



Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

December 20, 2018

CERTIFIED MAIL

Mr. Tom Carpenter
Hanford Challenge
2719 East Madison Street
Suite 304
Seattle, Washington 98112

Dear Mr. Carpenter:

FREEDOM OF INFORMATION ACT REQUEST (FOI 2019-00199)

This letter is in response to the electronic Freedom of Information Act (FOIA) request you submitted to this office requesting “written comments submitted to the Department of Energy in response to the Department’s Notice of Availability of the Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site...”

Your request was assigned to the U.S. Department of Energy (DOE) Office of River Protection (ORP) to conduct a search of their files for responsive documents. ORP has completed its search for records and 824 pages of documents were located and are enclosed. Within the documents, this office has made deletions of names, home addresses, personal cell phone and home phone numbers and any other personal information regarding other individuals, pursuant to Exemption 6 of the FOIA.

Exemption 6 provides that an agency may protect from disclosure all personal information if its disclosure would constitute a clearly unwarranted invasion of privacy by subjecting the third-party individuals to unwanted communications, harassment, intimidation, retaliation, or other substantial privacy invasions by interested parties.

In invoking Exemption 6 we considered 1) whether a significant privacy interest would be invaded by disclosure of information, 2) whether release of the information would further the public interest by shedding light on the operations or activities of the government, and 3) whether disclosure would constitute a clearly unwarranted invasion of private or public interest. The DOE has determined that the public interest in the identity and personal information of the individuals whose information appears in the documents does not outweigh the individuals’ privacy interests. All releasable information in these documents has been segregated and is being provided to you.

The undersigned individual is responsible for this determination. You have the right to appeal this determination to the Office of Hearings and Appeals, as provided in 10 CFR 1004.8. Should you choose to exercise this right, your appeal must be filed within 90 days after receipt of this letter. You may submit your appeal by email to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line (this is the method preferred by the Office of Hearing and Appeals). Alternatively, any such appeal may be made in writing to the following address: Director, Office of Hearings and Appeals (HG-1), U.S. Department of Energy, L'Enfant Plaza Building, 1000 Independence Avenue SW, Washington, D.C. 20585-1615. The appeal must contain all the elements required by 10 CFR 1004.8, including a copy of the determination letter. Should you choose to appeal, please provide my office with a copy of your appeal. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

You may contact the DOE Richland Operations Office FOIA Public Liaison, Richard Buel, at (509) 376-3375, or by mail at P.O. Box 550, Richland, Washington, 99352 for any further assistance or to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001, email at ogis@nara.gov; telephone at (202) 741-5770; toll free at 1-877-684-6448; or facsimile at (202) 741-5769.

If you have any questions regarding this matter, please contact me at our address or at (509) 376-6288.

Sincerely,

-Original signed by-

Dorothy Riehle
Freedom of Information Act Officer
Office of Communications
and External Affairs

OCE:DCR

Enclosures

WMA C Conceptual Model

(attached to email from Dr. Stan Sobczyk, Dec 1, 2016)

The goal of the Nez Perce conceptual model for WMA C is to explain the observed lateral spread of tank waste in the vadose zone, the presence of tank waste in groundwater, and to align with the existing data. It has long been recognized at Hanford that: "Stratification tends to increase spreading of liquids along bedding planes and along contacts between sedimentary units" (ARH-ST-156). The use of geophysical logs to correlate stratigraphy is well established and has been used in tank farms in the past. Within the C tank farm, DOE's most recent use of geophysical dry well logging to correlate stratigraphy and contamination was documented in DOE/RL-92-04. The conceptual model proposed by the Nez Perce ERWM is similar to that arrived at by prior Hanford investigators (HW-9671, 1948, ARH-ST-156, DOE/RL-92-04, WHC-SD-EN-TI-185, WHC-SD-EN-TI-299).

Cross Sections

The purpose of correlating the stratigraphic units is to evaluate and account for their effect on lateral transport. Widespread and correlatable stratigraphic units are identified based on neutron-moisture logs and spectral gamma ray logs from boreholes and push holes at WMA C. As shown on Figure 1, tank waste has migrated to the northeast down stratigraphic dip base on the distribution of cobalt-60 in the vadose zone. The index maps show the locations (Figure 2) and boreholes (Figure 3) used to construct four dip cross sections (Figures 4, 5, 6, and 7) and five strike cross sections (Figures 8, 9, 10, 11, and 12). These cross sections were developed using the neutron-moisture logs collected by WRPS, Stoller, and Energy Solutions. The cross sections demonstrate the presence of continuous, small scale, silty/fine-grained layers in the Hanford H1 and H2. These fine-grained layers are generally less than 0.5 meter in thickness. As shown on the cross sections (Figures 4 through 12), ten layers were correlated in the Hanford H2 (Layers B, D, E, H, J, L, N, P, R, and T), and five layers were correlated in the Hanford H1 (Layers U, V, W, X and Z). Table 1 lists the elevations of these layers for the boreholes and push holes based on the available neutron-moisture logs. Additional layers are present in the Hanford, which weren't correlated to simplify the computer modeling. Note the elevated moisture above layer B in push hole C8763 on cross Section C-C' (Figure 6). No soil samples were collected in push hole C8763.

Hanford Fine-grained Layers

C Tech Development Corporation's Environmental Visualization System (EVS) version 9.92 was used to krig the elevations of the interpreted fine-grained layers (Table 1) and to create visualizations of the subsurface distributions of the fine-grained layers in the Hanford H1 and Hanford H2. Visualizations of the individual Hanford fine-grained layers were exported to a graphics program for annotation and final presentation. The ten layers that were correlated in the Hanford H2 are shown in plane view on Figure 13, and the five layers that were correlated in the Hanford H1 are shown in plane view on Figure 14. Mapping of the fine-grained layers in the Hanford H2 (Figures 15 through 24) indicates a stair-step of over-lapping layers (Figure 13), which generally dip to the northeast. The map of the Hanford H1 fine-grained layer U (Figure

25) shows dip to the northeast at the base of the backfill near tanks C-106 and C-109. The fine-grained layers in the Hanford H1 (Figures 26 through 29) indicates a set of over-lapping layers (Figure 14), which will direct infiltration into the lower Hanford H1 and the backfill. The migration direction of the cobalt-60 plumes (Figure 1) is consistent with the slope of the fine-grained layers in the Hanford H2 (Figures 15 through 24), which generally dip to the northeast.

Contaminant Migration in the Vadose Zone

To explain the migration of uranium from the BX-102 tank leak, Pruess and Yabusaki in (Pruess, K. and S. Yabusaki, 2002. *Modeling Studies of Fluid Flow and Solute Transport at Tank BX-102 in the Hanford Vadose Zone* in Knepp, A.J., 2002. *Field Investigation Report for Waste Management Area B-BX-BY*, RPP-10098) report that: “The current interpretation, based on observations at the field experiments, is that there are numerous, discontinuous, low permeability laminations/lenses in the H2 unit oriented with 3% general slope towards the northeast. Liquid migrates sub-horizontally along a lamination until the lamination terminates or is weak enough to allow breakthrough, whereupon it migrates vertically until encountering another lamination.” The conceptual model of moisture-dependent anisotropy allows tank waste to migrate through the vadose zone, whereby fluids migrate horizontally along a conductive fine-textured lamination until it terminates, or its matrix potential is sufficient to allow breakthrough. The waste fluid migrates vertically after breakthrough, until encountering another wetter, conductive lamination that, again, promotes lateral migration. Enhanced lateral flow is caused by strong anisotropy throughout the formation due to pervasive multi-scale layering of the sediments. Lateral migration of tens of meters from the point of origin is possible with this anisotropy mechanism (Figure 30).

Model Parameterization for the Fine-grained Layers in the Hanford

The measured and estimated values for the Early Palouse Soil should be used emulate the characteristics for the fine-grained layers in the Hanford, since laboratory measurements of Hanford fine-grained layers probably haven't been made. Also, we recommend that the modelers read Pruess and Yabusaki's: *Modeling Studies of Fluid Flow and Solute Transport at Tank BX-102 in the Hanford Vadose Zone* in Knepp, A.J., 2002. *Field Investigation Report for Waste Management Area B-BX-BY*, RPP-10098.

Visualizations of the Neutron-Moisture Log Data

The neutron-moisture logs collected by WRPS, Stoller, and Energy Solutions were imported into C Tech Development Corporation's Environmental Visualization System (EVS) version 9.92 to create visualizations of the WMA C moisture field. The logs collected by Stoller and Energy Solutions were resampled from a 3 inch interval to a 6 inch interval to reduce the overall number of measurements to facilitate to computer computations. The hand-held logs collected by WRPS were collected at a one foot interval and resampling wasn't necessary. The combined moisture log dataset consisted of 21,120 measurements and is displayed in Figure 31. The fine-grained layers in the Hanford H2 appear to control the movement of cobalt-60 in the vadose zone (Figure 32), which causes the “stair-step” nature of the cobalt 60 vadose zone plumes. On the southwest

side of the tank farm, the Hanford H1 fine-grained layers direct infiltration into the backfill and the Lower Hanford H1 underneath tanks C-101, C-104, C-107, and C-110 (Figures 33 and 34). In the Lower Hanford H2, elevated moisture trending to the northeast is present in the area under tanks C-108 and 109 and extending out to groundwater well 299-E27-7 (Figures 33 and 34).

Figure 1: Migration of tank waste to the northeast at WMA C.

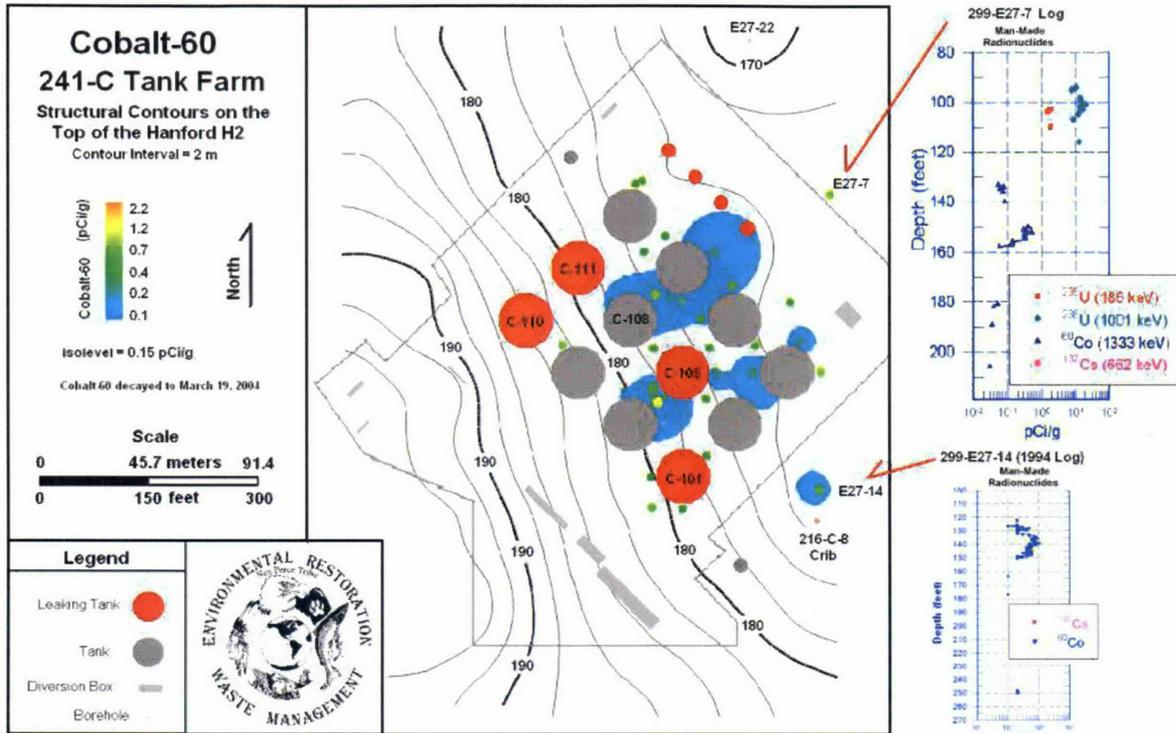


Figure 2: Location map for the cross sections in WMA C.

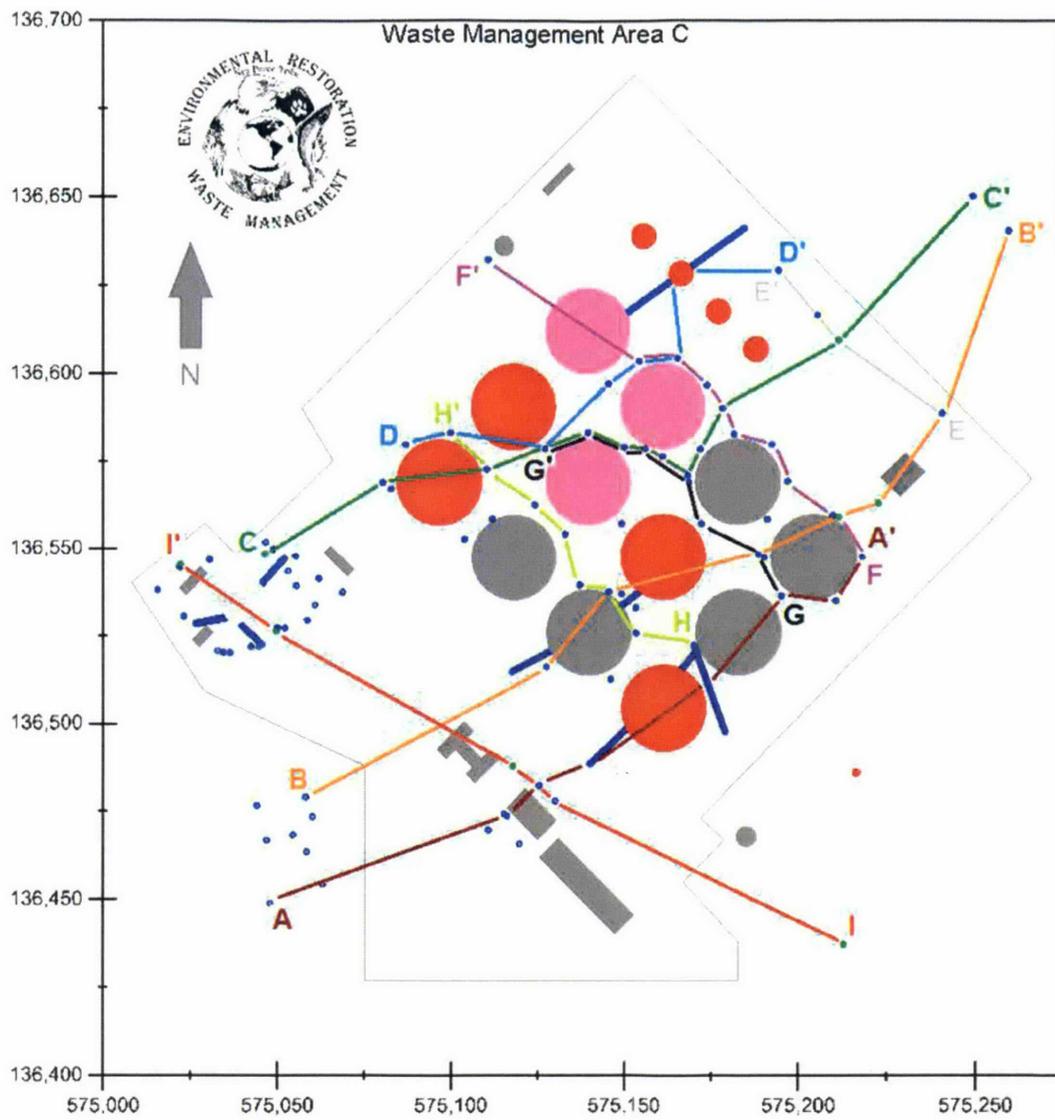


Figure 4: WMA C dip cross section A-A'

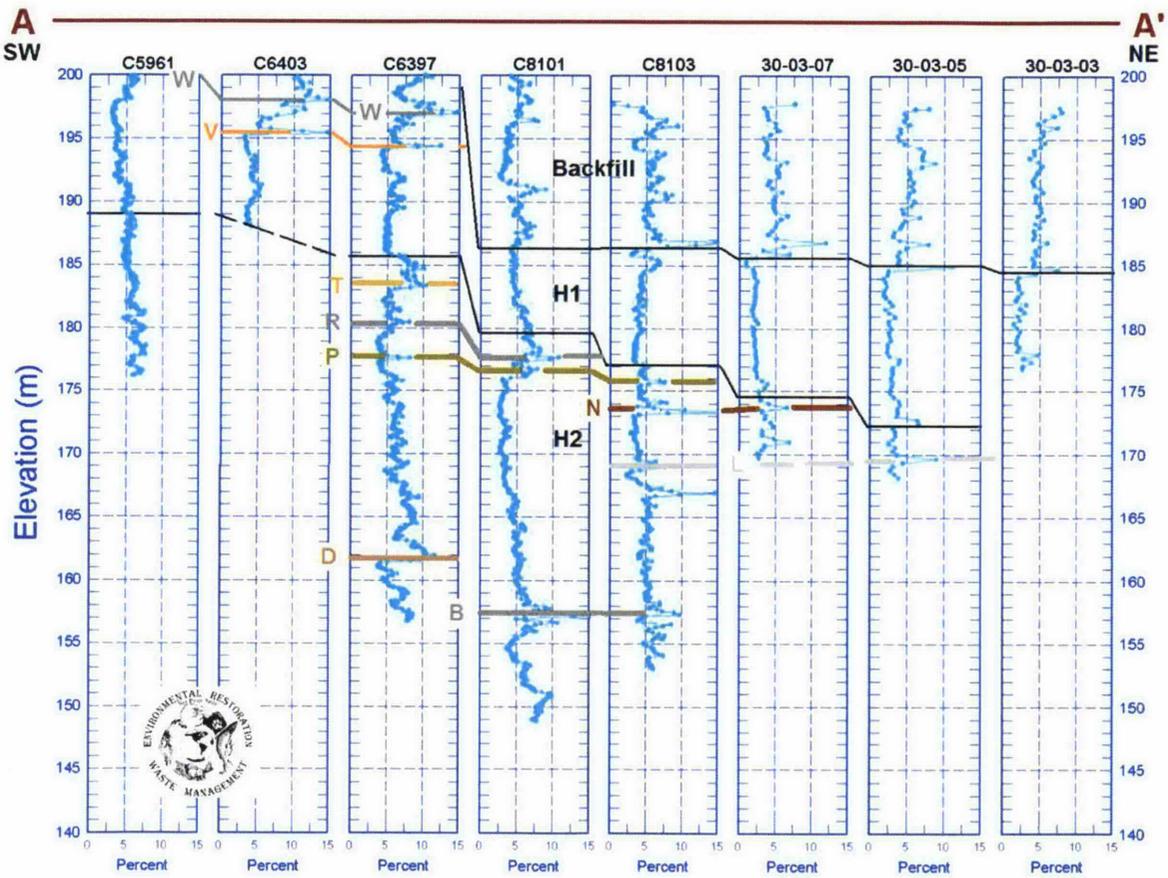


Figure 5: WMA C dip cross section B-B'

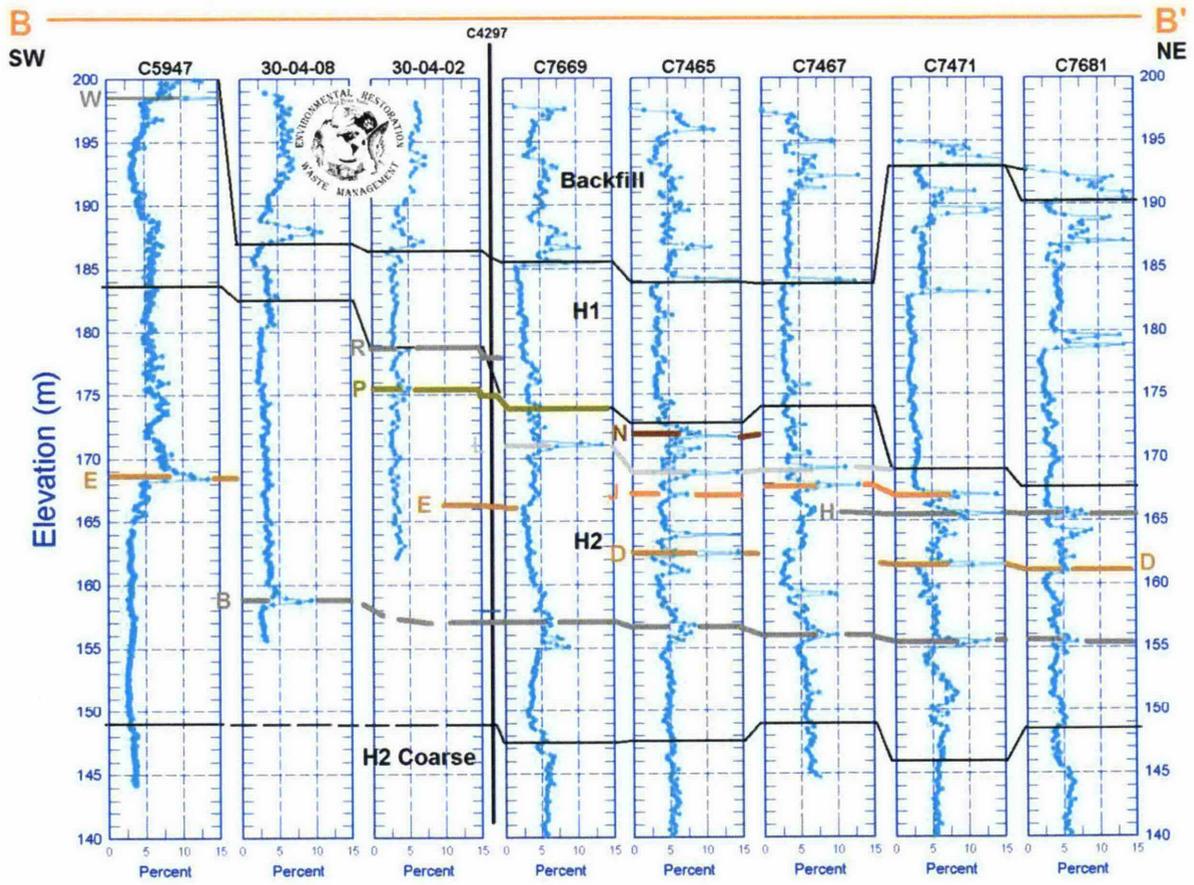


Figure 6: WMA C dip cross section C-C'

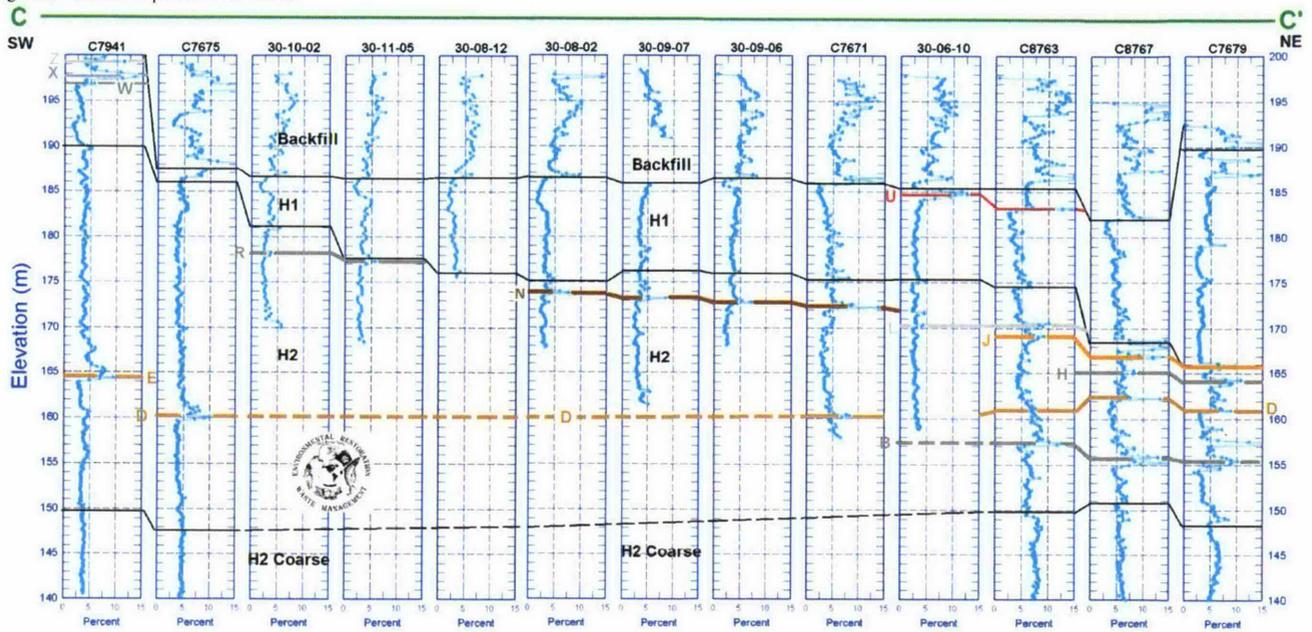


Figure 7: WMA C dip cross section D-D'

