrified waste form meeting the IDF or another permitted disposal facility's waste acceptance criteria and in addition, meeting the performance standards for offgas emissions.

COMMENT 4b: Lack of Adequate Waste Characterization Data

Based on the September 2003 iteration of the TWINS data the total amount of Cs-137 and Sr-90 with decay products is 92,700 curies and 121,000 curies respectively. Thus, there appears to be more than twice the amount of Cs-137 and SR-90 and their decay products than the amount documented by USDOE in the Permit Application. Some of this discrepancy could be due to radioactive decay. However, the failure to include decay products of Cs-137 and Sr-90 deserves further explanation and may impact the technical specifications and safety of this proposed project.

The preponderance of sampling data used to characterize Hanford's HLW, including Tank S-109, was done primarily to address the safety of stored wastes and is of limited value for treatment and disposal. According to the National Academy of Science (NAS), "while the sampling of the gas phase above the residues and analysis of one or two cores of residues per tank is useful to satisfy questions relating to possible safety issues, it is little value in designing chemical remediation processing, particularly if the horizontal heterogeneity is extensive."

There remain major uncertainties relative to the accuracy of tank characterization data. There are several forms and layers of wastes, which are, according to the NAS, "heterogeneous in all phases, both within a given tank and among different tanks."

There also remain major uncertainties relative to the accuracy of tank characterization data. For instance, estimates of the total amount of plutonium in Hanford HLW tanks vary widely. Based on these data, plutonium inventories estimates range from 26,000 Curies (390 Kilograms) to

69,100 curies (1,036.5. kilograms) -- a discrepancy of about 646 kilograms – enough to fuel roughly 110 Nakasaki-size atomic bombs.

There are even greater discrepancies in estimates for transuranic elements in Hanford tanks, which include plutonium, neptunium, americium and curium that have very long half-lives. They range from 131,000 curies to 353,000 curies a discrepancy of 270%.

Based solely on these data discrepancies, the Permit Application should be denied.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request to deny issuance of the RD&D Permit as discussed below.

The difference in the Tank Waste Information Network System data and the Permit Application is due to the fact that the permit inventory is based on the saltcake contents that are to be retrieved and do not include the sludge portion of Tank 241-S-109 that will not be retrieved for this demonstration.

It should also be noted that the Cs-137 content (and therefore the Ba-137m content) of the transferred waste will be monitored so that radioactive waste not meeting acceptance criteria can be sent to the Hanford double-shelled tank system (DSTs) rather than the Demonstration Bulk Vitrification System. This is one safeguard against possible impacts of waste inhomogeneity.

In addition, the waste solution will be directed to a staging tank, not directly to the Demonstration Bulk Vitrification System. The staging tank will be sampled before any liquid goes to the Demonstration Bulk Vitrification System for vitrification. Any waste that does not meet the acceptance criteria will be sent to the DSTs. Thus, the waste characterization is not the final determining factor in process operation.

COMMENT 4c: Need for Review by the National Academy of Science

The safety and operability of this project is highly dependent on knowledge of physical and chemical properties of the wastes. However, as mentioned previously, the National Research Council finds that Hanford waste data "is of little value in designing chemical remediation processing." In light of these uncertainties, world-wide high-level waste vitrification experience encourages extraordinary caution be exercised at Hanford.

Given the major uncertainties in HLW characterization, the issuance of a permit to dispose of high-level wastes onsite from Hanford Tank S-109 should be based on an independent, rigorous, scientific and technical review of the disposition of USDOE high-level radioactive wastes. Such a review should be done by the NAS. Both the U.S. Senate and House of Representative have passed legislation, now in Conference, requesting an NAS review – in light of the controversy over USDOE's attempts to self-regulate disposal of high-level radioactive wastes.

Otherwise, the Department of Ecology will be taking an unacceptable risk by approving a project on potentially flawed data and technical assumptions. Over the past several decades, the USDOE and its predecessors have repeatedly embarked on deploying unproven disposal technologies which turned into expensive failures.

The Permit Application should be denied. Protecting, at a minimum, the interests of the State's citizens and resources, a review by the NAS should be completed prior to any decision regarding high level radioactive waste reclassification, and until their recommendations can be implemented.

ECOLOGY RESPONSE: Ecology disagrees with the commenter's request to deny issuance of the RD&D Permit as discussed below.

Actinide uncertainties are not relevant to the RD&D Permit. Actinides, such as plutonium, primarily exist as insoluble solids in the sludge at the bottom of the tank. In accordance with the 1997 NRC letter (Paperiello, C.J., "Classification of Hanford Low Activity Tank Waste Fraction" Letter to J. Kinzer, ORP, June 9, 1997), the dissolved S-109 saltcake waste will undergo a liquids/solids separation to remove insoluble actinides and Sr-90 prior to the liquid being fed to bulk vitrification. The radionuclides thus removed will ultimately be fed to the high-level waste vitrification feed stream.

The RD&D Permit is not for disposal of high-level waste or disposal of any waste on site. The Permit is for a Research, Development & Demonstration facility to test treatment of pretreated Tank 241-S-109 waste. Disposal of the treated product from this Research, Development & Demonstration facility is subject to the requirements of a disposal facility permit and waste acceptance criteria.

National Academy of Science (NAS) committees have previously reviewed USDOE's tank waste treatment plans several times. (Several NAS Committee reviews have been performed regarding the disposition of USDOE HLW. Examples include: The Hanford Tanks: Environmental Impacts and Policy Choices; Risk Based … for defining needs/Hanford tanks example; Alternative High-Level Waste Treatments at the Idaho National Engineering and Environmental Laboratory [INEEL]; SRS Salt Processing.) A common theme in most of those reviews is support for 1) consideration of multiple options for disposition of high-level waste, including pretreatment and production of both immobilized high-level waste and immobilized low-activity waste fractions, 2) development, testing, and analysis of alternatives, including pilot-treatment plants. Pursuit of Research, Development & Demonstration facility to evaluate the performance, cost, and risks of a proposed alternative is consistent with recommendations previously received from the NAS reviews.

This Research, Development & Demonstration facility will vitrify pretreated tank waste. If the Research, Development & Demonstration waste packages are not ultimately accepted for final disposal as low-activity waste at Hanford, the borosilicate glass waste form will be suitable for disposal in a repository or for long-term storage as provided for under the Nuclear Waste Policy Act.