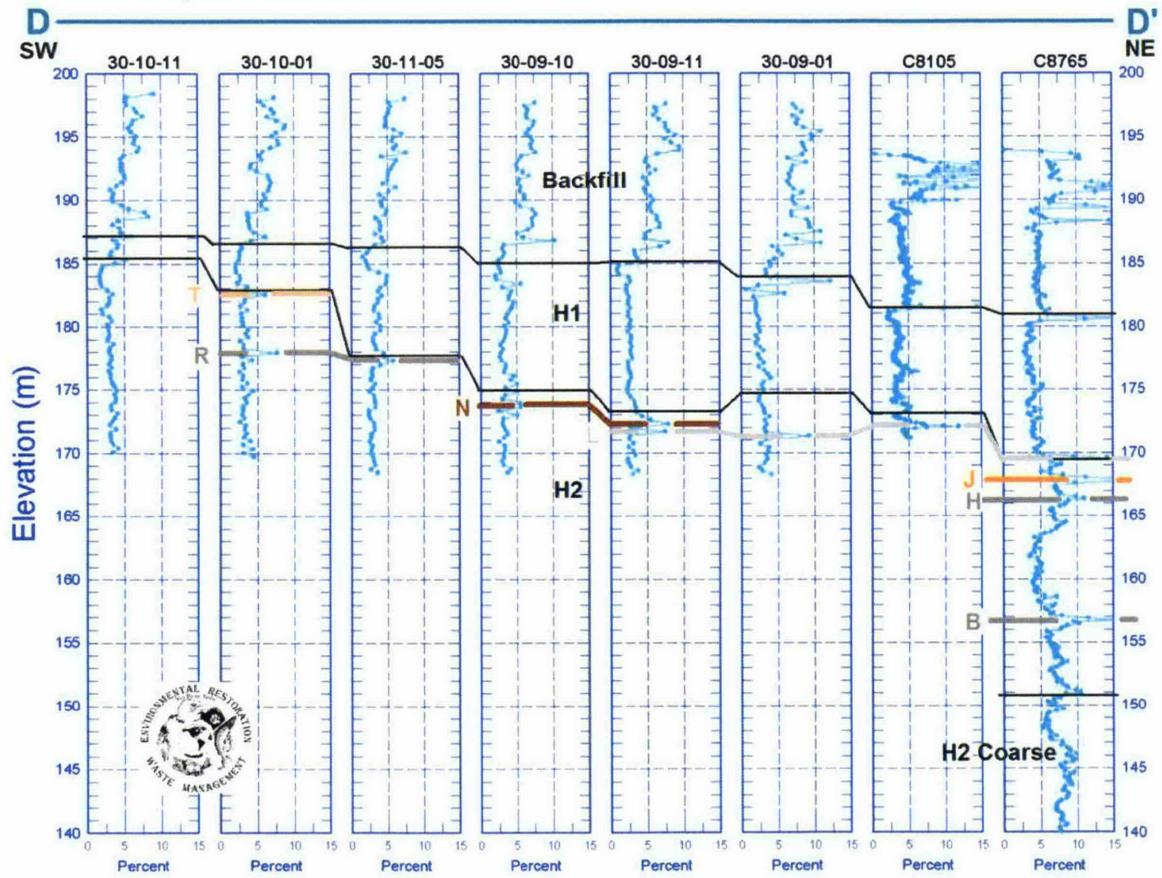


Figure 8: WMA C strike cross section E-E'

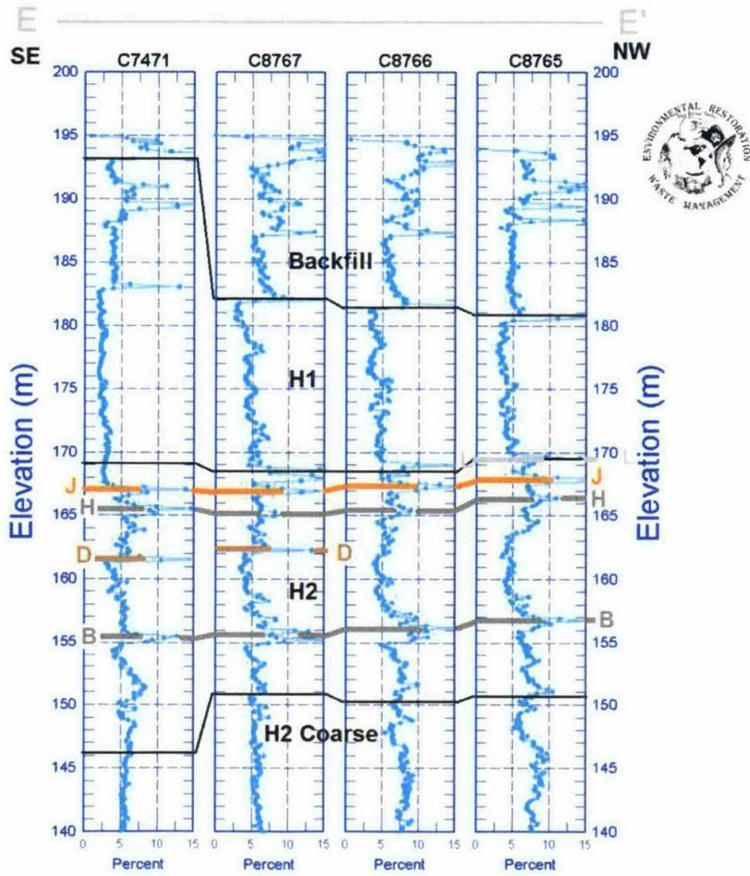


Figure 9: WMA C strike cross section F-F'

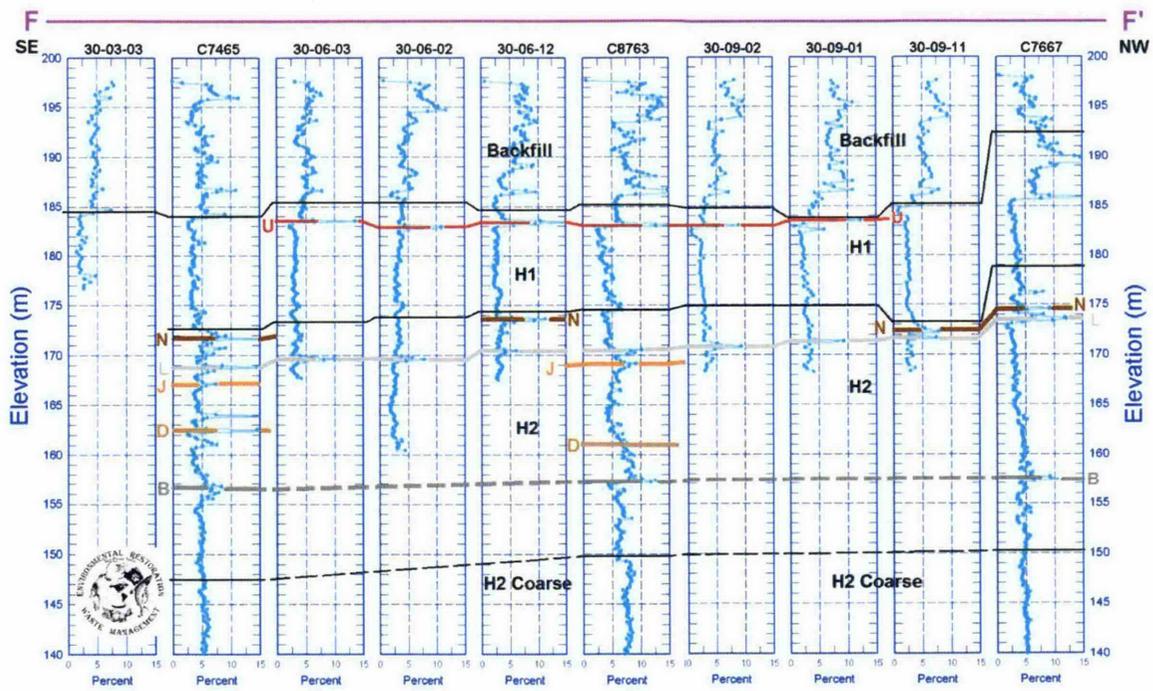


Figure 10: WMA C strike cross section G-G'

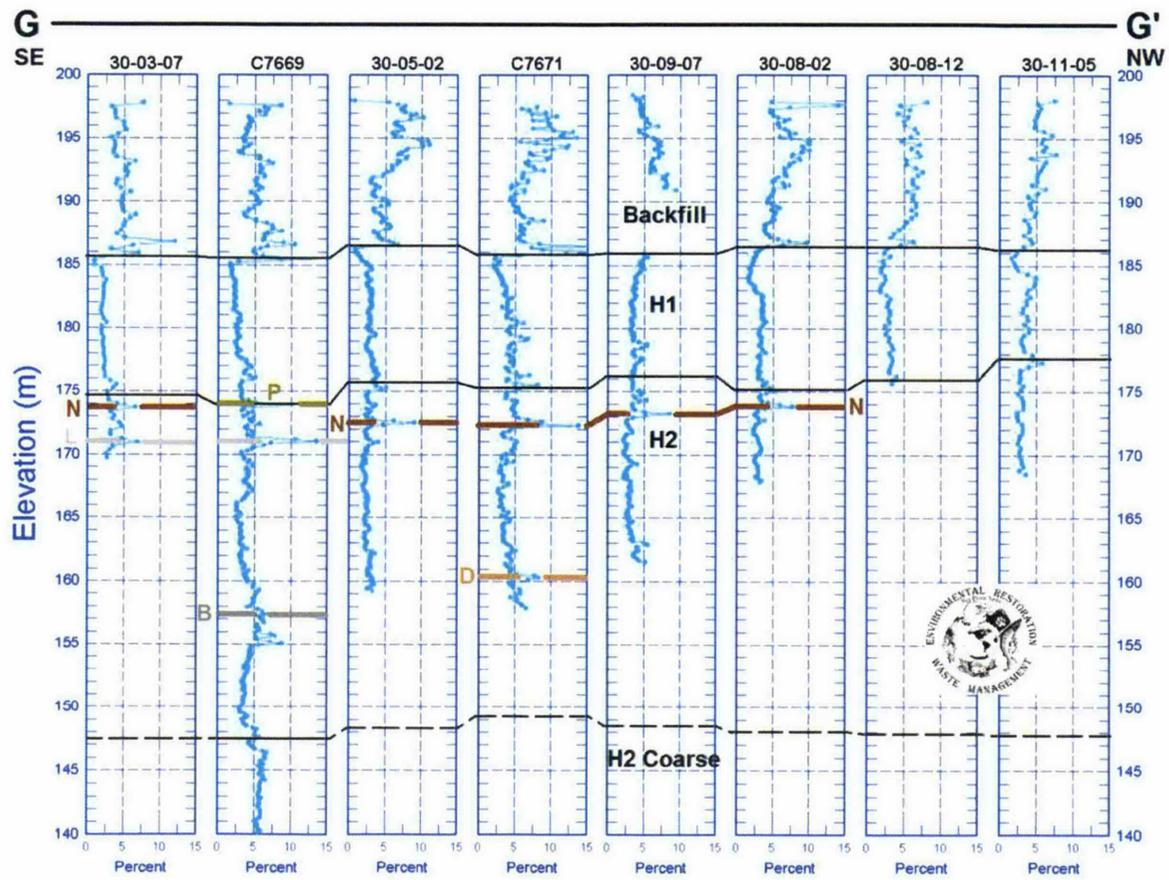


Figure 11: WMA C strike cross section H-H'

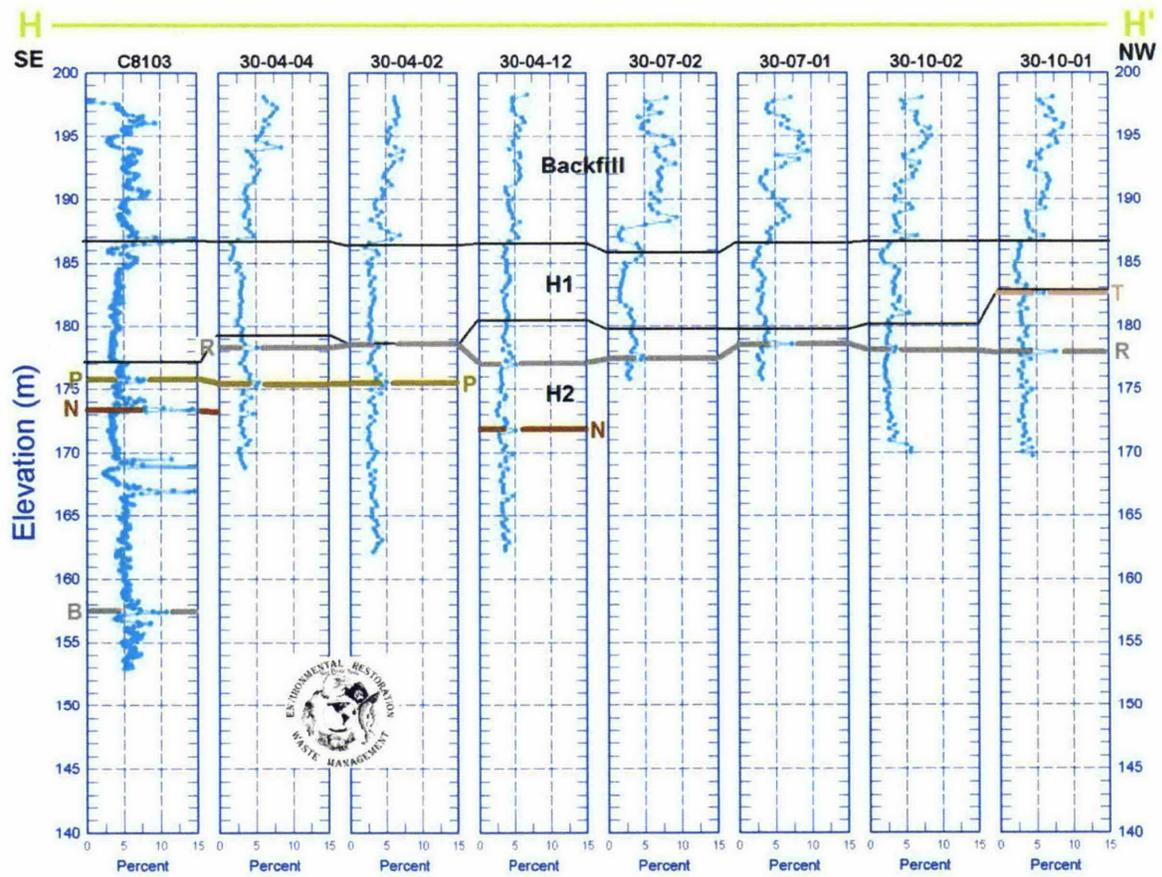


Figure 12: WMA C strike cross section I-I'

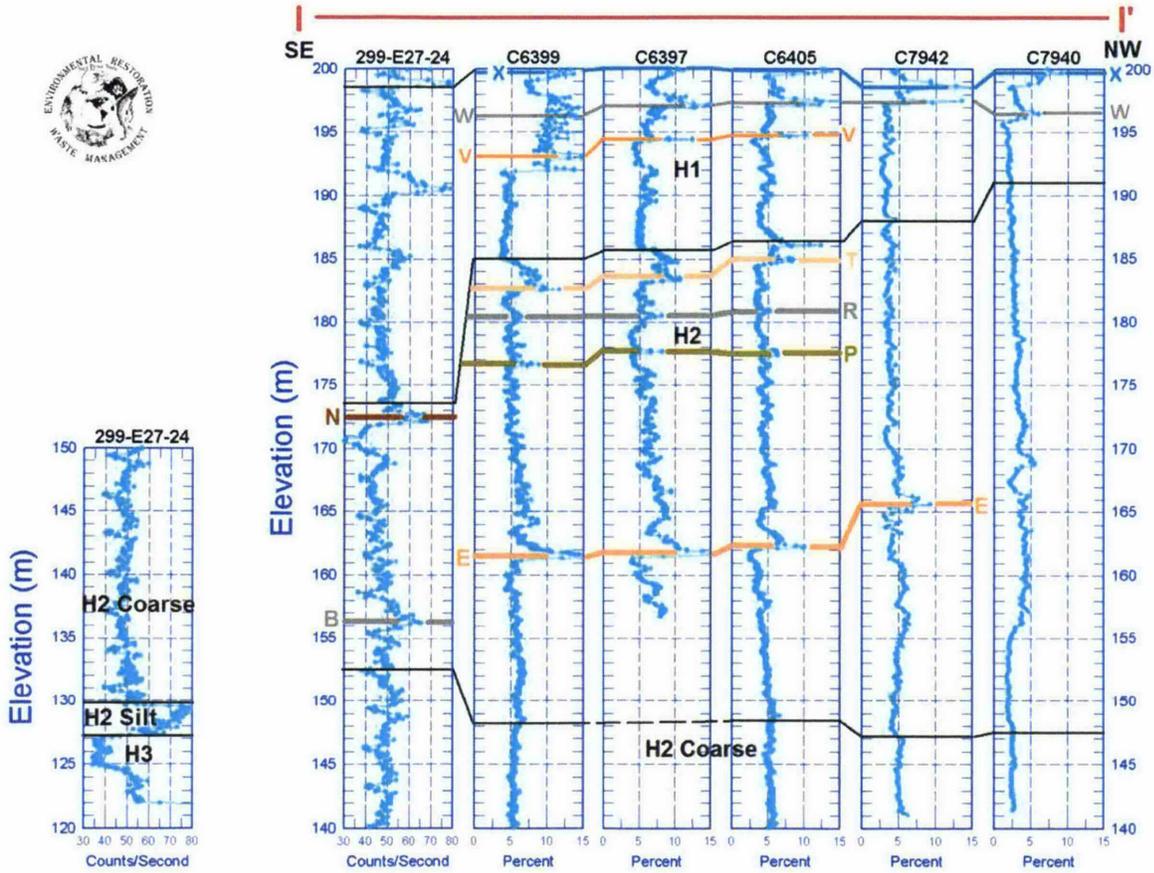


Figure 13: Top view of Hanford H2 fine-grained layers, which demonstrates the stair-step nature of the fine-grained layers in the Hanford H2.

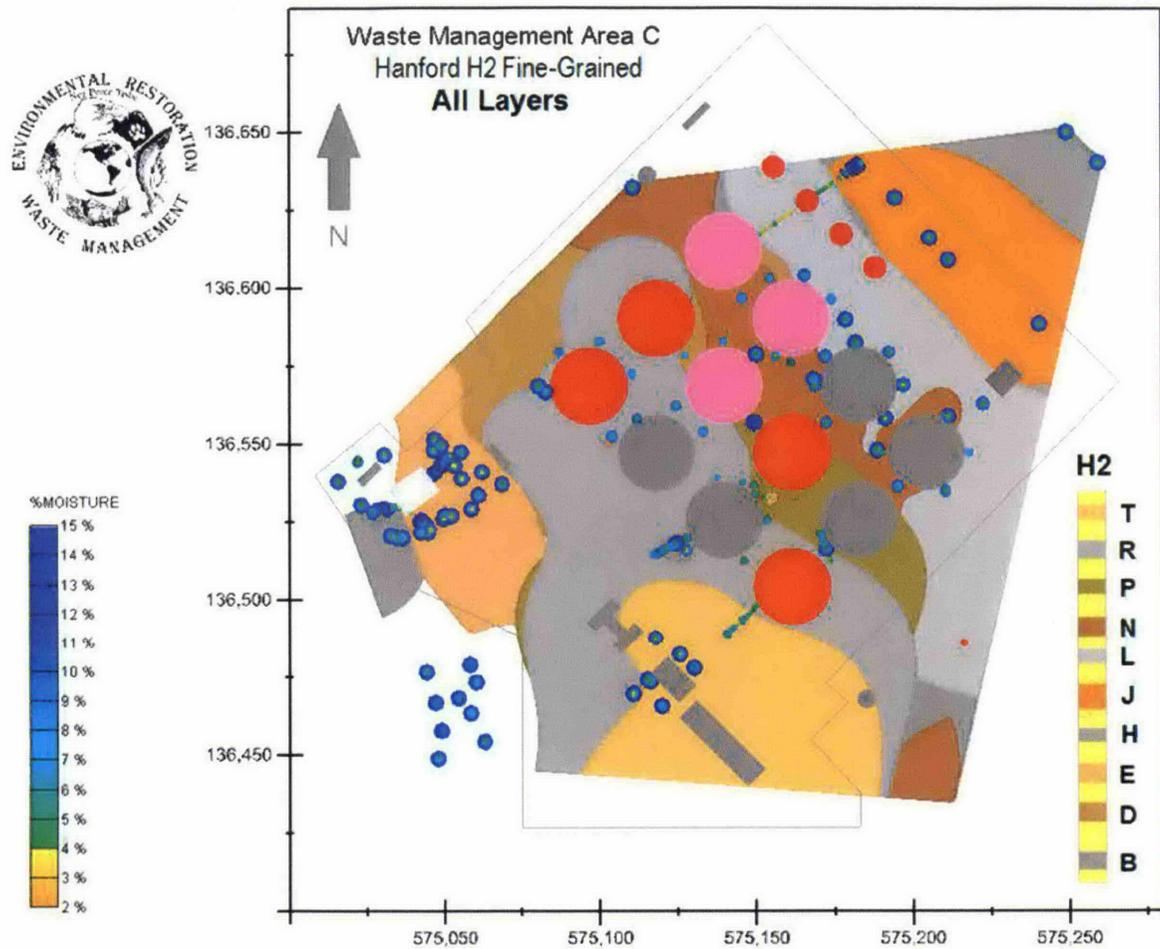


Figure 14: Top view of Hanford H1 fine-grained layers, which indicates the truncation of the four upper fine-grained layers by the tank farm excavation.

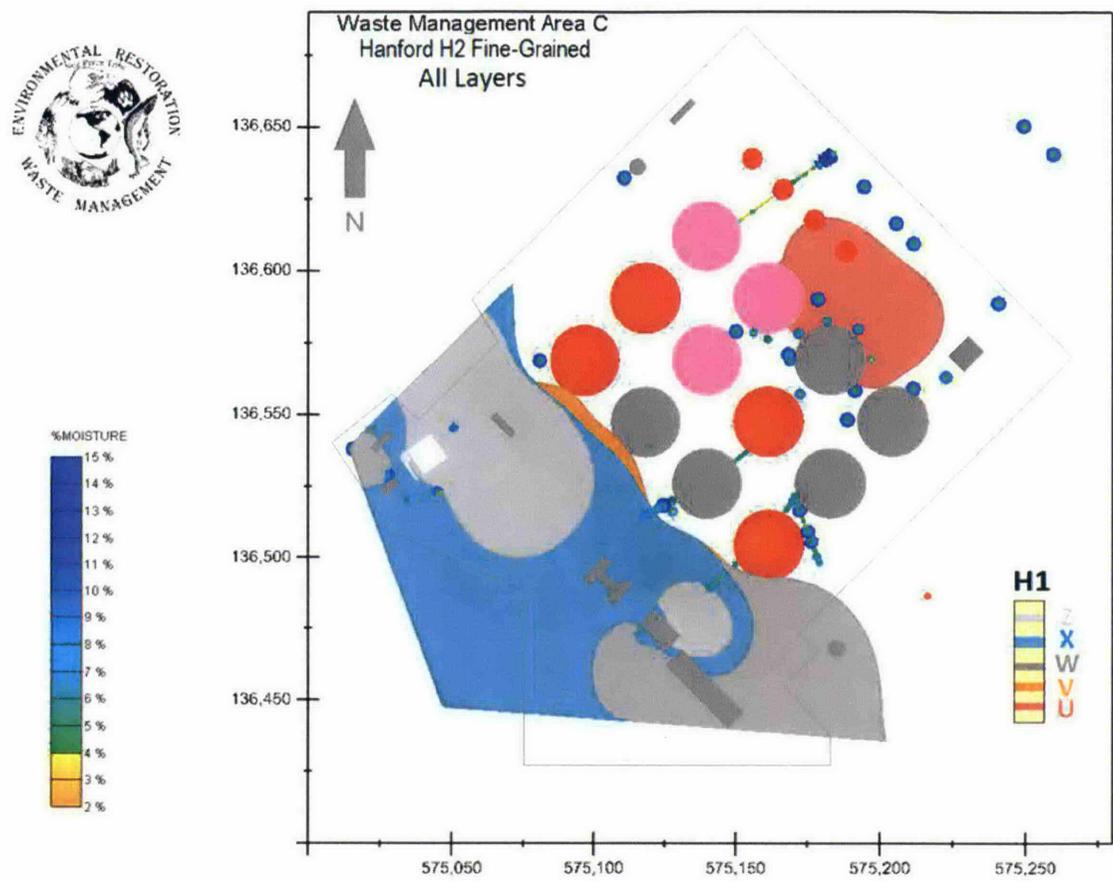


Figure 16: Top view of Hanford H2 fine-grained layer D, which shows a slight ridge centered under tank C-110 with a northeast/southwest strike. Isolines are in meters above sea level with 0.5 meter contour interval.

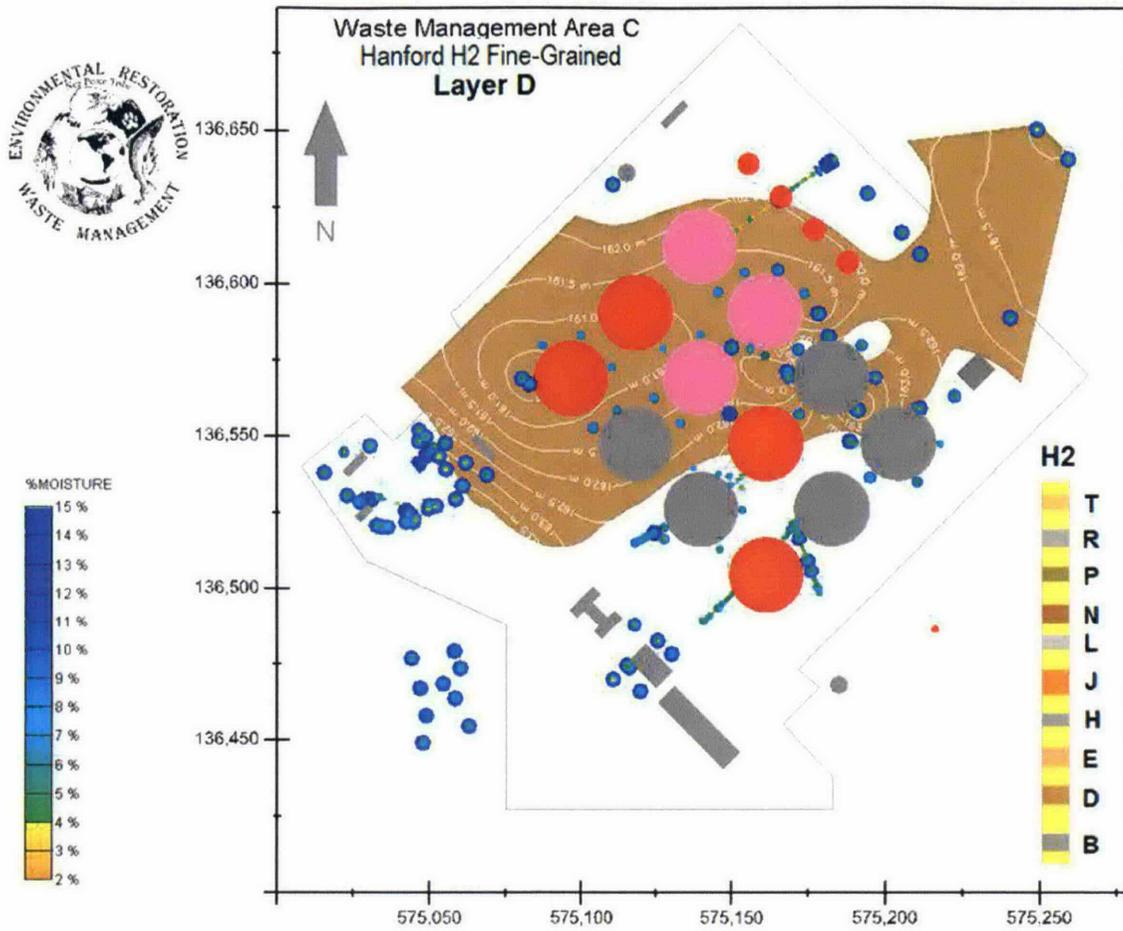


Figure 17: Top view of Hanford H2 fine-grained layer E, which shows northeast dip and a slight ridge centered under 241-CR-151 with a northwest/southeast strike. Isolines are in meters above sea level with 0.5 meter contour interval.

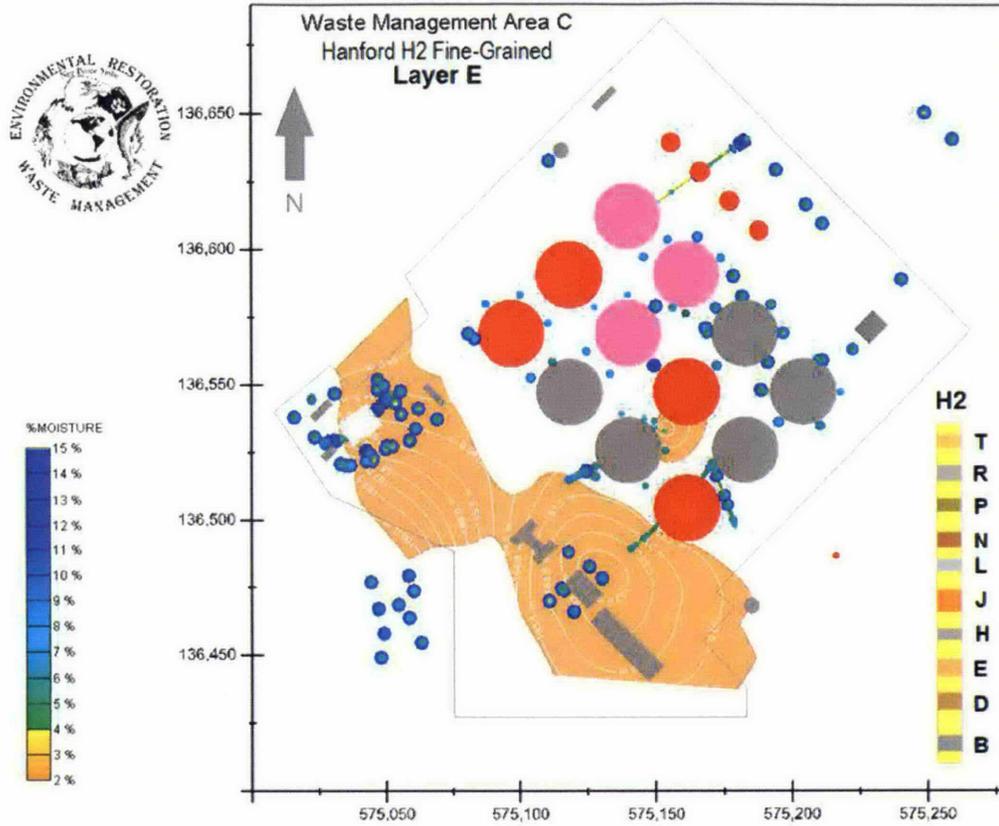


Figure 18: Top view of Hanford H2 fine-grained layer H, which shows a slight depression on the northeast side of WMA C. Isolines are in meters above sea level with 0.5 meter contour interval.

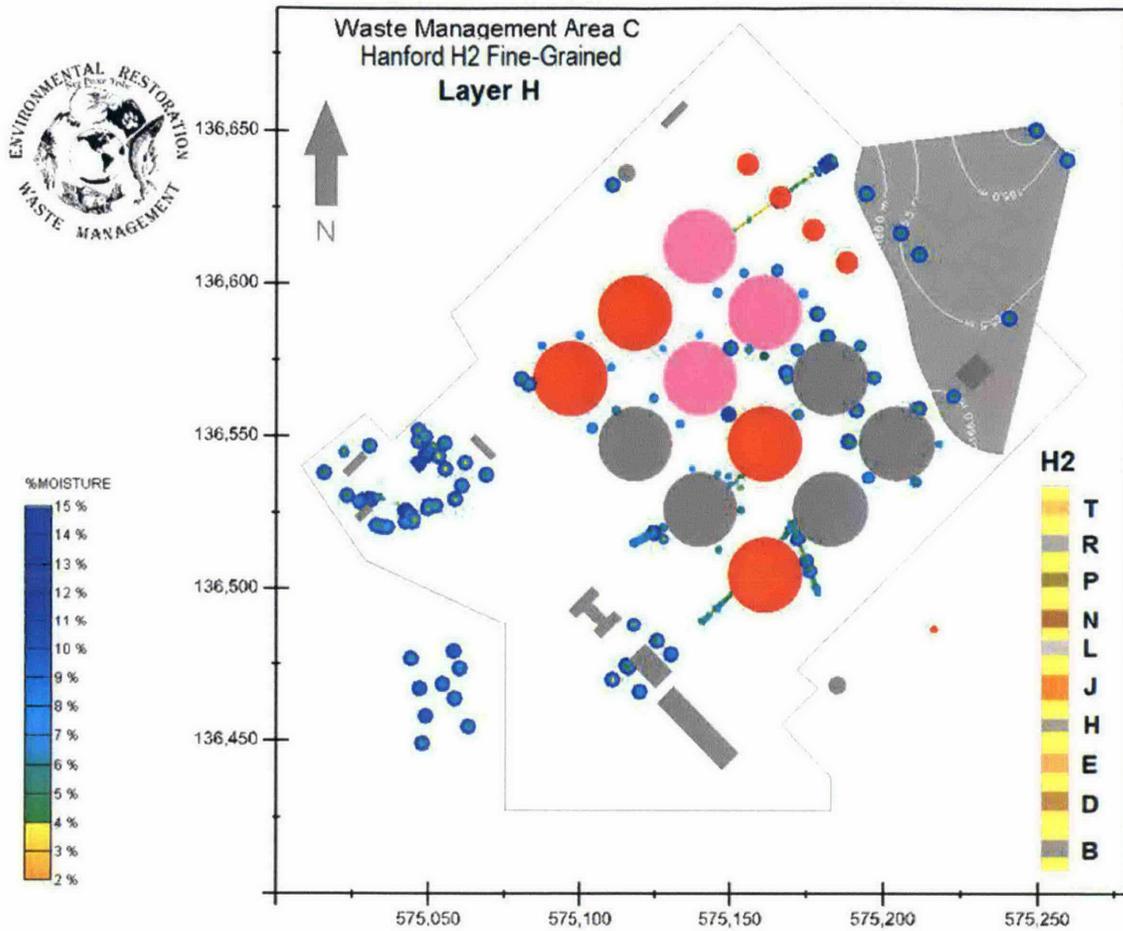


Figure 19: Top view of Hanford H2 fine-grained layer J, which shows northeast dip. Isolines are in meters above sea level with one meter contour interval.

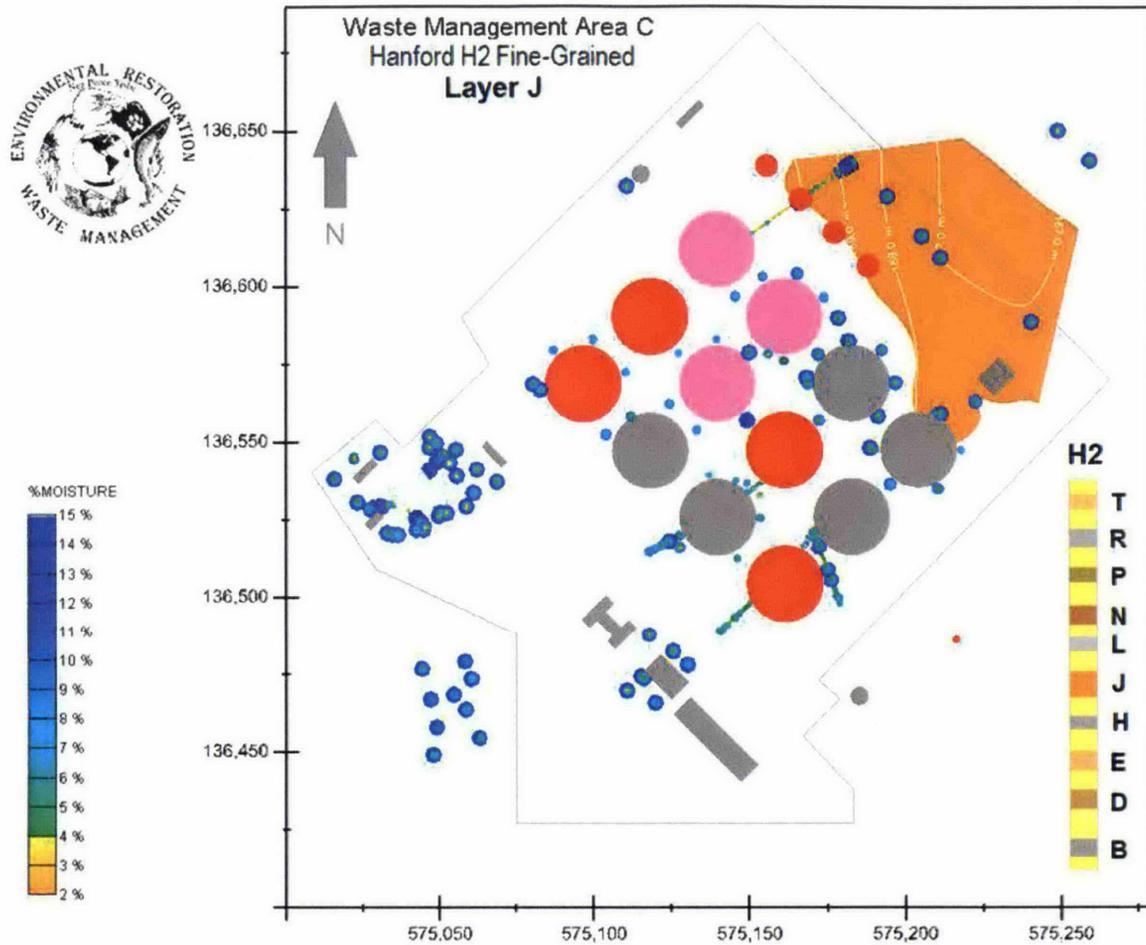


Figure 20: Top view of Hanford H2 fine-grained layer L, which shows northeast dip. Isolines are in meters above sea level with one meter contour interval.

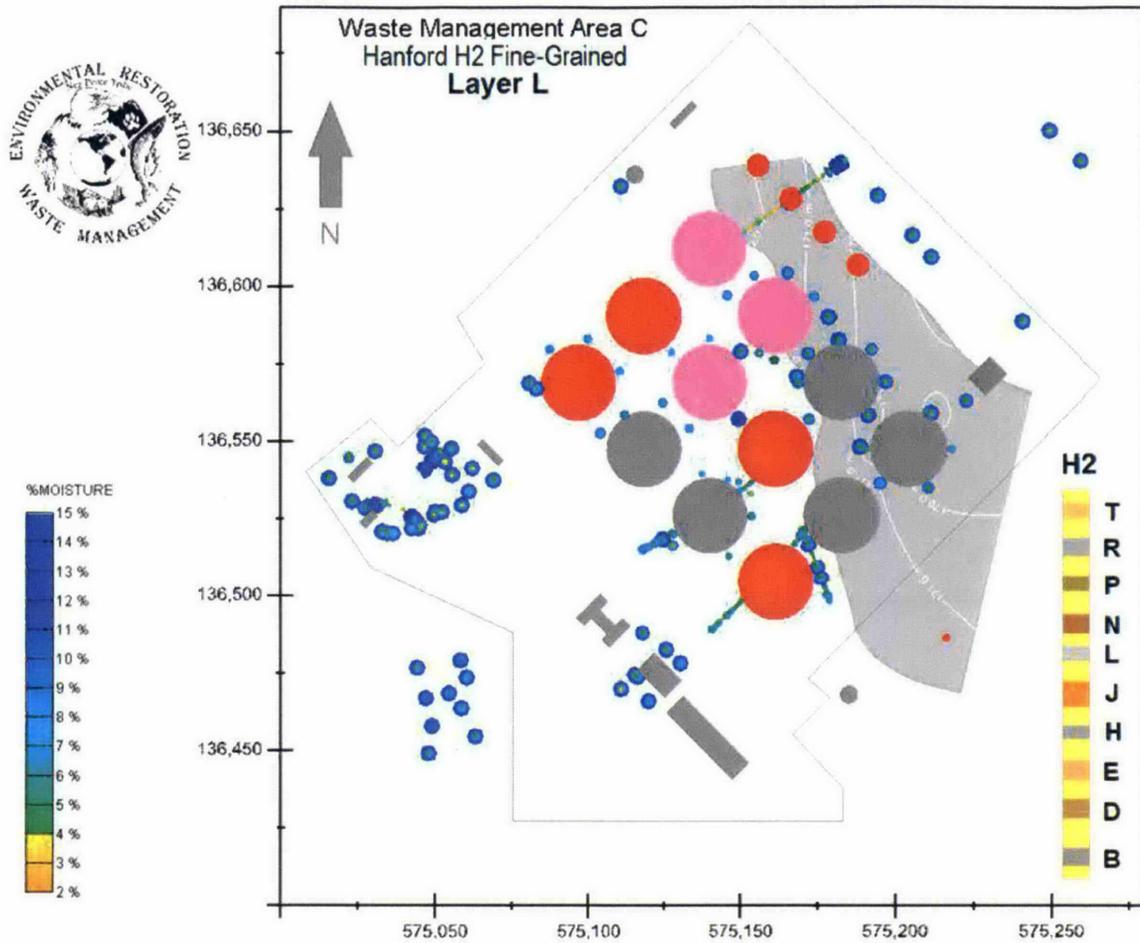


Figure 21: Top view of Hanford H2 fine-grained layer N. Isolines are in meters above sea level with one meter contour interval.

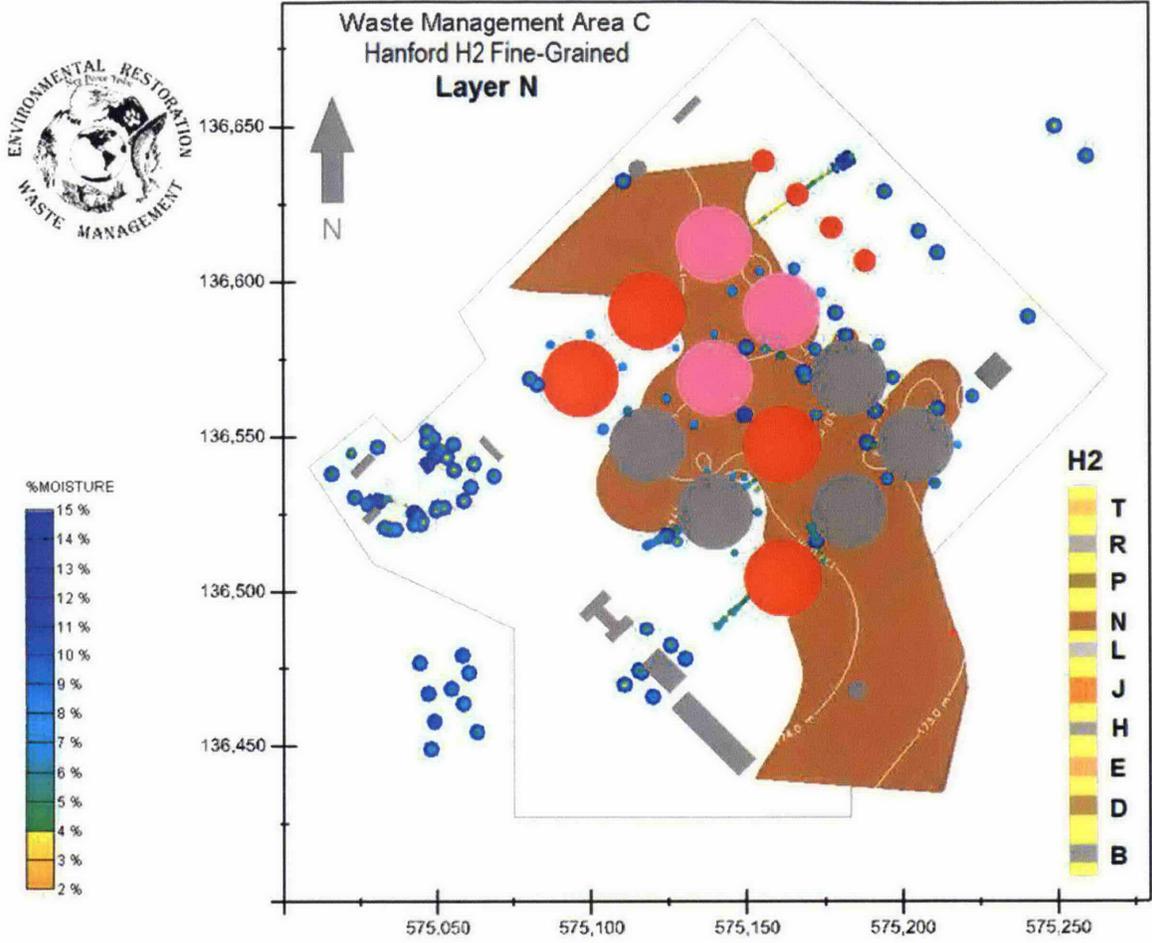


Figure 22: Top view of Hanford H2 fine-grained layer P, which shows east/northeast dip. Isolines are in meters above sea level with one meter contour interval.

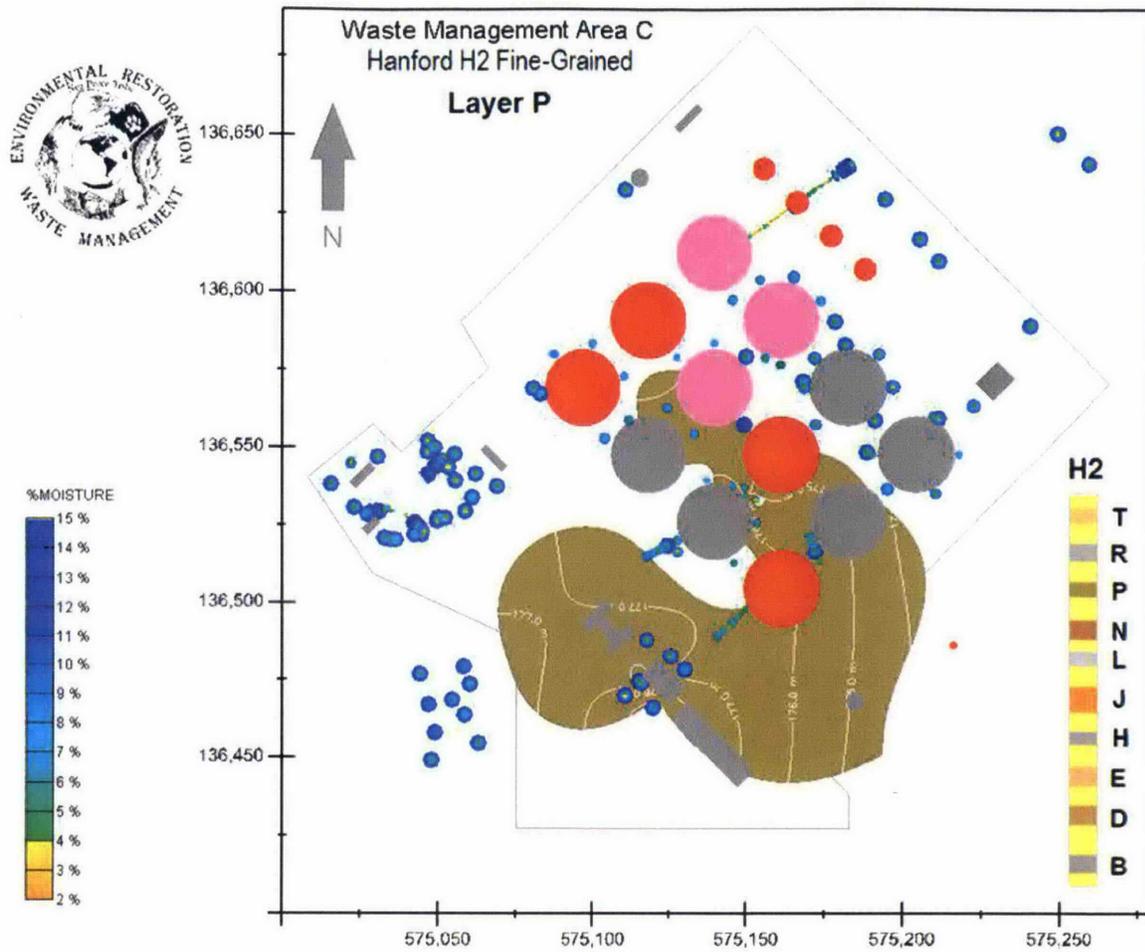


Figure 24: Top view of Hanford H2 fine-grained layer T, which shows east dip. Isolines are in meters above sea level with one meter contour interval.

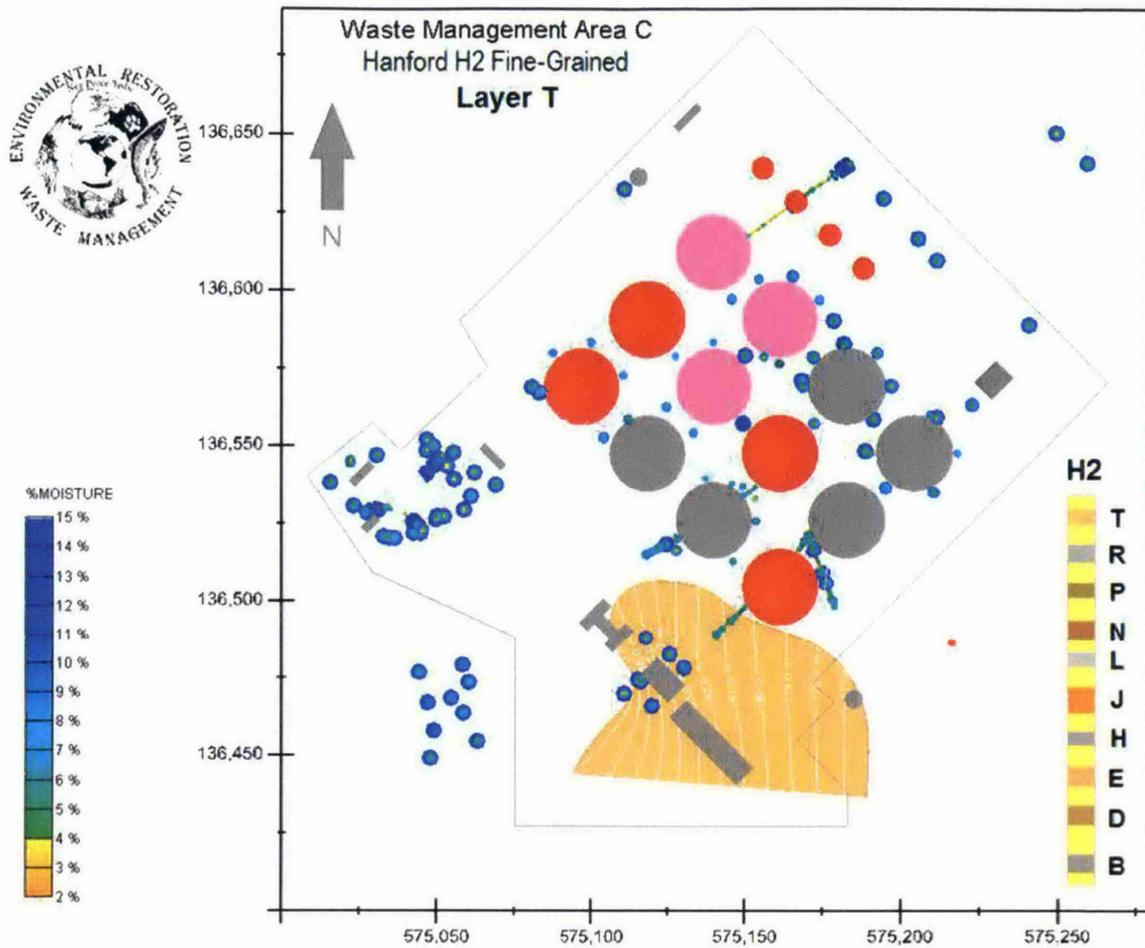


Figure 25: Top view of Hanford H1 fine-grained layer U, which shows northeast dip. Isolines are in meters above sea level with 0.5 meter contour interval.

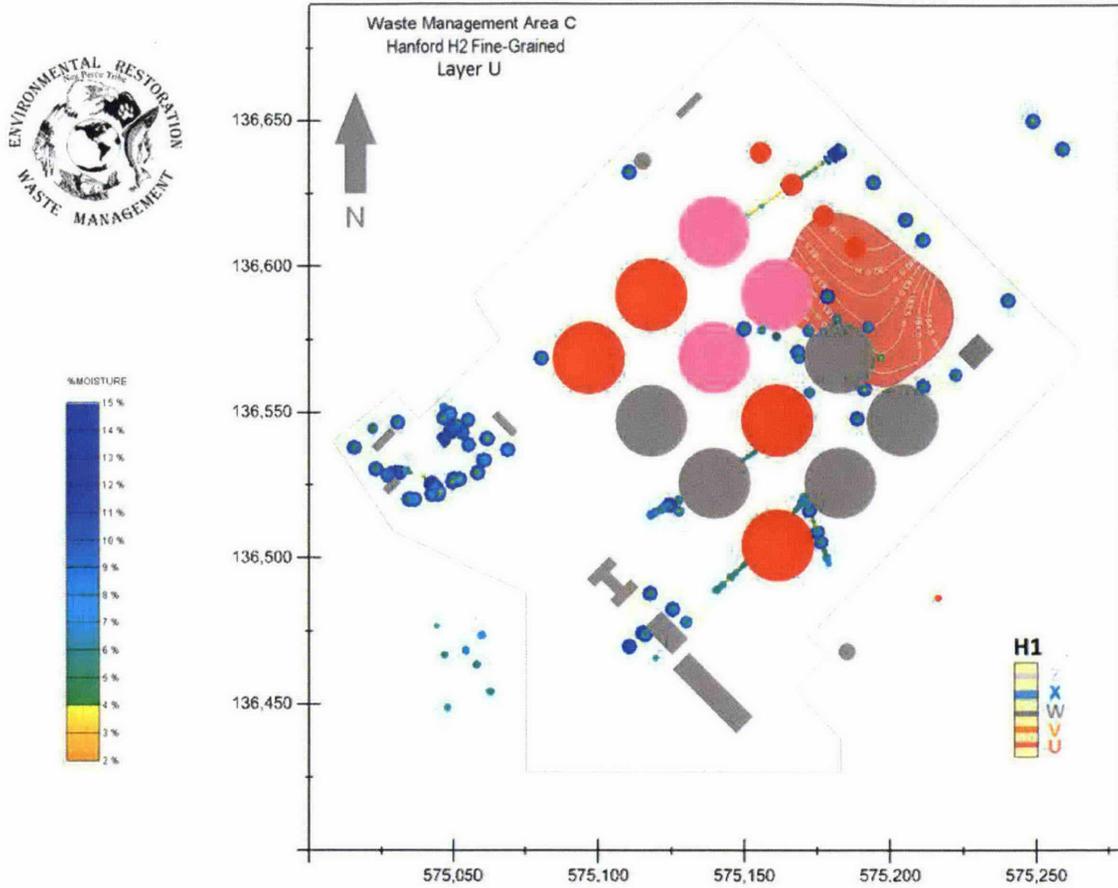


Figure 26: Top view of Hanford H1 fine-grained layer V, which shows northeast dip and directs infiltration into the Lower Hanford H1 beneath the tank farm backfill. Isolines are in meters above sea level with one meter contour interval.

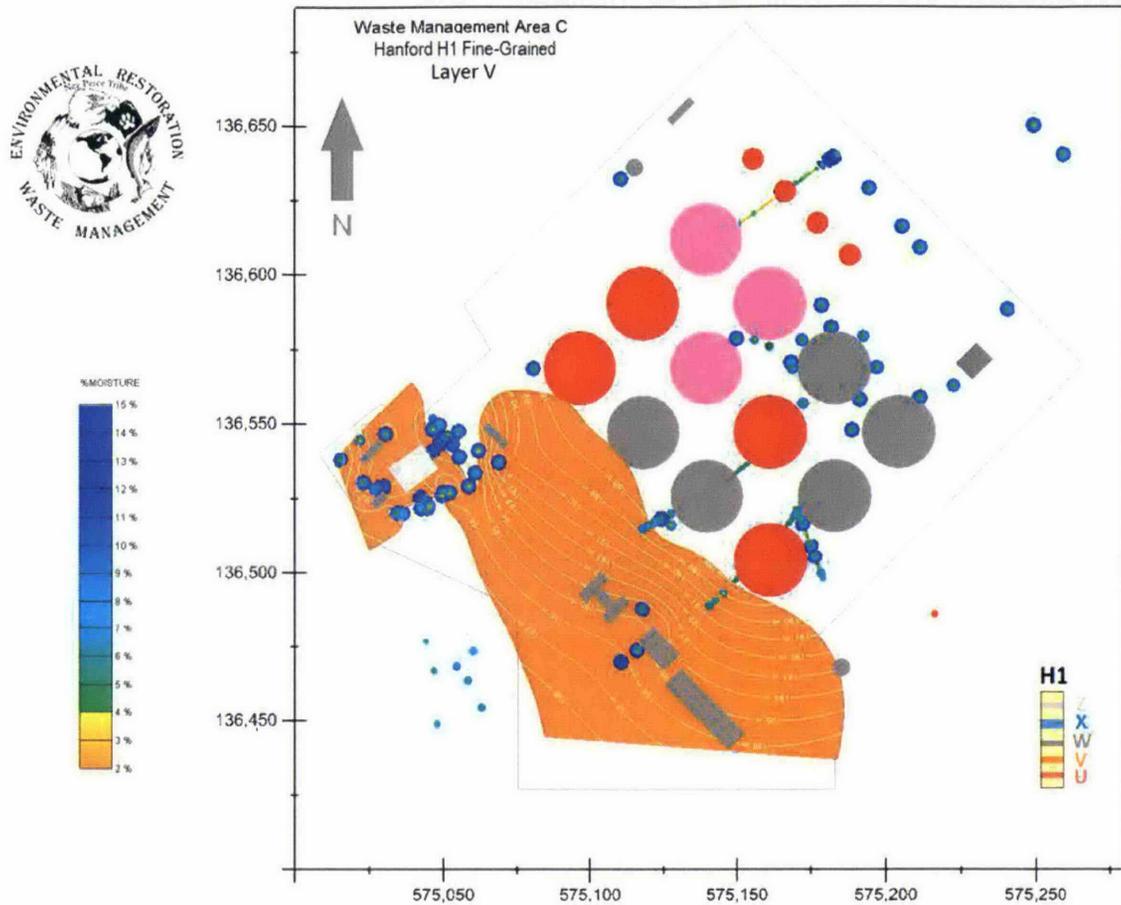


Figure 27: Top view of Hanford H1 fine-grained layer W, which shows northeast dip and directs infiltration into the tank farm backfill. Isolines are in meters above sea level with one meter contour interval.

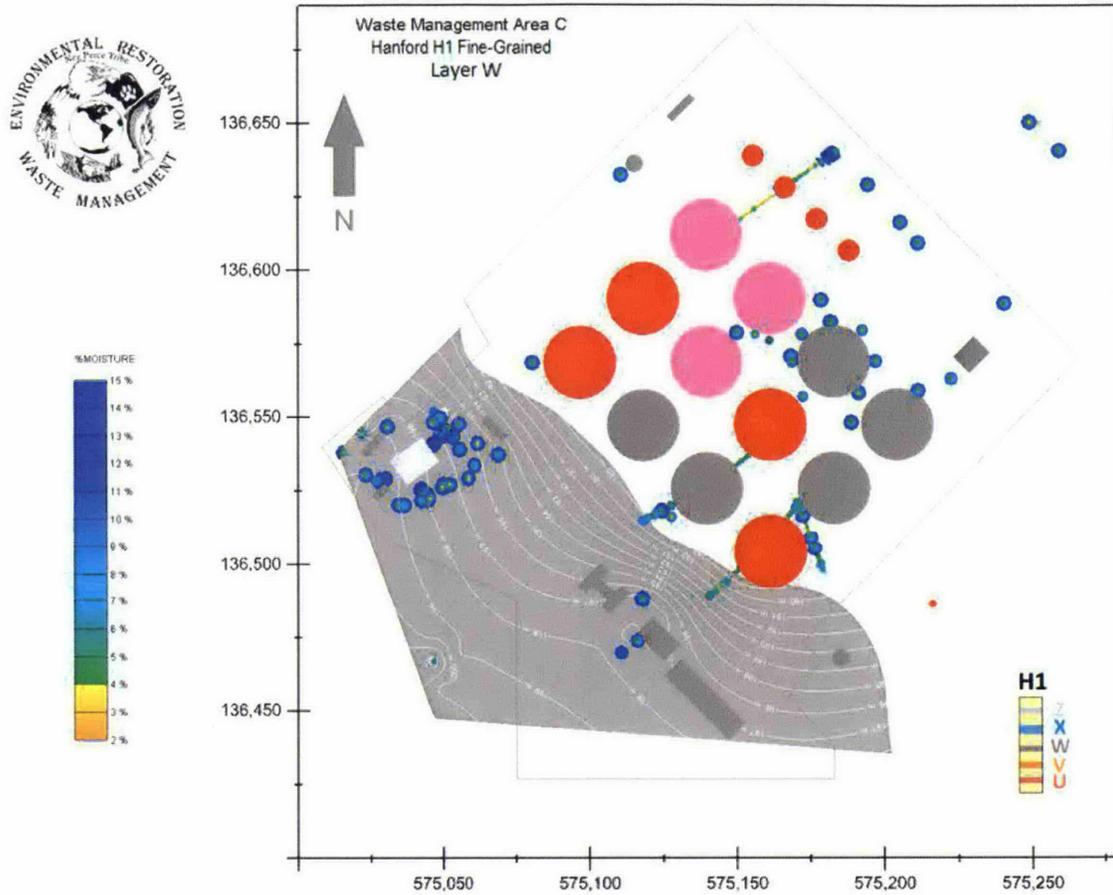


Figure 28: Top view of Hanford H1 fine-grained layer X, which shows northeast dip and directs infiltration into the tank farm backfill. Isolines are in meters above sea level with one meter contour interval.

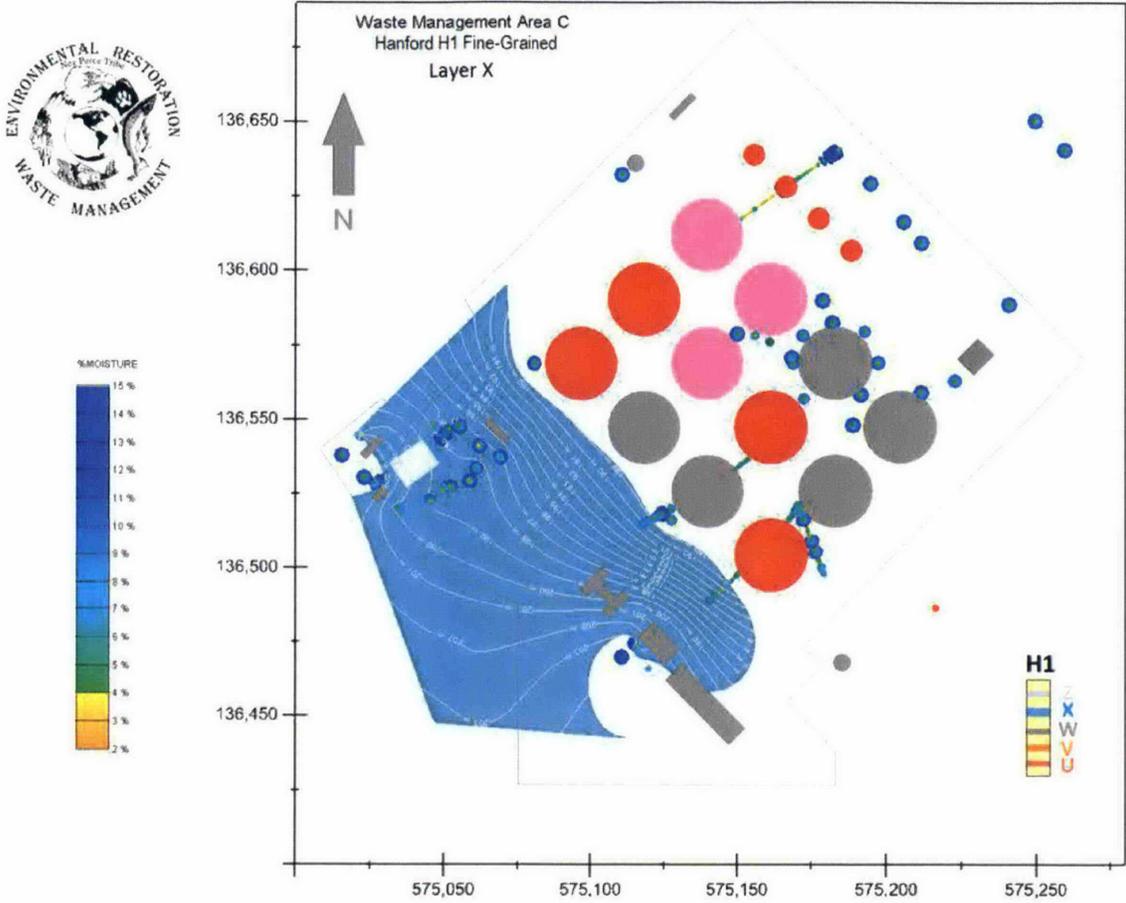


Figure 29: Top view of Hanford H1 fine-grained layer Z, which shows northeast dip and directs infiltration into the tank farm backfill. Isolines are in meters above sea level with one meter contour interval.

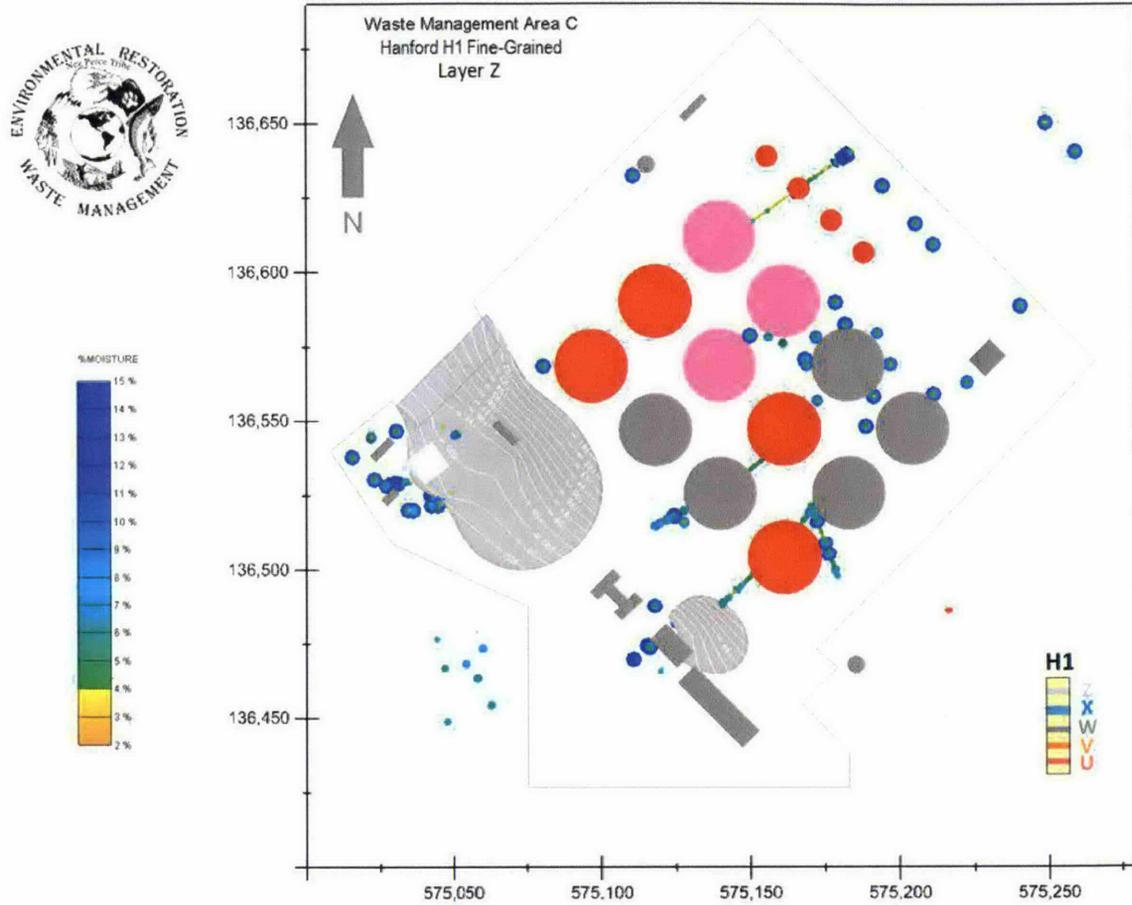


Figure 30: Lateral flow of tank waste in the vadose zone at WMA C is caused by strong anisotropy throughout the formation due to pervasive multi-scale layering of the sediments, particularly in the Hanford H2. Layering in the Hanford H1 will direct infiltration underneath the proposed surface barrier.

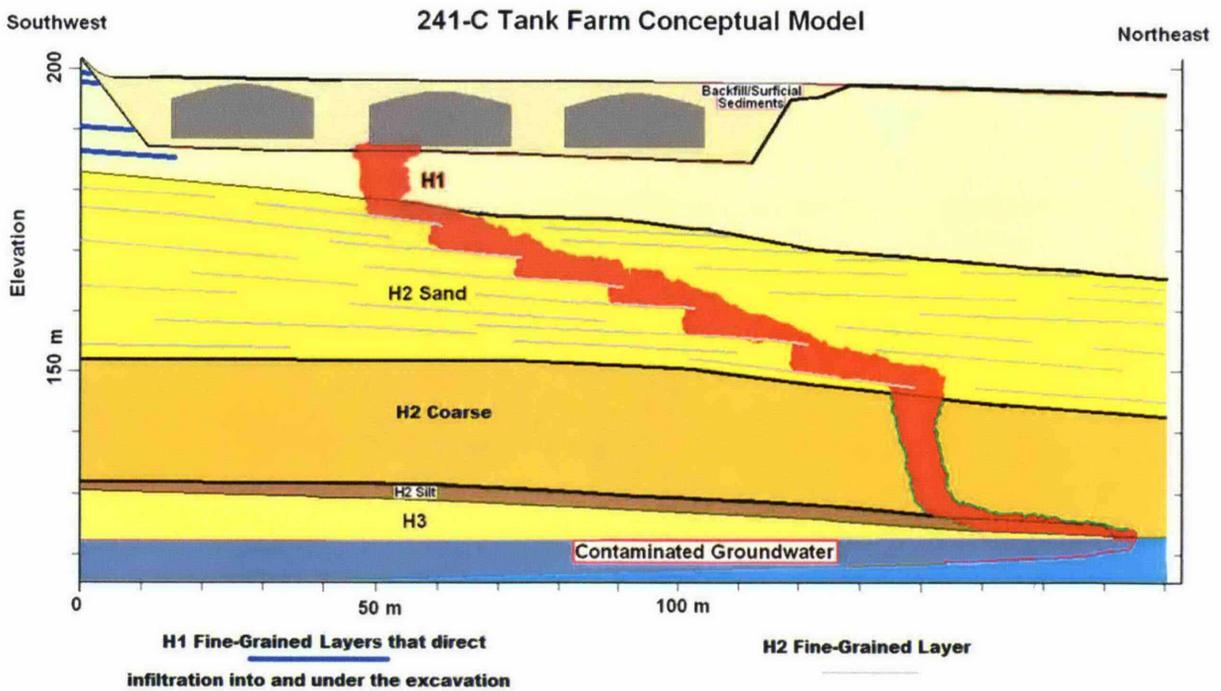


Figure 31: Neutron-moisture logs at WMA C viewed from the southeast and looking to the northwest.

Waste Management Area C

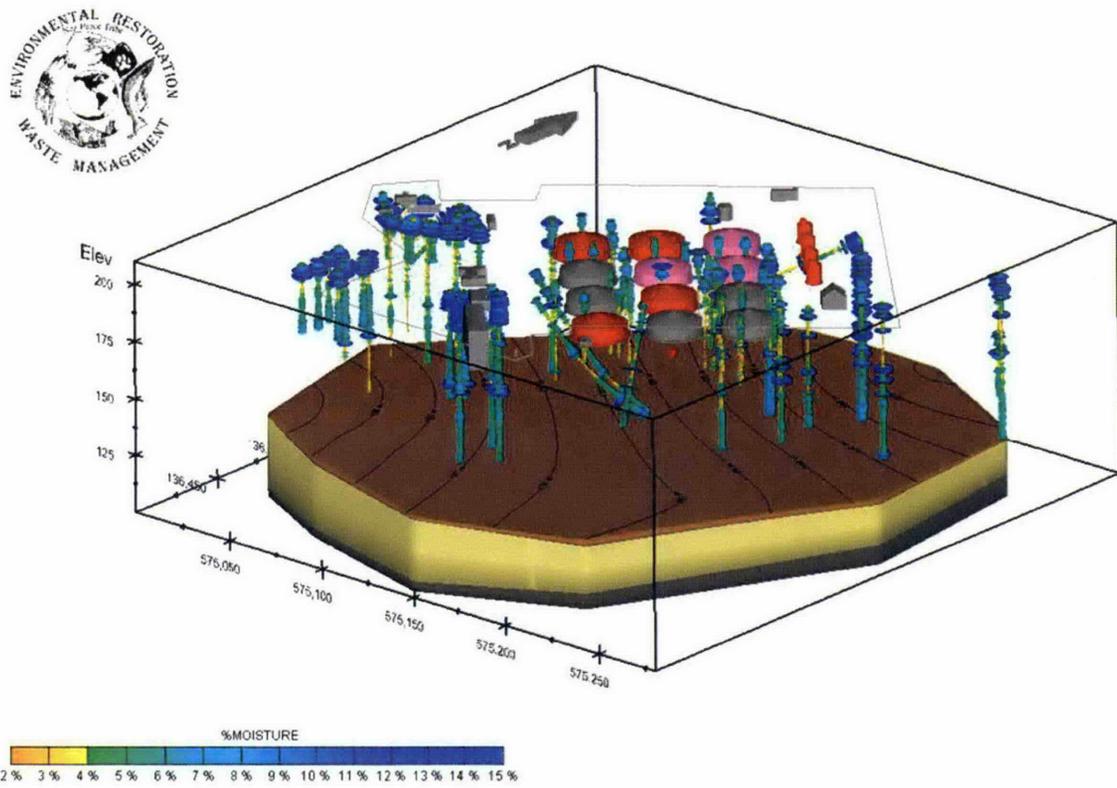


Figure 32: Neutron-moisture logs and cobalt-60 contamination at WMA C viewed from the northeast and looking to the southwest.

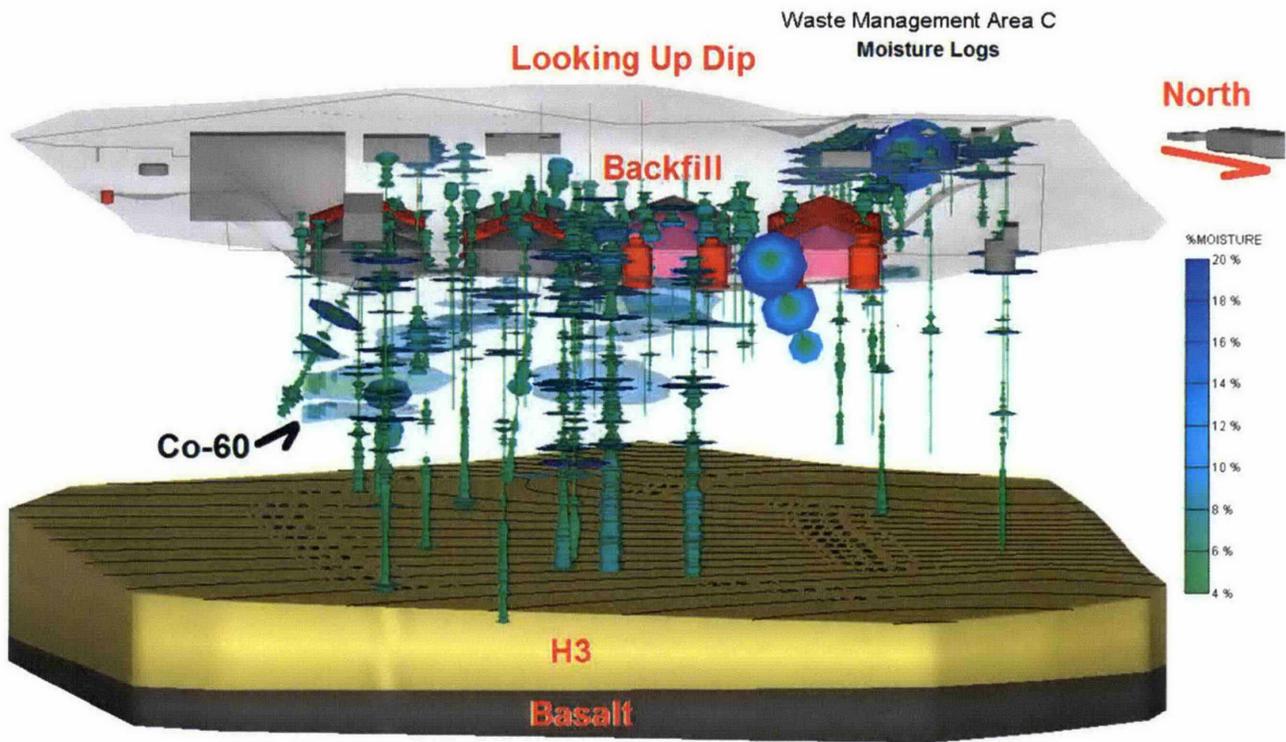


Figure 33: Neutron-moisture and cobalt-60 (tank C-108) data at WMA C viewed from the south and looking to the north that illustrates infiltration being directed into the backfill from the southwest by the Hanford H1 fine-grained layers and the moisture anomaly in the Lower Hanford H2, which is located northeast of tank C-109.

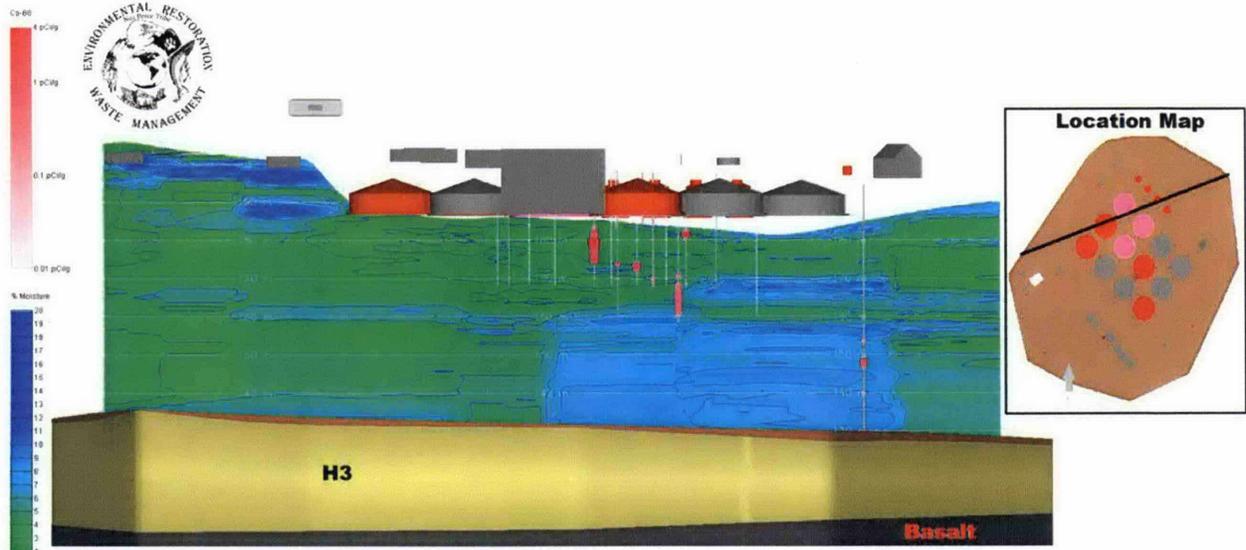


Figure 34: Neutron-moisture and cobalt-60 (tank C-108) data at WMA C viewed from the east and looking to the west that illustrates infiltration being directed into the backfill from the southwest by the Hanford H1 fine-grained layers and the moisture anomaly in the Lower Hanford H2, which is located northeast of tank C-109.

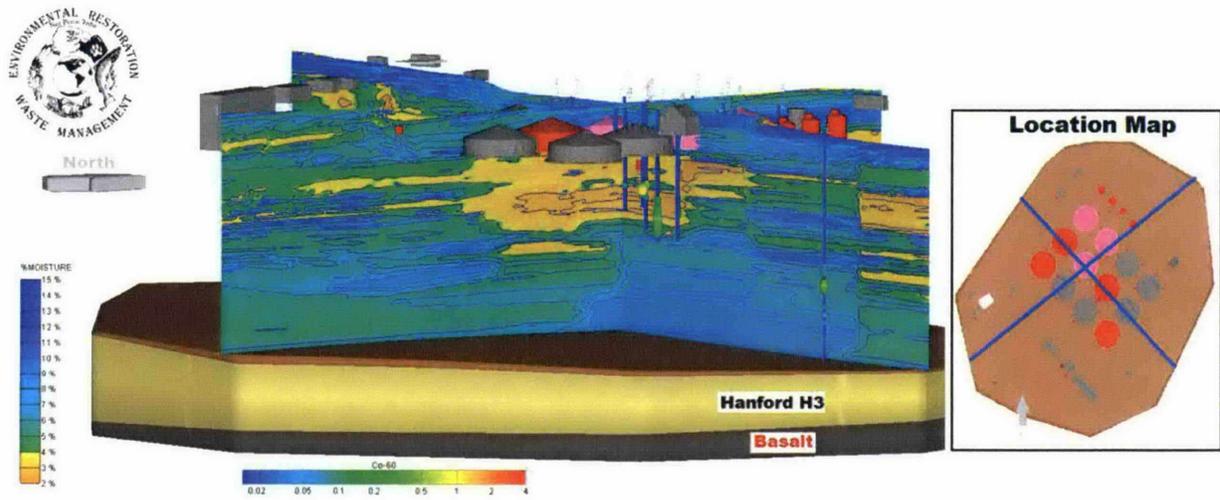


Table 1: Listing of elevations for the Hanford fine-grained layers that were correlated throughout WMA C. The elevation was picked at the maximum moisture content in the layer.

Well	H1	Silt Z	Silt X	Silt W	Silt V	Silt U	H2	Silt T	Silt R	Silt P	silt N	Silt L	Silt J	Silt H	Silt E	Silt D	Silt B
E27-24	198.571	absent	absent	absent	absent	absent	173.581	absent	absent	absent	172.5	absent	absent	absent	absent	absent	156.2
30-03-01	184.588	absent	absent	absent	absent	absent	172.398	absent	absent	absent	170.754	168.925	167.096	absent	absent	162.524	short
30-03-03	184.492	absent	absent	absent	absent	absent	172.4	absent	absent	absent	short	short	short	short	short	short	short
30-03-05	185.025	absent	absent	absent	absent	absent	172.5	absent	absent	absent	172.3	169.661	short	short	short	short	short
30-03-07	185.713	absent	absent	absent	absent	absent	174.743	absent	absent	absent	173.702	170.959	short	short	short	short	short
30-03-09	185.403	absent	absent	absent	absent	absent	175.043	absent	absent	absent	171.263	169.13	short	short	short	short	short
30-04-01	186.7	absent	absent	absent	absent	absent	180	absent	short	short	short	short	short	short	short	short	short
30-04-02	186.344	absent	absent	absent	absent	absent	178.724	absent	178.605	175.557	absent	absent	absent	absent	absent	absent	short
30-04-03	186.789	absent	absent	absent	absent	absent	179.3	absent	short	short	short	short	short	short	short	short	short
30-04-04	186.771	absent	absent	absent	absent	absent	179.301	absent	178.267	175.524	absent	short	short	short	short	short	short
30-04-05	186.765	absent	absent	absent	absent	absent	180.365	absent	176.8	short	short	short	short	short	short	short	short
30-04-08	187.059	absent	absent	absent	absent	absent	182.799	absent	absent	absent	absent	absent	absent	absent	absent	absent	158.792
30-04-12	186.496	absent	absent	absent	absent	absent	180.406	absent	177	absent	171.746	absent	absent	absent	absent	absent	short
30-05-02	186.392	absent	absent	absent	absent	absent	175.722	absent	absent	absent	172.521	absent	absent	absent	absent	absent	short
30-05-06	186.382	absent	absent	absent	absent	absent	176.2	absent	short	short	short	short	short	short	short	short	short
30-05-10	185.898	absent	absent	absent	absent	absent	176.138	short	short	short	short	short	short	short	short	short	short
30-06-02	185.454	absent	absent	absent	absent	183.014	173.874	absent	absent	absent	absent	169.602	absent	absent	absent	absent	short
30-06-03	185.459	absent	absent	absent	absent	183.552	173.269	absent	absent	absent	absent	169.684	short	short	short	short	short
30-06-04	184.784	absent	absent	absent	absent	184.559	173.514	absent	absent	absent	173.4	170.691	absent	absent	absent	164.671	short
30-06-09	186.089	absent	absent	absent	absent	absent	175.419	absent	absent	absent	172.223	absent	short	short	short	short	short
30-06-10	185.308	absent	absent	absent	absent	184.702	175.248	absent	absent	absent	absent	170.376	absent	absent	absent	absent	short
30-06-12	184.748	absent	absent	absent	absent	183.408	174.421	absent	absent	absent	173.654	170.454	absent	short	short	short	short
30-07-01	186.59	absent	absent	absent	absent	absent	179.88	absent	178.541	short	short	short	short	short	short	short	short
30-07-02	185.963	absent	absent	absent	absent	absent	179.863	absent	177.609	short	short	short	short	short	short	short	short
30-07-10	186.771	absent	absent	absent	absent	absent	184.631	absent	absent	absent	absent	absent	short	short	short	short	short
30-07-11	186.684	absent	absent	absent	absent	absent	183.024	absent	176.196	absent	absent	absent	short	short	short	short	short
30-08-02	186.371	absent	absent	absent	absent	absent	175.091	absent	absent	absent	173.236	absent	short	short	short	short	short
30-08-03	186.374	absent	absent	absent	absent	absent	175.1	absent	absent	short	short	short	short	short	short	short	short
30-08-12	186.403	absent	absent	absent	absent	absent	176.033	absent	absent	short	short	short	short	short	short	short	short
30-09-01	183.943	absent	absent	absent	absent	183.52	174.803	absent	absent	absent	absent	171.328	absent	short	short	short	short
30-09-02	184.963	absent	absent	absent	absent	183.011	174.903	absent	absent	absent	absent	170.819	absent	short	short	short	short
30-09-06	186.378	absent	absent	absent	absent	absent	176.008	absent	absent	absent	172.812	absent	short	short	short	short	short
30-09-07	185.958	absent	absent	absent	absent	absent	176.208	absent	absent	absent	173.236	absent	absent	absent	absent	short	short
30-09-10	185.045	absent	absent	absent	absent	absent	174.985	absent	absent	absent	173.644	absent	short	short	short	short	short

30-09-11	185.208	absent	absent	absent	absent	absent	173.328	absent	absent	absent	172.288	171.678	absent	short	short	short	short	
30-10-01	186.628	absent	absent	absent	absent	absent	182.968	182.541	177.969	absent	absent	short	short	short	short	short	short	
30-10-02	186.748	absent	absent	absent	absent	absent	181.108	absent	178.244	absent	absent	short	short	short	short	short	short	
30-10-09	187.732	absent	absent	absent	absent	absent	186.202	absent	176.635	absent	absent	absent	short	short	short	short	short	
30-10-11	187.123	absent	absent	absent	absent	absent	185.443	absent	absent	absent	absent	short	short	short	short	short	short	
30-11-05	186.264	absent	absent	absent	absent	absent	177.734	absent	177.306	absent	absent	absent	short	short	short	short	short	
C4297	186.339	absent	absent	absent	absent	absent	178.6455	absent	178	175	absent	absent	absent	absent	166.3	absent	157	
C4401	202.75	absent	200.167	198.948	194.528	absent	188.428	absent	absent	short	short	short	short	short	short	short	short	
C4403	203.048	absent	absent	199.3167	196.724	absent	188.719	absent	absent	short	short	short	short	short	short	short	short	
C4405	203.257	absent	absent	199.5242	absent	absent	189.3	absent	short	short	short	short	short	short	short	short	short	
C4407	203.228	absent	absent	199.9905	196.182	absent	189.209	absent	absent	short	short	short	short	short	short	short	short	
C4409	203.036	absent	absent	199.4968	195.3058	absent	189.2	absent	short	short	short	short	short	short	short	short	short	
C4411	203.194	absent	199.8833	199.1198	absent	absent	189.175	absent	absent	short	short	short	short	short	short	short	short	
C4413	203.164	absent	199.8503	198.9389	absent	absent	188	absent	short	short	short	short	short	short	short	short	short	
C4415	203.058	absent	199.29	198.3742	absent	absent	187.209	absent	absent	short	short	short	short	short	short	short	short	
C4417	203.034	absent	198.9598	197.8915	absent	absent	187.185	absent	absent	short	short	short	short	short	short	short	short	
C4419	202.633	200.08	198.5598	197.4946	193.3782	absent	188.305	absent	absent	short	short	short	short	short	short	short	short	
C4421	202.585	200.57	198.5886	197.2916	193.2515	absent	187.956	absent	absent	short	short	short	short	short	short	short	short	
C4425	202.485	200.24	198.5617	196.5836	absent	absent	187.8	absent	short	short	short	short	short	short	short	short	short	
C4427	201.607	199.59	197.4566	195.8564	absent	absent	188	absent	short	short	short	short	short	short	short	short	short	
C4429	202.024	199.93	198.2531	196.275	absent	absent	187.695	absent	absent	short	short	short	short	short	short	short	short	
C4431	201.708	199.54	197.2528	195.2716	190.395	absent	190.129	absent	absent	short	short	short	short	short	short	short	short	
C4433	201.89	199.72	197.7402	196.521	absent	absent	190	absent	short	short	short	short	short	short	short	short	short	
C4435	201.738	199.57	197.7405	196.5214	absent	absent	189	absent	short	short	short	short	short	short	short	short	short	
C4437	201.86	199.61	196.7196	196.7196	absent	absent	189.06	absent	absent	short	short	short	short	short	short	short	short	
C4439	201.96	199.64	197.5038	196.7418	absent	absent	189	absent	short	short	short	short	short	short	short	short	short	
C4447	201.54	199.6	197.4684	196.0952	short	absent	189	absent	short	short	short	short	short	short	short	short	short	
C5943	205.4	absent	202.091	199.5	absent	absent	190.464	absent	absent	absent	short	short	short	short	short	short	short	
C5947	204.996	absent	201.8352	198.6333	absent	absent	188.846	absent	absent	absent	absent	absent	absent	absent	absent	168.763	absent	absent
C5951	205.126	absent	201.8875	198.6109	absent	absent	188.976	absent	absent	absent	short	short	short	short	short	short	short	
C5953	205.6	absent	202.5901	absent	absent	absent	186.7	absent	absent	absent	short	short	short	short	short	short	short	
C5955	205.42	absent	202.2602	199.06	absent	absent	190.181	absent	absent	absent	short	short	short	short	short	short	short	
C5957	205.659	absent	202.4205	199.6788	absent	absent	190.719	absent	absent	absent	absent	absent	absent	absent	absent	short	short	
C5959	205.848	absent	202.8381	199.7901	absent	absent	188.168	absent	absent	absent	absent	absent	absent	absent	absent	short	short	
C5961	206.745	absent	203.3541	200.6109	absent	absent	189.065	absent	absent	absent	short	short	short	short	short	short	short	
C5963	205.65	absent	202.4135	199.6703	absent	absent	189.192	absent	absent	absent	short	short	short	short	short	short	short	
C6391	203.51	absent	absent	198.1394	195.5486	absent	187.36	186.709	180.842	176.575	absent	absent	absent	absent	162.7811	absent	short	
C6393	203.72	absent	absent	197.437	195.4558	absent	187.872	185.626	180.597	absent	absent	absent	absent	absent	162.6883	absent	absent	

C6395	203.65	absent	absent	197.749	196.225	absent	189.0231	absent	180.754	178.47	absent	absent	absent	absent	162.925	absent	short
C6397	203.07	202.2	200.216	197.168	194.348	absent	185.702	183.374	180.487	177.659	absent	absent	absent	absent	161.665	absent	short
C6399	203.028	202	200.172	196.3	193.2378	absent	185.048	182.57	180.436	176.6247	absent	absent	absent	absent	161.4609	absent	absent
C6403	203.3	202.85	201.473	197.968	195.53	absent	187.5	short	short	short	short	short	short	short	short	short	short
C6405	203.11	absent	199.8364	197.398	194.6548	absent	186.353	184.973	180.863	177.513	absent	absent	absent	absent	162.273	absent	absent
C7465	183.95	absent	absent	absent	absent	absent	172.679	absent	absent	absent	171.685	168.789	167.1128	absent	absent	162.3884	156.7496
C7467	183.77	absent	absent	absent	absent	absent	174.022	absent	absent	absent	absent	169.222	167.85	166.0214	absent	absent	155.963
C7471	193.153	absent	absent	absent	absent	absent	169.113	absent	absent	absent	absent	absent	167.058	165.534	absent	161.57	155.4752
C7667	193.531	absent	absent	absent	absent	absent	178.945	absent	absent	absent	174.6	173.532	absent	absent	absent	absent	157.378
C7669	185.605	absent	absent	absent	absent	absent	174.025	absent	absent	173.944	absent	171.049	absent	absent	absent	absent	157.3328
C7671	185.869	absent	absent	absent	absent	absent	175.199	absent	absent	175.509	172.309	absent	absent	absent	absent	absent	160.269
C7675	187.541	absent	absent	absent	absent	absent	186.021	absent	absent	absent	absent	absent	absent	absent	absent	absent	160.111
C7679	189.789	absent	absent	absent	absent	absent	165.709	absent	absent	absent	absent	absent	165.935	164.259	absent	160.906	155.4196
C7681	190.276	absent	absent	absent	absent	absent	167.726	absent	absent	absent	absent	absent	absent	165.436	absent	161.016	155.378
C7940	202.045	absent	199.6784	196.478	absent	absent	191.065	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent
C7941	201.34	199.28	197.759	196.8446	absent	absent	190.06	absent	absent	absent	absent	absent	absent	absent	164.3834	absent	absent
C7942	202.039	200.36	198.534	197.467	absent	absent	188.019	absent	absent	absent	absent	absent	absent	absent	165.5	absent	absent
C7943	201.627	absent	199.8984	198.984	195.4788	absent	187.635	absent	absent	absent	absent	absent	absent	absent	167.742	absent	158.144
C8099	187.059	absent	absent	absent	absent	absent	182.5	absent	182.436	179.707	absent	absent	absent	absent	absent	absent	absent
C8101	186.8	absent	absent	absent	absent	absent	180	absent	177.69	176.708	absent	absent	absent	absent	absent	absent	157.248
C8103	186.7	absent	absent	absent	absent	absent	179	absent	absent	175.683	173.38	absent	absent	absent	absent	absent	157.322
C8105	182	absent	absent	absent	absent	absent	174	absent	absent	absent	absent	172.072	short	short	short	short	short
C8763	185.245	absent	absent	absent	absent	absent	183.191	174.585	absent	absent	absent	absent	170.545	169.17	absent	absent	161
C8765	180.917	absent	absent	absent	absent	absent	169.647	absent	absent	absent	absent	absent	169.567	167.887	166.363	absent	absent
C8766	181.632	absent	absent	absent	absent	absent	168.532	absent	absent	absent	absent	absent	absent	167.312	165.482	absent	absent
C8767	182.068	absent	absent	absent	absent	absent	168.498	absent	absent	absent	absent	absent	absent	166.976	165.148	absent	162.252

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Re: Draft WIR Determination for the Closure of Waste Management Area C

Dear Mr. Bovier,

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I urge Energy to abandon its short-sighted, dangerous proposal because:

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- 2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
- 3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia. Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities. To date, Energy has held one public meeting in Richland, WA. People live downstream from Hanford and face serious threats from Energy's proposal. Energy must schedule hearings throughout the Pacific Northwest. Most of all, Energy must abandon its plans to re-label dangerous pollution and invest in cleanup solutions.

Sincerely,

(b)(6)
Name: _____
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Name: _____
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SEA WA 98121

646- (b)(6)

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(b)(6)
Name: [Redacted]
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Name: (b)(6)
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Sincerely,

(b)(6)
Name: _____
Email: (b)(6) @GMAIL.COM
Address: (b)(6) CAMANO ISLAND, WA 98282
Phone: 206 (b)(6)

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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(b)(6)

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(b)(6)

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Phone:

@comcast.net

Seattle WA 98119

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Name:

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Email:

@gmail.com

Address:

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Seattle 98116

Phone:

206 (b)(6)

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206

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@gmail.com
Seattle 98133

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Sincerely,

Name: (b)(6)
Email: (b)(6)@yahoo.com
Address: (b)(6) Vancouver, WA 98663
Phone: 360 (b)(6)

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Currently, we are experiencing unprecedented seismic activity in the SW Washington and S.W. Idaho areas. Also Mt. Rainier and Mt. St. Helens is rumbling.

Sincerely,

Name:

Email:

Address:

Phone:

(b)(6)

(b)(6)

(b)(6)

500 (b)(6)

Re Labeling the waste to allow the grouting of the 2nd tunnel to be slated into 'closure' status is EXTREMELY IRRESPONSIBLE.

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Sincerely,

(b)(6)
Name: _____
Email: (b)(6) @hotmail.com
Address: (b)(6) PORTLAND OR 97212
Phone: 503 (b)(6)

I would like to share these additional concerns as well:

Everyone in ^{the} Region is effected by
your actions. Water is THE most
important resource we have & must
have and protect. You have a ~~an~~ moral
obligation to protect us and keep
our needs primary - more important
than saving money - more important
than being able to claim accomplish-
ments based on renaming a poor actions
Speaking of money, how much will
we spend treating the cancers and
other health problems caused by
your inaction or bad actions?
How many lives will be shortened
or adversely effected? - this is not
an easily quantified # but your
obligation to put at the highest
priority

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Sincerely,

Name: (b)(6)
Email: (b)(6) @advisorycouncil.org
Address: (b)(6) Vancouver, WA 98684
Phone: 512-(b)(6)

I would like to share these additional concerns as well:

Leaving high level waste in old tanks so that
grout might be injected is totally inadequate.
The original plan to vitrify the HLW must be
followed. We have volcanic, earth quake, and
flood plain problems.

This is criminal. The US government created this
mess. Vitrification is one solution. The US government
is responsible from "cradle to grave" just like
commercial enterprises.

(b)(6)

We must protect our future generations.

Mr. Jan Bovier
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Sincerely,

(b)(6)
Name: _____
Email: (b)(6) *ial@msil.com*
Address: (b)(6) *Vancouver, WA 98661*
Phone: 970- (b)(6)

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Sincerely,

Name: (b)(6)
Email: (b)(6) @ YAHOO.COM
Address: (b)(6) PDX . OR . 97206
Phone: 771 (b)(6)

I would like to share these additional concerns as well:

WHAT ARE WE GOING TO DO WITH
THIS WASTE IN 7 GENERATIONS
FROM NOW? THE POTENTIAL
TO HURT INNOCENT PEOPLE
IS LURKING BENEATH THE
SURFACE OF HANFORD. THE
GOVERNMENT NEEDS TO TAKE RESPONSIBILITY
NOT JUST CALL IT SOMETHING,
IT ISN'T. A DOG IS STILL A DOG.

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Sincerely,

Name: (b)(6)
Email: (b)(6) @pdx.edu
Address: (b)(6) Cornelius OR 97113
Phone: 503 (b)(6)

I would like to share these additional concerns as well:

There needs to be public meetings
in many cities. The public
throughout the northwest needs
to know abt. the danger Hanford
poses to all our health if it's
not cleaned properly. Vitrification
is the only ~~safe~~ way to clean.
Using cement would be idiotic;
it wouldn't help our current or
future health.

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Sincerely,

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Name: _____
Email: (b)(6) *@ richland-wa.com*
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Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Re: Draft WIR Determination for the Closure of Waste Management Area C

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(b)(6)
Name: _____
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Phone: 503/ (b)(6) _____

I would like to share these additional concerns as well:

We must move faster, as the radioactive and toxic filth continues to approach the Columbia River. We have a duty to our children's children.

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Sincerely,

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Name: _____
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Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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Name:

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360

(b)(6)

407
Hanford WA 98626

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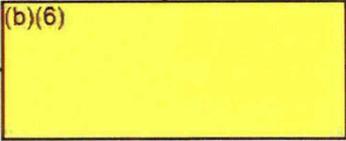
Sincerely,

Name: (b)(6)
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Phone: 360-(b)(6)

I would like to share these additional concerns as well:

SINCE I WAS 18 (50 YEARS AGO) I HAVE BEEN
CONCERNED ABOUT NUCLEAR WASTE FROM HANFORD
AND ALL NUCLEAR FACILITIES. IT BEGAN WITH 1
ALASKA SENATOR, MIKE GRAVEL, WHO UPON MY
REQUEST, SENT ME AN INFRARED PHOTO OF
THE RADIATION FLOWING ALONG THE BANKS
OF THE COLUMBIA. PLEASE, COULD YOU
SHOW THIS AGAIN AS IT WAS A LIFE
CHALLENGING QUEST FOR ME TO CHALLENGE!
THANK YOU FOR ALL YOU DO!

(b)(6)



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Name: _____
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DEPARTMENT OF ECOLOGY

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711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

November 6, 2018

Letter 18-NWP-181

Jan Bovier, Tank Closure Program Manager
Office of River Protection
United States Department of Energy
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Re: Ecology Comments on the United States Department of Energy *Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site*, DOE/ORP-2018-01, Draft D (Draft WIR Evaluation) submitted for the June 4 through November 7, 2018, Comment Period

Dear Mr. Bovier:

The Department of Ecology (Ecology) reviewed the Draft WIR Evaluation (DOE/ORP-2018-10, Draft D). This letter summarizes Ecology's position on the Draft WIR Evaluation and provides detailed comments on specific aspects of the Draft WIR Evaluation that concern Ecology.¹

Ecology believes that the United States Department of Energy (USDOE) is unable to show compliance with the three criteria of the waste incidental to reprocessing evaluation process set forth in Chapter II of the Radioactive Waste Management Manual, DOE M 435.1-1.

Specifically, Ecology observes:

1. The Draft WIR Evaluation fails to demonstrate that the residual waste in the C Farm tanks has been or will be processed "to remove key radionuclides to the maximum extent that is technically and economically practical." The DOE Order 435.1 Performance Assessment for Waste Management Area C (PA for WMA C) did not evaluate a number of key radionuclides. Radionuclides excluded from evaluation include several long-lived and transuranic elements that decay into long-lived fission products.

Ecology has identified concerns with the methodology USDOE used to identify those key radionuclides. Our concerns include the use of unsubstantiated assumptions, the lack of a technical basis for the screening approach used, and the limitation of the evaluation timeframe to 1,000 years.

¹ Ecology provided comments to the United States Department of Energy on the supporting DOE Order 435.1 Performance Assessment for Waste Management Area C through a separate submittal on November 6, 2018.



Since the conclusions in the Draft WIR Evaluation are explicitly based on the key radionuclides identified in the PA for WMA C, this brings into question the validity of USDOE's conclusion that this WIR criterion has been satisfied.² The comments we submitted on the PA for WMA C provide more details regarding these concerns.

2. The Draft WIR Evaluation fails to demonstrate that the residual waste will be managed "to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, *Performance Objectives*."

As USDOE states, the applicable performance objectives are those associated with land disposal facilities. "Land disposal facility" is defined as "the land, building, and structures, and equipment which are intended to be used for the disposal of radioactive wastes." 10 CFR § 61.2 (emphasis added).

Ecology also notes that the performance objectives set forth in 10 CFR Part 61 require protection of the general population from certain concentrations of radioactivity "which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals." 10 CFR § 61.41 (emphasis added). By excluding analysis of the contaminated soils surrounding the tanks, the Draft WIR Evaluation fails to comply with land disposal facility performance objectives. Moreover, exclusion of soils makes it impossible to consider cumulative impacts in determining whether comparable performance objectives could be met.

In addition, the performance objective set forth in 10 CFR § 61.42 requires the inadvertent intrusion analysis to be performed for land disposal facilities. However, the PA for WMA C and Draft WIR Evaluation did not set forth an adequate analysis of inadvertent intruder scenarios or their implications.

In particular, USDOE has not demonstrated that comparable performance objectives will be met by placing grout on top of the residual waste in the tanks without performing any mixing of the waste and grout. USDOE assumed that the worst-case scenario would be "breaching a buried waste transfer pipeline, rather than a tank" despite the fact that "little or no residual waste is assumed to remain in the pipelines other than waste adhered onto surfaces."

In contrast, however, the PA for WMA C and the Draft WIR Evaluation state that the highest calculated "potential doses that might arise [are] from intrusion into a tank." Yet both documents fail to include any analysis of whether performance standards would be met under a scenario involving exposure to residual tank waste, such as could happen with an acute well driller. Because grout is proposed to be placed on top of the waste instead of being mixed in with it, this lack of analysis is of particular concern, as any breach of the bottom of a tank will result in untreated waste being released directly into the environment.

² In addition, in the middle of the public comment period on this Draft WIR Evaluation, USDOE published in the Federal Register a new "interpretation" of the Nuclear Waste Policy Act's definition of High Level Waste (HLW), which explicitly excludes the requirement to remove key radionuclides to the maximum extent practical. Ecology is concerned that USDOE could attempt to use this new "interpretation" to render the Draft WIR Evaluation obsolete and to move forward in reclassifying the residual waste in WMA C without first proving that it has sufficiently reduced the risk associated with disposing of the waste in-place (by removing those key radionuclides).

3. The Draft WIR Evaluation fails to demonstrate that the waste will be “incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, *Waste Classification*,” as required by DOE Order 435.1. Ecology does not agree that the “incorporated in a solid physical form” requirement of this criterion can be met by pouring grout on top of residual waste without performing any mixing of the waste and grout.

If USDOE cannot demonstrate the waste will be incorporated into a solid form, then the only way to satisfy the plain language of this DOE Order 435.1 criterion is for USDOE to rely on the “alternative requirements” portion.

Although Ecology recognizes that USDOE states in several footnotes throughout the Draft WIR Evaluation that it is not relying on the “alternative requirements” language, we also note that the “alternative requirements” language was found by a federal district court to directly conflict with the Nuclear Waste Policy Act’s definition of High Level Waste. Ecology is, therefore, concerned that it appears the only way USDOE can meet the plain language of this criterion is by relying on language a court found to be invalid.

In addition to the Draft WIR Evaluation’s failure to meet any of the three criteria of the WIR evaluation process under DOE Order 435.1, Ecology is concerned that USDOE submitted the Draft WIR Evaluation to the Nuclear Regulatory Commission without any evaluation of the contaminated soil surrounding the tanks, in violation of the Hanford Federal Facility Agreement and Consent Order (HFFACO).

Appendix H of the HFFACO sets forth a process for establishing the “criteria for determining the allowable residual waste following retrieval operations on the Hanford single shell tanks.” Importantly, Step 2(b) of Appendix H requires USDOE to “Establish an interface with the Nuclear Regulatory Commission (NRC), and reach formal agreement on the retrieval and closure actions for single shell tanks with respect to allowable waste residuals in the tank and soil column.” HFFACO at H-2 (emphasis added).

Ecology also notes that the public has not had a meaningful opportunity to review and comment on the PA for WMA C, upon which the analysis in the Draft WIR Evaluation is based. Ecology notes that USDOE’s Office of River Protection made a commitment during a series of stakeholder meetings held in 2009-2010 to publish the PA for public review and comment.

Although the PA was made available for public review concurrently with the Draft WIR Evaluation, there was no opportunity for the public to provide feedback as to any perceived deficiencies prior to the PA being used to develop key assumptions for the Draft WIR Evaluation. Ecology is concerned about the precedent this evaluation sets for future tank farms at Hanford.

Jan Bovier
November 6, 2018
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Ecology is also concerned that USDOE appears to have made a number of misstatements to the public regarding the scope of the Draft WIR Evaluation and Ecology's role in closure of WMA C.

First, USDOE represented that the contaminated soils throughout WMA C will be addressed solely under CERCLA. Ecology disagrees with this representation, and believes it is contrary to the process set forth in the HFFACO. Final closure of the tank system must be permitted under RCRA and therefore must meet the closure performance standards set forth in WAC 173-303-610 and the corrective action requirements set forth in WAC 173-303-646.

Second, Ecology encourages USDOE to clarify its interpretation of the WIR Determination that was made in 2008 by citation for "tank farm soil" at Hanford. Given USDOE's recent representations that the 2008 WIR Determination does not apply to the contaminated soils in the C Tank Farm, we think it would be helpful to the public to clarify what the 2008 WIR Determination does and does not cover.

Ecology notes that the Citation Waste List set forth in Attachment 10.1 to the 2008 WIR Determination (ESQ-EM-IP-M435.1-1-01, R0 [2008]) states that "soil or debris indirectly or directly contaminated by tank waste due to spills, leakage, and/or subsequent radionuclide migration" is categorically "non-HLW." The only tank farm soil expressly excluded from this 2008 WIR Determination is soil that exceeds Class C concentrations and has been "excavated ... on a bulk basis." Contrary to this plain language, USDOE represented to Ecology, the Hanford Advisory Board, and the public that the 2008 WIR Determination only applies to soils contaminated by spills that occurred during retrievals.

Ecology also notes that DOE Order 435.1 limits use of the citation method to fuel, machinery, equipment, and other solid wastes used in fuel reprocessing, and does not include soils contaminated by liquid high-level waste. For these and other reasons, Ecology encourages USDOE to remove tank farm soils from the 2008 Citation Waste List and to include the WMA C soils in a revised version of the current WIR Evaluation.

Ecology staff are available to discuss these concerns further and answer any questions you might have regarding our comments.

Sincerely,



Alexandra K. Smith
Program Manager
Nuclear Waste Program

cc: See page 5

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cc electronic:

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Hanford Facility Operating Record
MSA Correspondence Control
USDOE-ORP Correspondence Control
WRPS Correspondence Control

cc: Matt Johnson, CTUIR
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Administrative Record
NWP Central File

Brian Vance, Manager
Office of River Protection
Department of Energy
Richland, Washington 99352

July 12, 2018

Dear Mr. Vance,

The Department of Energy (Energy) recently released for public comment its "Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site" (Draft WIR Evaluation). The proposed reclassification of high-level nuclear waste in Hanford's C Tank Farm is one of the most significant changes to Energy's cleanup approach in recent years and demands meaningful deliberation.

We ask that you consider withdrawing the Draft WIR Evaluation and working with the State of Washington and the undersigned on a new path forward for the following reasons:

- A history of case law strongly suggests that Energy's WIR approach contradicts the Nuclear Waste Policy Act as it applies to Washington.
- Energy is likely spending considerable resources on a WIR evaluation that could generate litigation and distract from other more important cleanup work.
- Information supporting the Draft WIR Evaluation is incomplete and inadequate. Energy's Performance Assessment and review of potential soil and groundwater impacts do not present information necessary to support the Draft WIR Evaluation.
- Energy has been unable to provide information regarding the potential presence of transuranic waste (TRU) in C Farm tanks. The presence of TRU waste in the C Farm should render at least some of the tank waste facially unsuitable for shallow disposal in grouted tanks at Hanford.
- Pouring cement onto approximately 70,000 gallons of tank waste containing 1.2 million curies of long-lived radioactive products forecloses future remediation possibilities, both for the in-tank waste and for wastes that have leaked out of the tanks and into the soil, and thereby consigns an extraordinary amount of radioactivity next to the Columbia River in perpetuity.

If you decide to proceed with the public process for the Draft WIR Evaluation, we have the following requests:

- Energy should schedule a set of public meetings around the region, specifically including Seattle, Portland, the Tri-Cities, and Spokane. The meetings should occur in the evenings, be widely publicized, and accept public comments. Good facilitation is a necessary requirement for successful meetings, as well as the use of plain language and plenty of opportunity for questions and answers. Please consider working with the Hanford Advisory Board's Public Involvement Committee as a resource for the logistics related to these regional meetings.

- Energy should make public all comments received by agencies and members of the public as they are received to better facilitate increased public knowledge of the Draft WIR Evaluation.
- Energy should extend the deadline for comments to incorporate the anticipated review by the Nuclear Regulatory Commission, in order for the public to have the best information available on which to base their comments.

Some members of our groups participated in the single, all-day meeting in Richland, Washington for the Draft WIR Evaluation. The meeting reinforced our deep-seated concern that Energy is rushing towards making a decision that will fundamentally alter the framework for Hanford cleanup. Hanford's tanks hold some of the nation's most toxic, radioactive waste. Pollution from Hanford's tanks has already entered Hanford's soils, groundwater, and some has reached the Columbia River. Energy must give the public every opportunity to understand the gravity and ramifications of reclassifying high-level waste.

Foreclosing future remediation efforts to remove more waste from the C Farm tanks by grouting these tanks, and future efforts to remove high-level waste that has contaminated the soils below the C Farm tanks, is unwise and unnecessary.

We look forward to your reply.

Respectfully,

Dan Serres, Columbia Riverkeeper

Tom Carpenter, Hanford Challenge

Geoff Fettus, Natural Resources Defense Council

Laura Skelton, Washington Physicians for Social Responsibility

Gerry Pollet, Heart of America Northwest

cc: Washington State Congressional Delegation
Oregon State Congressional Delegation
Governor Jay Inslee
Governor Kate Brown

ANCIENT LAKEBEDS UNDER HANFORD

BY (b)(6) (November 7, 2018)

FORWARD: This paper was prepared to support Comment #3 by the author submitted as a Public Comment on the C-Farm PA and WIR determination. This paper provides evidence of numerous ancient lakebeds under the Hanford 200-Areas. These ancient lakebeds have a major impact on how radionuclides travel through the vadose zone to the groundwater, yet they are completely ignored in the C-Farm performance assessment upon which the Department of Energy at Hanford is attempting to (1) justify a Waste Incidental to Reprocessing (WIR) decision and (2) justify closure of the first tank farm, i.e. C-Farm, at Hanford.

The purpose of this paper is (1) to present over-whelming evidence that the ancient lakebeds exist beneath the 200 areas and especially C-farm, (2) to present over-whelming evidence that ancient lakebeds are responsible for lateral flow and (3) to alert decision makers of the dangers which exist by ignoring unsuspected lateral transport of highly contaminated liquids in the soil beneath the 200 Areas.

SUMMARY:

There are a number of ancient lakebeds under the 200 Areas of Hanford. A minimum of 15 upper lakebeds were mapped under the C-Farm. Numerous documents are provided which explain how radioactivity discharged to the ground has traveled laterally along these ancient lakebeds. There is at least one case where contamination was accidentally discovered traveling underground outside the fence of the 200 East Area into non-contaminated areas. This Movement of contamination laterally from discharge sites has both benefits and dangers.

The benefit is that radionuclides are held up on ancient lakebeds and do not typically flow directly straight down into the groundwater 250 to 300 feet below the surface.

The first danger is to workers who perform excavations in or near the 200 Area on land which is free from surface contamination. Contamination which has traveled laterally along ancient lakebeds would be unsuspected; therefore, the workers would not be protected from

contamination. There is one case where unsuspected lateral flow resulted in contaminating excavation equipment and contaminating the entire backfill of one tank farm before it received any radioactive waste in the tanks. As uncontaminated land outside of the 200 Areas is transferred to private operators, they would face the same danger.

A second danger is that lateral transport on successive lakebeds creates a long flowpath which will contain a significantly larger radionuclide inventory than modeling based on a monitoring well with only a vertical flowpath straight to groundwater. Since this radionuclide inventory is typically outside the footprint of a monitoring well, the total inventory of radionuclides discharged or leaked to the soil can be under-reported by several orders of magnitude.

A third danger is how monitoring wells may have unknowingly monitored discharges from neighboring discharge points, thanks to lateral flow along ancient lakebeds.

- A. **TRADITIONAL INTERPRETATION:** For over 70 years the traditional interpretation of finding contamination located at 20, 60 and 120 feet depths in a monitoring well has been that those layers contained high carbonate concentrations (i.e. they are called caliche layers). The traditional interpretation was that contaminants traveled vertically down to those carbonate-rich ancient lakebeds at 20, 60 and 120 feet depths and concentrated there due to the reaction with carbonate. It was easy to justify the fact that there may have been little contamination measured between these depths.
- B. **ALTERNATIVE INTERPRETATION:** The existence of multiple ancient lakebeds provides an alternative interpretation of the data. A liquid discharge can encounter an ancient lake bed at 20 feet and travel laterally perhaps 500 to 1,000 feet or more outside the footprint of the monitoring well and the original discharge site. This wandering liquid discharge typically will find a vertical path, e.g. clastic dikes, to travel down to the next ancient lakebed or perhaps travel down to several lakebeds below and travel back into the footprint of the original monitoring well at 60 feet below surface. Or if the ancient lake beds are sloped, another up-slope discharge may enter the monitoring well at 60 feet, travelling along a deeper ancient lakebed.

That raises the question of where did the contamination at 60 feet come from? And which discharge point is the monitoring well actually monitoring at 60 feet? For over 70 years of operations at Hanford, these questions were never asked because the flow of liquid was always assumed to be vertically straight down into the groundwater.

The same questions apply to the contamination detected at 120 feet in the original monitoring well. Did this contamination arrive via a zig-zag flowpath from the original discharge point, or did it come from another near-by liquid discharge point? In some cases in the 200-Areas, the contamination came from another liquid discharge point a distance away.

If the original liquid discharge immediately moved laterally away from the discharge site, such lateral flow creates the possibility that the monitoring well never yielded data pertinent to the radioactivity discharged to the soil at that point. Because of these uncertainties, the amount of radionuclides in the soil may be under-reported by orders of magnitude.

C. PREPARATION OF FAULTY PERFORMANCE ASSESSMENTS.

The dynamics of lateral flowpaths along ancient lakebeds in the vadose zone under the 200 Areas are complex. Without incorporating lateral flow dynamics, the performance assessments which model only vertical flowpaths to groundwater (e.g. the C-Farm PA) are suspect, and probably worthless.

Any document which is based on the results of such faulty performance assessments will mislead decision-makers and the public. Examples of recent documents based on the faulty C-Farm PA would be the C-Farm WIR Determination and the C-Farm Closure Plans.

Until the dynamics of lateral flow on ancient lakebeds in the vadose zone are incorporated into the modeling of flowpaths through the vadose zone, DOE is merely fooling itself and the public by issuing erroneous performance assessments. If the flow model is erroneous, the inventory

which enters the groundwater will be erroneous and the resultant dose to the public will be erroneous.

ACKNOWLEDGEMENTS: This paper would not have been possible without (1) many conversations about Hanford geology over the past 10 years with Dirk Dunning (Oregon Dept. of Energy, retired) and Zelma Jackson (Washington State Dept. of Ecology, retired); (2) the reports of Dr. Stan Sobczyk (consultant for the Nez Perce Tribe) and (3) the tour boat captain of Columbia River Tours. Thanks also to the many authors who wrote the reports mentioned in this paper.

INTRODUCTION: Each summer thousands of visitors to the Tri-Cities take a boat tour up the Columbia River around the edge of the Hanford project and get a close view of the White Bluffs where the Columbia River cut through the bluffs exposing 20-30 ancient lakebeds which lie under the Hanford project. The tour boat captain tells how each lakebed was covered by a lake 1,000 or more feet deep over the Hanford project site. That depth of water exerted tremendous pressure which compressed sand and sediment into hard layers on each lake bottom. These ancient lakebeds are so tightly compressed that water cannot penetrate, but will flow laterally along the surface of the bed.

The first recorded observation of lateral flow on an ancient lakebed at Hanford occurred in about 1905 by an Army Corps of Engineers geologist who observed that water was seeping into the Columbia River along the top of a compressed layer of sand, i.e. an ancient lakebed in the White Bluffs area. Beginning in 1943 every excavation in the 200 Areas for canyon facilities, tank farms, burial grounds and cribs has uncovered remnants of one or more ancient lakebeds. Since the construction crews had no understanding of how these ancient lakebeds could affect the future of Hanford, there was no effort made to map how the individual layers spread across the 200 Areas.

Thousands of monitoring wells have been drilled but samples taken every 5 to 10 feet typically miss lakebeds 2-6 inches thick. And the process of core drilling typically breaks up the lakebed so it is no longer recognizable as a compacted layer. The presence of ancient lakebeds is typically determined by examining monitoring wells to identify areas of high moisture content or

areas of elevated levels of radioactivity which are found residing on top of these beds.

MULTIPLE NAMES GIVEN TO THE ANCIENT LAKEBEDS: Many names have been given to ancient lakebeds. It is important to understand that geologists classify ancient lakebeds using different scientific terms, sometimes differing from another. While these terms may seem confusing to the layman, the bottom line is the same. For the layman, any hard layer of highly-compressed, fine-grained sand which stops vertical flow, and re-directs liquid flow laterally can be considered an ancient lakebed.

The following terms are usually signals to the layman that the geologist is describing an ancient lakebed.

anisotropic soil (physical property stronger in one direction than another)

aquitards (a feature which blocks water flow)

bedding plane

caliche (high carbonate layer; seen as a white layer at White Bluffs)

embedded fine-scale features

fine-grained geologic heterogeneities

fine-grained layers

fine-grained lens

fine-grained sand

fine-scale features

fine-scale heterogeneities

fine-scale laminations

fine-scale properties

fine-textured layers

fine-textured soil

hardpan

hard, compact sand layers

heterogeneity in soils (diverse in character or content)
impermeable sediment layer
layered heterogeneity (presence of fine-grained layers in between coarse layers)
layered soils (same as above)
low permeability layers
low permeability silt zones
multi-scale sedimentological bedforms (including fine-scale laminations)
plane-laminated sand facies
small-scale features (referring to fine-grained layers or fine-textured layers)
silty fine-to-medium fine sand
silty interbeds
silt layer
sloping thin layers
sloping water lens
stratigraphic variability in the vadose zone geology

To a geologist, there can be significant technical differences in the above terms. But to a layman reading the above terms, the terms generally refer to one geologic feature, i.e. an ancient lakebed.

DISCOVERIES IN THE 200 AREAS OF LATERAL FLOW

The purpose of this Section is to present scientific findings over 70 years at Hanford which documented lateral flow along ancient lakebeds. Note the vague findings in the 1940s, lack of reports in the 1950s and 1960s, and the growth of discoveries beginning in the 1970s.

1940s: First Evidence of Ancient Lake Beds in the 200 Areas: When health physicists in the 200 Areas discovered that liquid discharges of radioactive waste into the ground had spread only 20 feet deep and 500 feet laterally, they became optimistic about the ability of the soil under the 200 areas to hold back radioactivity and therefore protect the groundwater.

They did not immediately identify the hard soil layers which held back contamination as ancient lakebeds.

1948: Lateral Spread Over Ancient Lakebeds.

HW-9671, "Underground Waste Disposal at Hanford Works" by RE Brown and HG Ruppert. (Thanks to Dr. Stan Sobczyk for the reference)

DECLASSIFIED

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HW- 9671

The results of the deposition of the contamination are summarized as follows:

Area	Plutonium contamination		Fission products contamination	
	Depth Below Crib	Lateral Spread	Depth Below Crib	Lateral Spread
231	32 feet	103 feet	None present	
361-T	20 feet	45 feet	107 feet	95 feet
241-T (224-T or 201-tank crib)	34 feet	197 feet	28 feet	280 feet

1940s: Early Evidence of Ancient Lakebed Under 200-West Area:

There were several observations by health physicists of monitoring well data which seemed to indicate that liquid discharges tended to flow down-slope to the southwest inside the 200-West Area at about a 20-foot depth.

1977: Lateral Flow Along Ancient Lakebeds

ARH-ST-156, "Evaluation of Scintillation Probe Profiles from 200 Area Crib Monitoring Wells." (Thanks to Dr. Stan Sobczyk for the reference.)

"Stratification tends to increase spreading of liquids along bedding planes and along contacts between sedimentary units." In this context, "bedding planes" refer to ancient lakebeds.

1979: Ancient Lakebed Under A-Farms, 200-East Fence: I was manager of the Environmental Protection Section for Rockwell Hanford between 1975 and 1980. After the AN tank farm was completed in 1980, a burrow pit

was dug outside the 200-east fence to obtain nonradioactive dirt to backfill the AN tank farm. When radioactive contamination was detected in the backfill throughout the new tank farm, I was called to investigate where the contamination was coming from. I examined the burrow pit and discovered a 2-3 inch thick layer of hardpan (ancient lake bed) at about the 15-20 foot depth throughout the burrow pit. Above the hardpan was 3-4 inches of damp soil which was saturated with radioactive liquid containing an organic odor. The burrow pit was located down-slope from the PUREX cribs. It appeared to me that the most likely source would be from the PUREX Crib A-23. The A-23 discharge had traveled laterally on an ancient lakebed down-slope 500 to 1,000 feet (and who knows how much farther) outside of the 200-East fence. The question was where did the A-23 discharge go inside the 200-East fence around the A tank farms?

The A-series tank farms were built upslope from the AN tank farm and had been dug deeper than 20 feet, thus breaking up this particular ancient lake bed inside the 200-East Area fence. Because of the wide excavation for tank farms, the radioactivity from the A-23 crib entering the excavation would not be close enough to the tanks to give the false impression of a tank leak; however, the radioactivity would have likely traveled vertically down to the next ancient lakebed and continued laterally down-slope underneath the A-series tank farms perhaps intercepting monitoring wells for the tanks and thus confusing the readings obtained from those wells.

The confusion would be created if radioactivity was discovered in a monitoring well, say at 100 feet below ground surface (bgs), without finding any radioactivity at elevations above 100 feet closer to the bottom of the tanks. Monitoring data was never analyzed from this perspective because the concept of lateral flow on ancient lakebeds was still an unfamiliar phenomenon in the 1970s.

1980s: Lateral Flow on Ancient Lakebed Under U-Cribs: (Thanks to (b)(6) (b)(6) for the paper.) In February 1985 the uranium concentration under the retired U-1 and U-2 cribs increased abruptly. (b)(6) (b)(6) and (b)(6) studied the situation and found that flow from the U-16 crib (started up in 1984) traveled on top of an impermeable sediment layer (an ancient lakebed) to below the U-1 and U-2

cribs which had been previously taken out of service. They rushed into action and developed a system for recovering the uranium.

They reported the following: "The water table lies at about 67m while a thin noncontinuous caliche layer lies at 51m. The caliche is a cemented, CaCO₃-rich crust, which is virtually impervious to water." The caliche layer is a calcium carbonate-rich ancient lakebed.

This example of lateral flow reveals how the liquid discharge from one point, i.e. the U-16 Crib, flowed under the monitoring wells of the U-1 and U-2 cribs. Because of circumstances, this interpretation was quickly made. However, the question remains as to how many other times have monitoring wells at one liquid discharge point reflected not the primary liquid discharge, but liquid discharges from other nearby cribs, ponds or reverse wells which traveled laterally along ancient lakebeds.

1988 February 22: Cobalt-60 Moving on Ancient Lakebed:

(Thanks to Dr. Stan Sobczyk for the reference.) **Westinghouse Hanford Company Internal Memo, Subject: ENVIRONMENTAL PROTECTION DEVIATION REPORT 87-10, RADIATION LEVEL INCREASE IN DRYWELL 30-03-09**

TO: R. K. Welty

"This suggested a sloping water lens (Ed note: ancient lakebed) as an active carrier of the mobile cobalt-60 radionuclide, and the geologic profile maps appeared to support the possibility. It was thereby recommended that wells intercepting this lens (see Attachments I and II) be investigated to track the path of migration."

2000 September: Co-60 Lateral Movement Under C-Farm Tanks

DOE/GJO-HAN-18, "Vadose Zone Characterization Project at the Hanford Tank Farms, C Tank Farm Addendum." (Thanks to Dr. Sobczyk for the reference.)

The reader is advised to review Section 4 for discussions regarding the limitations of this visualization.

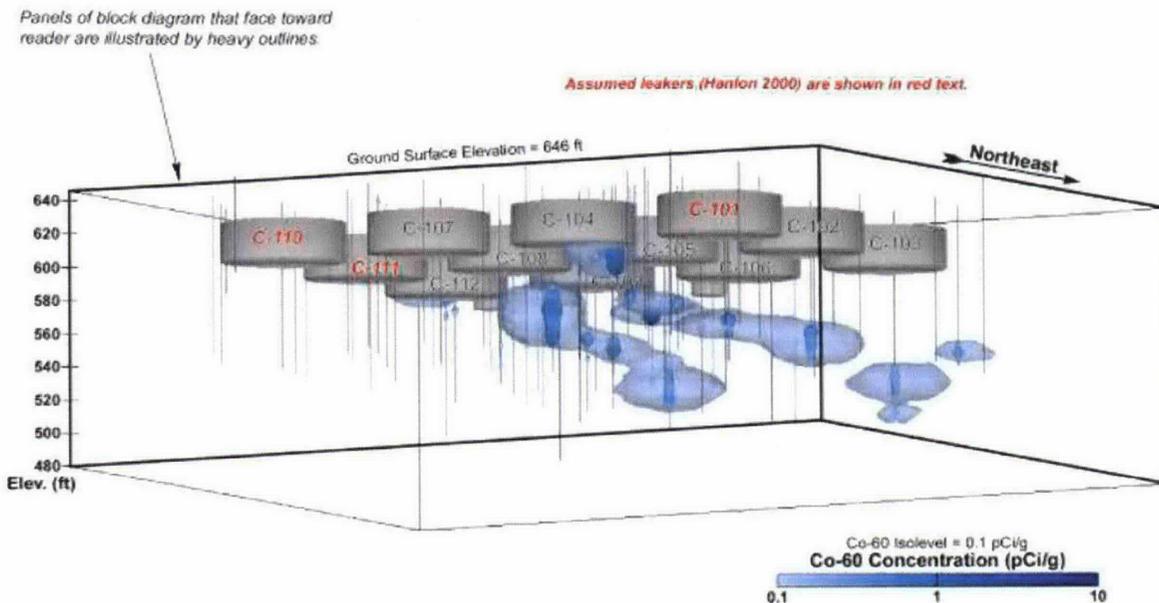


Figure D-18. C Tank Farm Visualization

2001 January: Ancient Lakebeds Under C-Farm

PNNL-13024, "RCRA Groundwater Monitoring Plan for Single-Shell Tank Waste Management Area C at the Hanford Site," by DG Horton & SM Narbutovskih. See page 2.20.

"SILT-DOMINATED FACIES. This facies consists of rhythmically bedded, plane laminated and ripple cross-laminated silt and fine-to coarse-grained sand (Ed note: ancient lakebeds). Beds are typically a few centimeters to several tens of centimeters thick and commonly display normally graded-bedding (Lindsey et al. 1992). Sediments of this facies were deposited under slackwater conditions along the margins of flooded valleys and in back-flooded areas (DOE 1988)."

2002 December Lateral Flow on Ancient Lakebeds Under B-BX-BY Tank Farms: PNNL-14083, "Characterization of Vadose Zone Sediment: Borehole 299-E33-45 Near BX-102 in the B-BX-BY Waste Management Area."

“The near horizontally bedded, northeasterly dipping sediment likely caused horizontal flow of the migrating contaminants. At borehole 299-E33-45, there are several fine-grained lenses within the Hanford H2 unit at 74.5, 120, and 167 ft bgs that likely cause some horizontal spreading of percolating fluids. The 21-ft thick Plio-Pleistocene fine-grained silt/clay unit is also an important horizontal flow conduit as evidenced by the perched water zone between 227 and 232 ft bgs.”

2004 June: Lateral Flow on Ancient Lakebeds Under C-Farm

PNNL-14656, “Borehole Data Package for Four CY 2003 RCRA Wells 299-E27-4, 299-E27-21, 299-E27-22, and 299-E27-23 at Single-Shell Tank, Waste Management Area C, Hanford Site, Washington.” (Thanks to Dr. Stan Sobczyk for the reference.)

Pages B-18 through B-39 contain a geologic description of core from Borehole C4124 (299-E27-22) Appendix B. Sample descriptions which indicate ancient lakebeds are indicated at 39, 46.5, 48.5, 52.5, 82.5, 89, 92, 94, 97.5, 104, 107.5, 114, 115, and 124 feet below ground surface.

2005 January: Lateral Flow on Ancient Lakebed Under C-Farm

DOE-EM/GJ777-2004, “Hanford Tank Farms Vadose Zone Monitoring Project Annual Monitoring Report for Fiscal Year 2004, DOE-EM/GJ777-2004.” (Thanks to Dr. Stan Sobczyk for the reference.)

Page D-3: “When all available data are compiled, pre-retrieval vadose zone conditions in the immediate vicinity of tank C-106 appear to not have significantly changed for either moisture or gamma activity up to March 2004, except for borehole 30-06-10, where gamma activity shows downward and lateral movement below 86-ft depth. This contaminant movement was recognized in the tank summary data report (DOE 1997). It was confirmed by SGLS logging and reported to DOE in March 1999 (Bertsch 1999).”

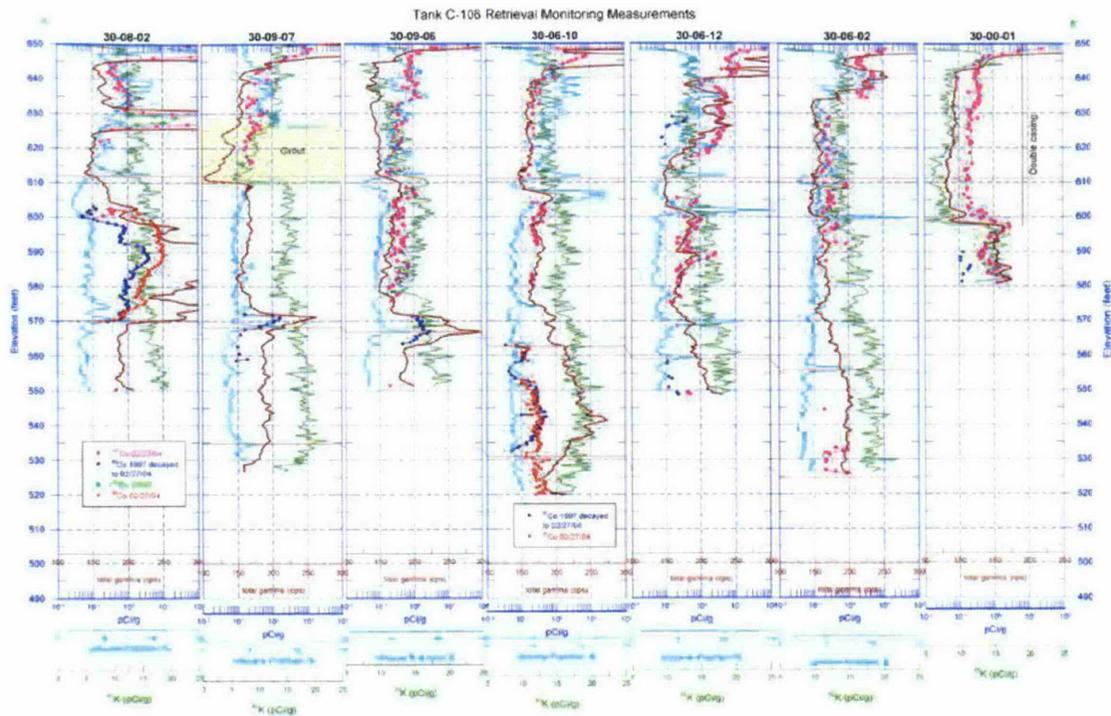


Figure 12

2006 June: Lateral Flow on Ancient Lakebeds Near Integrated Disposal Facility and PUREX Cribs: PNNL-15443, Vadose Zone Transport Field Summary Transport Report by A.L.Ward et al.

Page iii: Fine-scale geologic heterogeneities (Ed note: ancient lakebeds) were observed to have a strong effect on the large-scale behavior of contaminant plumes, primarily through increased lateral spreading.”

Page 1.2: “Part of the complexity in field-scale unsaturated transport arises from natural capillary breaks that form when fine-textured layers (Ed note: ancient lakebeds) are underlain by coarser sediments. During unsaturated flow, these structures direct flow laterally until the matric potential in the fine layer is sufficient to overcome the entry pressure of the underlying coarse layer.”

Page 1.8 “In FY 2000 and FY 2001, two injection experiments were conducted in Hanford’s 200 East Area at the 299-E24-111 test facility...etc.” “This site was chosen primarily because of its

characterization history, the presence of layered heterogeneity (Ed note: ancient lakebeds) and existing monitoring infrastructure.

Page 2.3 Section 2.1.1 Results: “The fine-textured soil (Ed note: ancient lakebed) overlaying the coarse material is therefore acting as a capillary barrier impeding vertical advection and enhancing lateral flow.”

“Figure 2.2 shows that the lower fine-textured layer acted as an impeding layer and led to enhanced lateral movement out of the monitored domain. The experiment was discontinued after a total injection of 20,000 L of water; at that point, none of the injected water had penetrated the lower fine-textured layer.” (Ed note: fine-textured layer = ancient lakebed.)

Page 3.1 “Fine-scale geologic heterogeneities, including grain fabric and lamination, were observed to have a strong effect on the large-scale behavior of contaminant plumes, primarily through increased lateral spreading resulting from anisotropy.”

2006 September: Ancient Lakebeds Missed by Geophysical Logs

PNNL-15503, “Characterization of Vadose Zone Sediments Below the C Tank Farm: Borehole C4297 and RCRA Borehole 299-E27-22.”

Page 2-13, “Therefore, thin, lower-permeability, fine-grained layers, (Ed note: Ancient Lakebeds) such as those that sometimes cap sand sequences within the Hanford formation H2 unit and may result in the lateral spreading of moisture and contaminants, may not show up on geophysical logs.”

2007 January: Lateral Flow on Ancient Lake Beds Under C-Farm:

PNNL-15617, “Characterization of Vadose Zone Sediments from C Waste Management Area: Investigation of the C-152 Transfer Line Leak.” (Thanks to Dr. Stan Sobczyk for the reference.)

PNNL-15617 has twenty-one statements documenting lateral migration at WMA C, e.g. Page 2-7: “The highly heterogeneous, complexly bedded nature of cataclysmic flood deposits (Hanford formation) make this stratigraphic unit particularly anisotropic, which leads to significant lateral migration of fluids along bedding interfaces.”

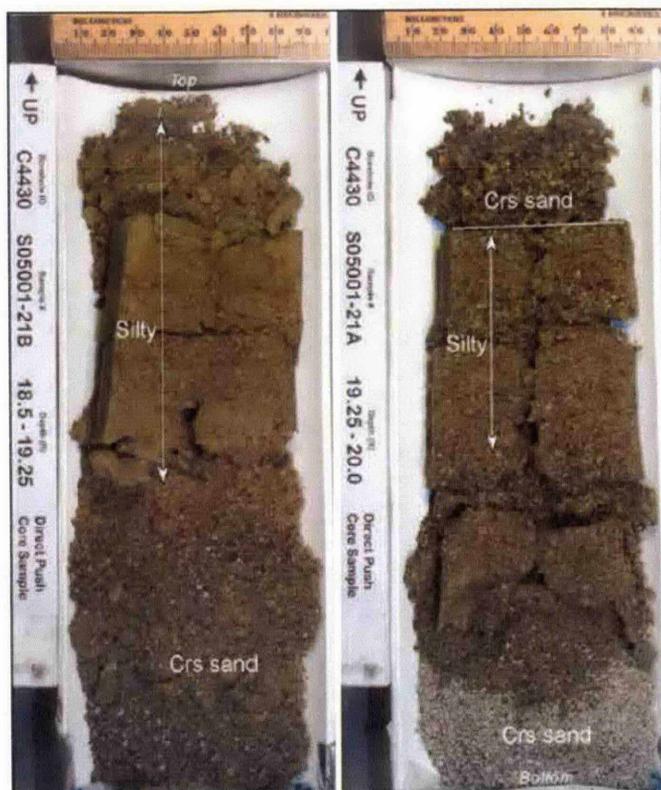


Figure 2.3. Alternating Sand- and Silt-Dominated Beds in Two Adjacent Core Segments. Notice moisture concentrates in area of two silty layers. Below the silty interval is dry coarse sand. Moisture is associated with lithologic boundary #3 intersected by vertical probe hole C4430 (see Figure 2.2).

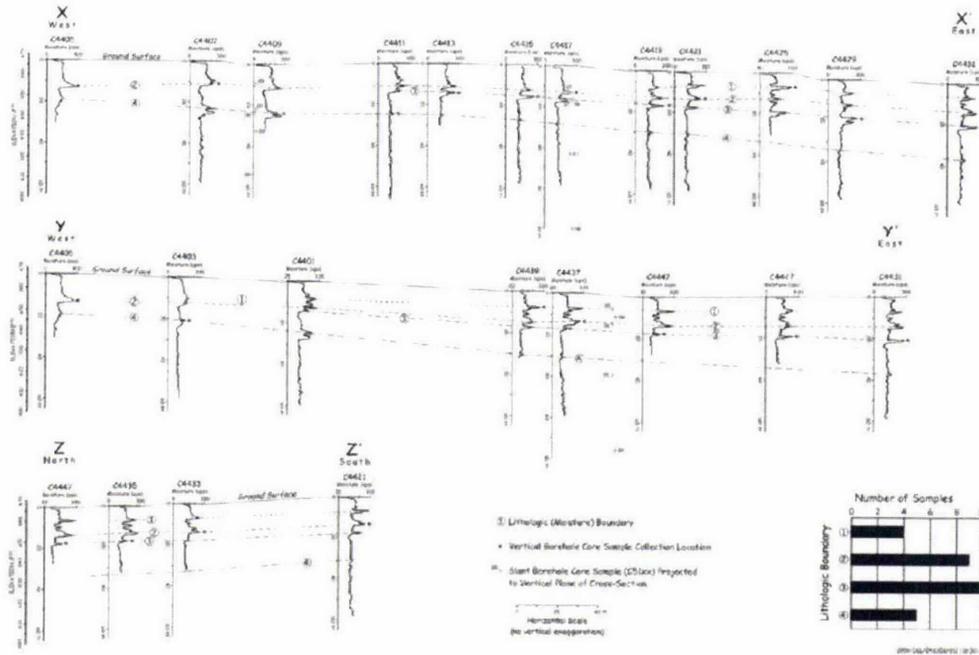


Figure 2.2. Cross Sections Showing Four Major Lithologic (moisture) Boundaries Based on Neutron-Moisture Geophysical Logs in the Vicinity of the 241-C-152 Diversion Box. Core-sample frequency for the lithologic (moisture) boundaries are shown in lower right.

Page 2-13, "Bedding continuity is another factor that affects the downward percolation and migration of fluids in the vadose zone beneath C-152. Of the four major lithologic boundaries in the upper 40 ft, two of these (#2 and #4) appear to correlate across the entire study area; the other two (#1 and #3) appear to pinch out or merge together within the western portion of C-152 (Figures 2.4 and 2.5). Therefore, near-surface moisture retention and lateral migration may be more effective over the eastern portion of the study area. To the west, fewer lithologic boundaries are present to interfere with vertical flow."

2.14

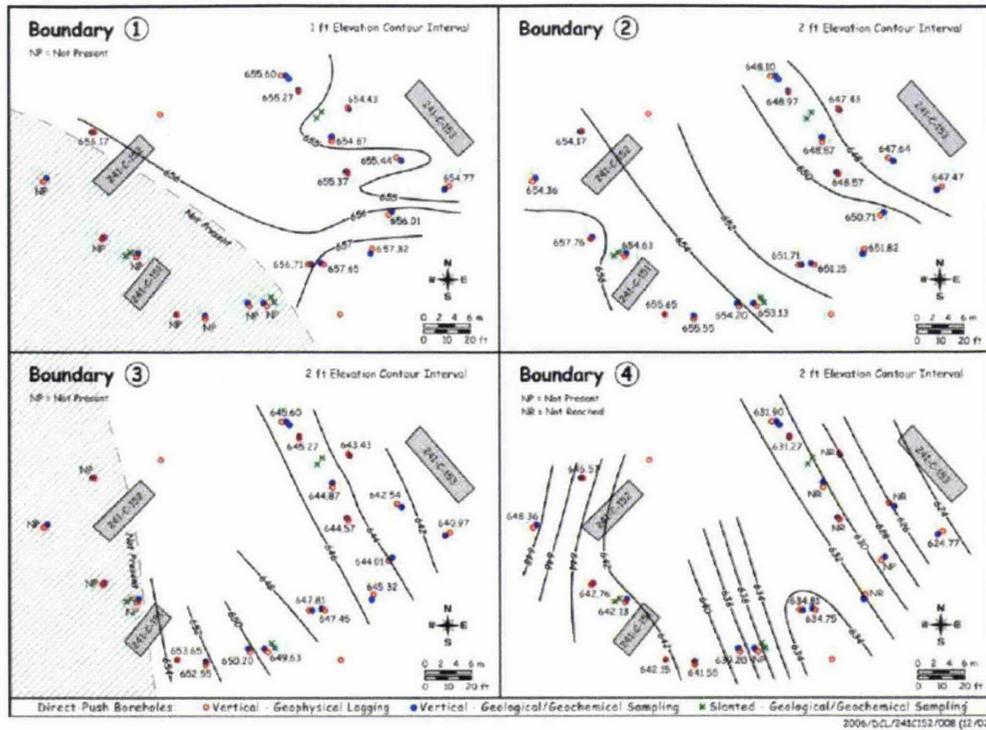


Figure 2.4. Structure Contour Maps on Upper Surfaces of the Four Moisture (lithologic) Boundaries in the Vicinity of the C-152 Diversion Box

Page 5-8

“Although a lateral migration of contamination was documented via analysis of the vertical push samples, a significant enough driving force has been present to push the mobile contaminants at least as deep as 80 ft bgs.”

2007 July 10: Lateral Flow on Ancient Lakebeds Under BC Cribs, and 200-East Area: RPP-33441, “An Evaluation of Hanford Site Tank Farm Subsurface Contamination, FY2007,” by F.M.Mann et.al.

Page 46: “Cribs (structures receiving large volumes of liquid discharges) are located near most tank farms. Measurements at the BC cribs have shown that moisture can move laterally long distances (several hundred feet) away from the vertical line of discharge.”

Page 102, **Section 4.5.7 Anisotropy and Vadose Zone Lateral Flow**

“The heterogeneous nature of Hanford sediments results in significant moisture-dependent anisotropy and lateral flow, depending on the flow regime. This has been illustrated by the moisture content profiles at the controlled field injection experiment (also known as the Sisson and Lu site) in 200 East Area. This site was recently used for a series of infiltration tests

(Ward et al. 2006). The measured moisture content profiles at the Sisson and Lu injection site after serial injection of water and tracers clearly illustrate significant lateral spreading.”

2007 July 10: Lateral Flow on Ancient Lakebeds Under T-Tank Farms:

RPP-33441: “The preponderance of lateral migration of water and solutes is also evident elsewhere at the Hanford Site. The tank 241-T-106 leak (115,000 gallons) is the largest known tank leak. The leak occurred in 1973 at a bottom edge of the tank. The vadose zone profile clearly shows that, even after 20 years of migration, the peak concentrations of the long-lived mobile radionuclide are primarily found within fine-textured horizons at a depth of 35 to 40 m (115 to 130 ft) below ground surface (bgs) and well above the water table (Freeman-Pollard et al. 1994; Serne et al.2004b). These field data suggest that the natural heterogeneity (Ed note: presence of ancient lakebeds) of the Hanford sediments plays an important role on lateral flow and transport, and the significant lateral migration which is in fact induced by media heterogeneities is highly effective in containing the vertical extent of plumes within the vadose zone for an extended period of time.”

2007: Lateral Flow on Ancient Lake Beds Under C-Farm:

RPP-35484, “Field Investigation Report for Waste Management Areas C and A-AX.” (Thanks to Dr. Stan Sobczyk for this reference.)

Page 2-14: “From these observations, a gross two-step process for how the leak event occurred was postulated. In the first step, rapid release of the leaking fluid occurred, providing a hydraulic driver for the fluid to move through the vadose zone. Stratigraphic variability in the vadose zone geology exerted sufficient influence to induce movement in the lateral direction. In the second step, the hydraulic driver for the leak event eventually relaxed, and the moisture movement within the far-field vadose zone equilibrated with natural infiltration. Far-field conditions reverted to more natural soil-water conditions, so as to induce slow downward percolation and horizontal migration along fine-grained lenses in the Hanford formation and CCU for mobile constituents.”

Page 3-37: “The zones of high gamma-emitting contamination may identify the location(s) of the leak event(s), but then the mobile contaminants that are found by HRR have moved laterally and most likely deeper into the subsurface to cause the existing anomaly.”

2008 March: Lateral Flow on Ancient Lakebed Under C-Farm:

RPP-ENV-33418, Rev 1, "Hanford C-Farm Leak Assessments Report: 241-C-101, 241-C-110, 241-C-111, 241-C-105 and Unplanned Waste Releases," (Thanks to Dr. Stan Sobczyk for the reference.)

Page 134, "The contamination may have originated on the northwest side of tank C-108 where the low resistivity anomaly is located. It migrates downward in the vicinity of 30-08-02 to a fine layer (Ed note: ancient lake bed) at approximately 570 ft in elevation. From there, it moves laterally to the east, following the dip to the vicinity of 30-06-10, where it is observed to be moving downward, below TD of the borehole at an elevation of 520 ft (130 ft bgs)."

2008 September: Ancient Lakebed Under SX Tank Farm: PNNL-13757-3, "Characterization of Vadose Zone Sediment: Borehole 41-09-39 in the S – SX Waste Management Area," by R.J. Serne et al.

Figure 2.4 shows a cemented caliche layer under the entire SX tank farm. Any tank leak from SX would be carried laterally along the top of the caliche layer to outside the footprint of the SX tank farm. The cemented caliche layer about 150 feet below the surface is an ancient lakebed. This is about the same depth as the caliche layer in the near-by U-Tank Farms (reported in 1985) which suggests a wide-spread, carbonate-rich, ancient lakebed in the southwest portion of the 200-West Area.

2008 September: Lateral Flow on Ancient Lakebeds Under B Tank Farms: PNNL-14083, "Characterization of Vadose Zone Sediment: Borehole 299-E33-45 Near BX-102 in the B-BX-BY Waste Management Area," by R. J. Serne et al.

The near horizontally bedded, northeasterly dipping sediment likely caused horizontal flow of the migrating contaminants. At borehole 299-E33-45, there are several fine-grained lenses (ed note: ancient lakebeds) within the Hanford H2 unit at 74.5, 120, and 167 ft bgs that likely cause some horizontal spreading of percolating fluids. The 21-ft thick Plio-Pleistocene fine-grained silt/clay unit (ed note: ancient lakebed) is also an important horizontal flow conduit as evidenced by the perched water zone between 227 and 232 ft bgs."

2008 September: Lakebeds Too Thin to Show Up on Geophys. Logs

Revision 1 of PNNL-15503, Characterization of Vadose Zone Sediments Below the C Tank Farm: Borehole C4297 and RCRA Borehole 299-E27-22," by CF Brown et al. (Thanks to Dr. Sobczyk for the reference.)

Page 2-13 "Therefore, thin, lower-permeability, fine-grained layers, such as those that sometimes cap sand sequences within the Hanford formation H2 unit and may result in the lateral spreading of moisture and contaminants, may not show up on geophysical logs."

2012 June: Lateral Flow on Ancient Lakebed Under C-Farm:

RPP-PLAN-39114, Rev 2, "Phase 2 RCRA Facility Investigation/Corrective Measures Study Work Plan for Waste Management Area C." (Thanks to Dr. Stan Sobczyk for the reference.)

Page 3-18 "Waste fluids were distributed rapidly over limited areas of the vadose zone until ambient moisture contents were essentially restored. Key characteristics and processes were unsaturated flow and lateral migration that resulted from hydro-geologic controls. Consequently, waste contacted an expanded vadose zone volume compared to the initial volume of the released waste."

2016 March: Borehole Data Insufficient to Model Ancient Lakebeds

PNNL-25146, "Scale-Dependent Solute Dispersion in Variably Saturated Porous Media," by M.L. Rockhold, Z.F. Zhang, Y-J Bott

See Section 2.1.2.1 on page 9: "In general, physical and hydraulic property data for samples collected from Hanford boreholes/wells are very limited. When core or grab samples are obtained from a borehole, the vertical sample frequency is often limited to a minimum of ~1.5 m (~5 ft) depth intervals, and sampling is often not performed over the entire length of the borehole. The limited sampling frequency is insufficient for resolving smaller-scale features (ed note: ancient lake beds) such as those shown in Figure 2, which control subsurface flow and transport behavior. Distances between boreholes/wells are also typically quite large, perhaps hundreds of meters, as shown in Figure 3. Therefore, the data needed for quantitatively evaluating spatial auto- and cross-correlation is usually lacking."

The above report acknowledges that the technique used to drill thousands of boreholes and wells at Hanford is not sophisticated enough to detect thin-layered ancient lakebeds which may only be 2-3 inches thick. As a

result of this insufficiency, knowledge of ancient lakebeds over the past 70 years of scientific research of Hanford has remained extremely limited. PNNL-25146 provides a rare look at the lakebeds under the 200 Area.

PNNL-25146
RPT-IGTP-009, Rev 0

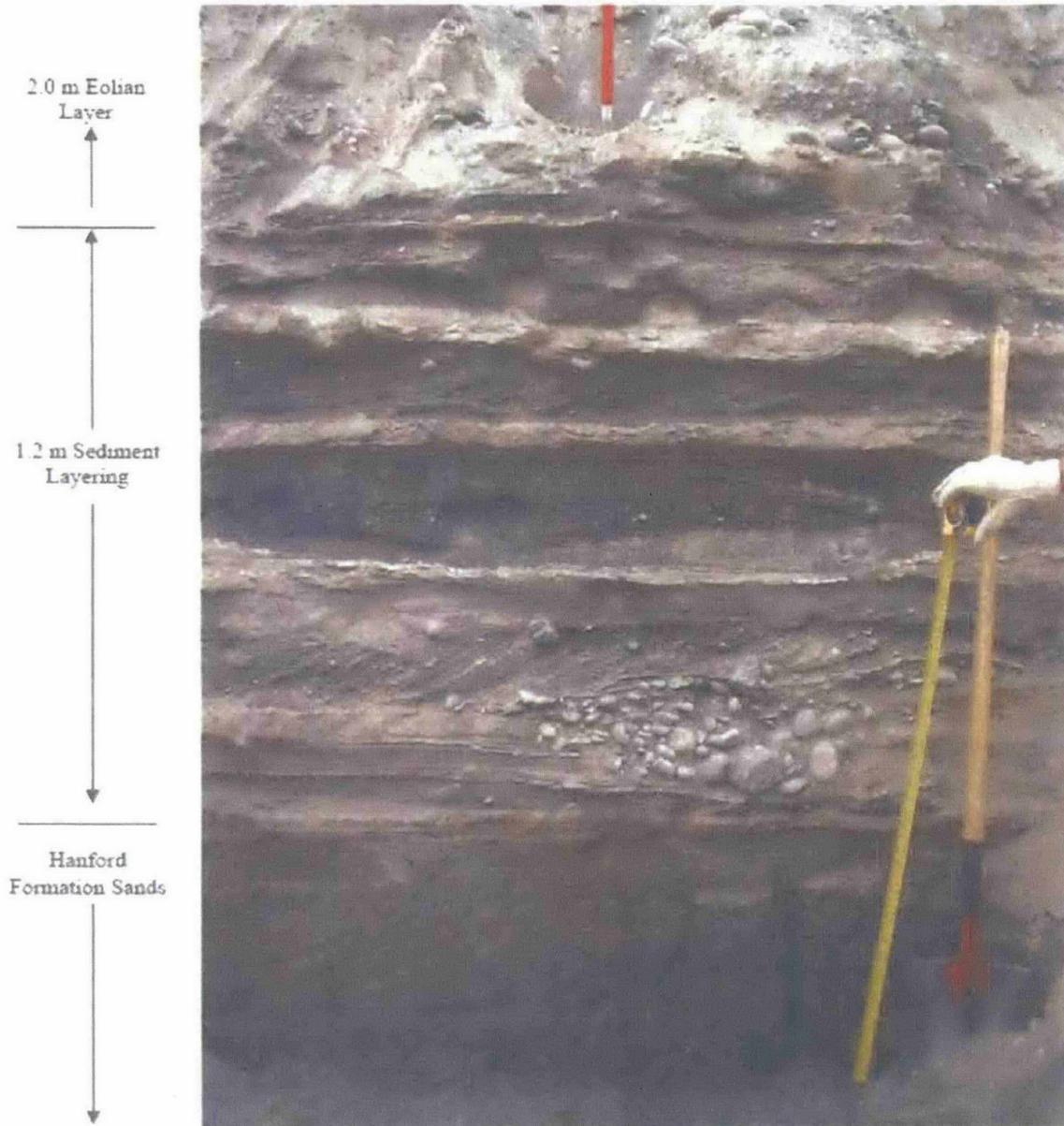


Figure 2. Sediment layering in a pit excavated ~175 m west of the southwest corner of the Integrated Disposal Facility. (Photograph by Dr. John Selker, Oregon State University.)

Ancient lakebeds are clearly visible in the above photo.

The existing knowledge gap of ancient lakebeds is surprising given that understanding the flowpath of radioactivity through the vadose zone into the groundwater is critical not only for protecting Hanford groundwater, but is critical to protecting all the downstream communities which depend on the Columbia River.

As a result of this knowledge gap, the current vertical-flow models are the only models available to predict long term movement of radionuclides into the groundwater (and therefore, into the Columbia River). To the extent that the current (vertical-flow) models have no relationship with the lateral flowpaths above ancient lakebeds through the vadose zone at Hanford, the resulting Performance Assessments will be of little use to the Department of Energy in predicting radiation exposure to the general public over the next few thousand of years.

2016 December: Ancient Lakebeds Under BY Tank Farms

SGW-60265, Revision 0. "200 DV-1 Operable Unit BY Cribs Field Summary Report." (Thanks to Dr. Sobczyk for the reference.)

Pages 39 & 40: "A cross section through the BY Cribs (Figure 4-1) illustrates the variations in contaminant distribution and concentration. Contaminant hot spots are correlated more often with low permeability silt zones (Ed note: ancient lakebeds), some only 6-12 inches in thickness. In most cases these low permeability zones correlate well with neutron moisture and natural gamma peaks in the geophysical logs and can be visually inspected in the core photographs. Consider the one-foot thick silt layer observed in well C9549 (Figure 4-2). Sub sampling just above and below this silt layer shows high concentrations of the contaminants of concern above the silt and almost undetectable concentrations below the silt. These results indicate this thin silt layer is acting as a barrier to vertical contaminant migration and may create a surface causing liquid effluents to spread laterally much further than expected as seen in the elevated contaminant concentrations northeast of the BY Cribs. The continuous intact coring for DV-1 has revealed how important some of the small-scale structures (Ed note: ancient lakebeds) are to the migration of mobile contaminants."

2016 December 1: Current Modeling of C-Farm is Inherently Flawed:
E-mail from Dr. Stan Sobczyk to a large distribution.

“The following text lists three **key issues** that affect the validity of the technical basis of the document, which is titled: Analysis of Past Tank Waste Leaks and Losses in the Vicinity of Waste Management Area C at the Hanford Site, Southeast Washington, RPP-RPT-59197 Rev.01. These technical errors invalidate the major conclusions of the report. All of these **key issues** require a formal response from the site and should be corrected.”

1. “No validation of modeled vadose zone results

No comparisons of modeled results to field data were attempted for the vadose zone. There are approximately 25,000 spectral gamma log measurements of cobalt-60 in the vadose zone that reflect multiple sources. The lateral transport of cobalt-60 in the vadose zone is well documented at WMA-C and should be compared to model output for both location and activity level. Additionally, the gross gamma logs collected in the drywells in the 1970s, 1980s, and early 1990s are another vadose zone dataset that should be compared with modeled output of gamma emitters in the subsurface. This modeling would demonstrate the robustness of DOE’s understanding of the vadose zone migration of contamination from past releases at WMA-C and the magnitude of past releases.”

2. “Lack of lateral transport modeling in the vadose zone

The current approach for modeling of vadose zone transport at WMA-C doesn’t appear to account for lateral transport of contaminants in the vadose zone. Lateral transport of contaminants has been observed and documented at Hanford over the past seventy years. The justification for the dismissal of modeling the fine-grained layers (Ed note: ancient lakebeds) within the Hanford formation is unclear. Until the modeling at WMA-C can adequately mimic the lateral transport of contaminants, the reliability of the current model’s projection of future conditions is suspect. Without incorporating lateral transport in the vadose zone, the current modeling isn’t a realistic representation of subsurface conditions and is inherently flawed.”

3. “Dismissal of the effects of sedimentary layers on contaminant migration is in conflict with DOE’s characterization approach at WMA C.

The basis for DOE’s characterization of WMA C was the collection of data using direct push holes. “The general sampling approach for vertical direct pushes will include an initial push at each sample location to a depth of no greater than 200 ft bgs or refusal. Testing for gross gamma activity and neutron moisture logging will be done to identify candidate sample zone(s). A second direct push will be made to collect sample(s) material in the zone(s) of interest.” (Data Quality Objectives Report Phase 2 Characterization for Waste Management Area C RCRA Field Investigation/Corrective Measures Study, RPP-RPT-38152, Revision 0, page 8-22). High moisture zones were routinely sampled because DOE and its contractors claimed that the high moisture zones due to the fine-grained layers (Ed Note: ancient lakebeds) in the Hanford formation were more likely to contain contaminants than the coarser-grained layers.

In November 2015, I provided a fine-grained layered geologic model to DOE and its contractors. (Ed note: This model is contained in the Word document that will be attached to (b)(6) Comment #3, Public Comment for C-Farm PA) This model or a model developed by DOE that incorporates the fine-grained layers (Ed note: ancient lakebeds) within the Hanford formation should be used in future modeling of WMA C.

These comments are a reiteration of comments that have been made in the past. None of these comments have ever been addressed, and a path forward should be established to resolve these technical issues.”

2016 December 1: Lateral Flow on Ancient Lakebeds Under C-Farm:
RPP-ENV-58782, Rev. 0, “Performance Assessment of Waste Management Area C, Hanford Site, Washington,” (Thanks to Dr. Stan Sobczyk for the specific paragraph from the C-Farm PA.)

Page 3-65 & 3-66: “The vadose zone stratigraphy influences the potential for spreading of liquid within the soil column. Where conditions are favorable, lateral spreading of liquid effluent and/or local perched water zones may develop. Lateral spreading can occur along any strata with contrasting hydraulic conductivity. Where low -permeability layers (Ed note: Ancient Lakebeds) within the Hanford formation have been documented,

they are thin (0.5 m [1.6 ft] or less) and laterally discontinuous. Low-permeability layers within the sand-dominated facies of the Hanford formation are generally thicker and more continuous than those in the gravel-dominated facies. Some paleosols and facies changes (i.e., the contact between fine-grained and coarser-grained facies) may be fairly continuous over the range of 100 m (328 ft) or so, with some lateral spreading of crib effluent noted on that same scale. Lateral spreading can delay the arrival of contaminants at the water table but may cause mixing of the subsurface plume at one site with that of an adjacent site. Spreading may also require increasing the area of surface barriers to cover wider plumes.”

2017 March: Ancient Lakebeds Not Included in C-Farm PA.

PNNL-24740, “Alternative Conceptual Models of the Subsurface at WMA C,” by ML Rockhold, ZF Zhang, Y-J Bott, see page 6.1.

“Finally, the alternative conceptual models discussed herein did not include an assessment case that contains sloping thin layers (ed note: ancient lake beds) that have been suggested in WMA C workshops. While such features **may** exist, available field-measured water content data arguably do not allow thin, continuous sloping layers to be unambiguously identified (Appendix A).”

These words confirm that ancient lakebeds, called sloping thin layers in this case, were not modeled in the C-Farm PA.

2017 April 16: Current Flow Modeling is Inherently Flawed,

E-mail from Dr. Stan Sobczyk, Nez Perce Tribe: (Note that he labels ancient lake beds with the technical term of “fine-scale heterogeneities” or “sloping thin layers.”)

“I have heard that DOE/ORP and its contractors are dismissing fine-scale heterogeneities that would promote lateral flow, because there is “no evidence” to support these types of heterogeneities at WMA C. The attached WORD document lists a set of references that establishes the presence of fine-scale heterogeneities and lateral flow of contaminants at WMA C. “ (Ed note: The references provided by Dr. Sobczyk have been incorporated into this paper as noted throughout.)

“Additionally, I have read through *Alternative Conceptual Models of the Subsurface at WMA C*, PNNL-24740. These “alternative models” and the models in the WMA C PA don’t address the sloping thin layers (Ed note: ancient lakebeds) that are in the vadose zone underneath WMA C. These sloping thin layers are key features in the Hanford formation that affect the migration of tank waste and moisture in the vadose zone. Clearly, the gamma logging results demonstrate the lateral migration of tank wastes in the vadose zone underneath WMA C and elsewhere on the Hanford site. Until the modeling at WMA C can adequately mimic the lateral transport of contaminants, the reliability of the current model’s projection of future conditions is suspect. Without incorporating lateral transport in the vadose zone, the current modeling isn’t a realistic representation of subsurface conditions and is intrinsically flawed.”

“The last paragraph of Section 6.0 Summary and Conclusions, (PNNL-24740, page 6-1) states the following. *“Finally, the alternative conceptual models discussed herein did not include an assessment case that contains sloping thin layers that have been suggested in WMA C workshops. While such features may exist, available field-measured water content data arguably do not allow thin, continuous sloping layers to be unambiguously identified (Appendix A). Uncertainty in the timing, locations, and rates of past releases and the sparse nature of the available characterization and monitoring data are also such that inverse modeling or history matching efforts may be of limited value.”* This paragraph outlines the flaws in DOE’s approach to modeling. They recognize that sloping thin layers may exist, but they are unwilling to consider them in their conceptual modeling. Finally, the last sentence in the paragraph acknowledges that DOE is unable to do inverse modeling or history matching due to a lack of data. Yet, DOE assures us that they can predict future conditions over thousands of years without knowing the *“timing, locations, and rates of past releases and the sparse nature of the available characterization and monitoring data.”*

2017 June 16: Ancient Lakebeds Not Addressed in C-Farm PA

Letter from Dept of Ecology to Office of River Protection, June 16, 2007.

Subject: Groundwater and Vadose Zone Modeling Issues Related to Performance Assessment (PA) and RCRA Closure for Waste Management Areas (WMA.s) C and A-AX Tank Farms.

“This letter expresses the Department of Ecology's (Ecology) concerns about modeling approaches taken for WMAs C and A-AX. After years of developing agreements between our agencies on what parameters would be evaluated, we find a number of agreements were not kept. These concerns are applicable to both of the WMAs, as we believe the approach for WMA A-AX will be similar to that used for WMA C. Our main areas of concern are: Small scale heterogeneity (Ed note: ancient lakebeds) and structural features:

1. Ecology believes that the issue of small scale heterogeneity and structural features (e.g. dipping slope in the upper part of the vadose zone, etc.), identified and interpreted by the stakeholders and tribal nations, are not adequately addressed in the vadose zone modeling. The United States Department of Energy (USDOE) could address these issues through multiple simulations to see the impacts. These simulations can serve as "what-if" scenarios to evaluate various uncertainties, which are not addressed.

The Subsurface Transport Over Multiple Phases (STOMP) model is a flexible computer code designed to solve a wide variety of nonlinear, multiple-phase, flow, and transport problems for variably saturated geologic media. It is unlikely that the STOMP code places significant limitations on the ability to model reasonably complex scenarios involving water and contaminant transport through heterogeneous, variably-saturated media. Specifically, there is no limit on the thickness of grid cells in any dimension, though, like all numerical models, abrupt changes in cell size in any dimension may lead to numerical instability.

Limitations are more likely related to insufficient data to support calibration of a deterministic model with the detail required to represent thin, sloping, low-permeability layers and lenses, horizontal or vertical fast-flow pathways. However, these limitations should not prevent use of the STOMP simulator to conduct stochastic simulations that include geologic characteristics that are known to exist at the site and those that the stakeholders expressed interest in testing.

Simulated values of head or concentration can be compared to both base case values and to observed values at discrete points in the saturated flow system. These exercises could provide a valuable path

toward the goal of USDOE, Ecology, and the other stakeholders working collaboratively towards a mutually agreed evaluation of risks and measures to mitigate those risks.

2. Inadequate parameter range used for evaluating heterogeneity (PNNL-24740): The range of input parameters (e.g. hydraulic conductivity) used is not large enough to represent the variability in the vadose zone. The range of values for saturated hydraulic conductivity (K_s) is about a half-order of magnitude (in cm/sec). The ranges used in the Theta 01 model are characteristic of sand and gravel mixtures. Lower K_s values that could represent a soil type with a significant silt fraction, do not appear to be used in the model. The facies models do not incorporate anisotropy in terms of saturated hydraulic conductivity values while the theta 01 model does for its Hi/H3 soils type only.

3. Use of sod moisture under ponding scenarios: There are no alternative models simulated to address ponding from abnormally high snowmelt or rainfall event (i.e., episodic high infiltration) in the A-AX and C Tank Farms. These scenarios should be modeled, because these events cause flushing of radionuclides from low permeability layers in the vadose zone and cause rapid migration to the saturated zone.

4. Inventory estimate for C Farm: Although the estimated inventory of ^{99}Tc varies from roughly 0.8 Ci to 10 Ci in C Tank Farm, field observation was the principal driver for use the inventory of 10 Ci. The modeling shows a conspicuous decreasing trend and almost depletion of the entire 10 Ci in a few years. This assumption is the basis of one set of the conceptual model. It is unusual to expect the entire inventory of ^{99}Tc to simply discharge from the vadose zone as a slug within a short period of time. In order to have a better bounding analysis, one option is to have multiple realizations to address future uncertainties.

Scenarios should include a higher upper bound for ^{99}Tc and extrapolate the current upward trend of ^{99}Tc concentration for at least a decade or two, rather than to assume a sudden decrease, and calculate the inventory based on that as alternative scenarios for the modeling and simulations.”

2017 September 5: DOE Response to Dept. of Ecology:

The purpose of this letter is to provide a response to (Reference 1). Reference 1 is a June 14, 2017 letter expressing Ecology's concern with "modeling approaches undertaken in WMAs C and A-AX". This letter was followed by Reference 2 which provided comments from Ecology on the WMA-C PA. The U.S. Department of Energy, Office of River Protection (ORP) is currently working the comment resolution process on the comments received in Reference 2. ORP remains appreciative of Ecology's comments, but would prefer they be submitted as part of the comment resolution process if at all possible to facilitate tracking and comment resolution.

The existing process has served us well and is the primary means by which any outstanding technical concerns that Ecology has with the WMA C PA documents (including modeling issues) are best addressed and resolved. I think we can use the comment resolution process to find common ground on the technical issues surrounding the WMA C PA, and we look forward to working collaboratively to do so.

Our preference at this point is to respond to the specific technical issues raised in your letter (Reference 1) as part of the comment resolution process after we have received Ecology's review comments on all of the WMA PA documents. To support this next step though, initial response points are provided in Attachment 1. Attachment 2 is included indicating which WMA C PA documents are still with Ecology for review and comment. I would like to have a focused discussion regarding Ecology's view of the priority of closing WMA-C, which remains one of our highest priorities. We will work schedules as necessary to accommodate this important dialogue, and ask you to propose a date and time that best works for you."

ATTACHMENT 1

General Response:

Small Scale Heterogeneity and Structural Features:

• *Significant time and resources were expended as a part of the IPA heterogeneity and effort to investigate the potential impact of vadose zone Structural Features heterogeneities beneath WMA C on water flow and contaminant migration.*

- *The scientists involved in this work are seasoned professionals who have been involved in and have published results of past modeling of flow and transport process in the vadose zone using STOMP and other similar codes at Hanford and other sites.*
- *The approaches developed and implemented made use of the available data and information at a resolution appropriate for the scale of interest taking into consideration the numerical and computational constraints of STOMP.*
- *Results of much of the work that was done under the IPA effort was presented to Ecology in Webinar on this topic on March 29, 2017.*
- *A brief summary of this body of work is as follows:*
 - *Separate and independent modeling studies were undertaken to construct heterogeneous representations of the vadose zone using the available data in a rigorous fashion. These models were based on:*
 - *Evaluation of neutron moisture logging data*
 - *Cluster analysis of KUT data*
 - *All heterogeneous model simulations of the C-105 Tc-99 leak indicate the center of mass of the Tc-99 plume moved generally downward in response to gravity despite the presence of higher-moisture (finer textured) horizontal features in the models.*
 - *The Tc-99 plumes originating from the C-105 leak spread laterally in all heterogeneous models to widths of up to 200 ft. as they migrated downward through the vadose zone prior to entering the saturated zone.*
 - *Results of heterogeneous and EHM representations of the vadose zone generally produced similar results in terms of peak concentrations and the time of occurrence of each peak.*
- *We regard the submittal of Ecology comments on specific parts of the IPA documents and the comment resolution process as the primary*

means by which any outstanding technical concerns that Ecology has with the WMA CPA documents (including modeling issues) are to be addressed and resolved.

- The discussion of the development of a heterogeneous model from neutron moisture data under the IPA effort by WRPS and INTERA is provided in Appendix F of both RPP-ENV-58782 (DOE Order 435.1 PA) and RPP-ENV-58806 (RCRA Closure Analysis).*
- The application of this heterogeneous model results in the past leaks analysis is discussed with a number of other alternative models in Section 4.4 of RPP-RPT-59197 (Analysis of Past Leaks). This heterogeneous model representation is simulated as Case 4b.*
- The independent effort by PNNL on the development of alternative heterogeneous conceptual models is discussed in PNNL-24740. This report also provides some inter-comparison of results of the models they developed with some example results of tank residual/ and past leaks impacts developed for the PA base case.*
- We look forward to seeing Ecology's specific comments as they relate to these sections of the reports.*
- We are committed to expand the discussion of IPA efforts on these evaluation of results from alternative conceptual models that consider local-scale heterogeneity in the vadose zone in more detail in updates to the IPA documents.*
- We are continuing our effort to further understand the potential issue of lateral flow and contaminant transport at WMA C by preparing a new WRPS report that focuses on the issue of lateral flow and contaminant transport at WMA C.*

This report will summarize the detailed results of the inter-comparisons of all of the alternative models developed under the IPA efforts thus far that were presented to Ecology in the March 29 webinar. Additional model simulations addressing other specific aspects of this problem are being conducted and will be included as appropriate in this planned future document.

Inadequate Parameter Range Used For Evaluating Heterogeneity (PNNL-24740)

- The comments provided here appear to be based on an incomplete range used for Evaluating understanding of the basis for the selection of the hydraulic Heterogeneity (PNNL- 24740) properties used and warrant additional discussion.
- Without any information about what sections of the PNNL report the comments are referring to, this stated concern cannot be specifically addressed.
- Ecology should provide specific comments related to appropriate sections of this report. We would glad to pass them along to PNNL for consideration and resolution.

Use of Soil Moisture Under Ponging Scenarios

- *While the past leaks analysis did not explicitly address the effect of short-term ponding as a specific scenarios, the scoping analysis performed in the past leaks analysis (RPP-RPT-59197) did evaluate some cases that might shed some light on this scenario. Specifically, a couple of scoping cases were evaluated. One considered the effect of a 50 percent increase (150 mm/yr) in recharge (See Case 3a) and another case (See Case 3c) examined the effect of a focused amount of incremental recharge over a relatively short period of time at one of the UPR site. The results of these cases are provided in Section 4.3 of this report.*
- *Additional discussion of Ecology's comments on this topic is needed.*

Inventory Estimates for C-Farm

- *The comments provided appear to reflect an incomplete understanding of what was done in the analysis. The interpretation provided in the review comments about the depletion of inventory in a few years also does not appear to be consistent with the actual results of the modeling provided in Section 6 of the report.*
- *The analysis of past leaks was based entirely on soil inventory estimates provided by the leak assessment process. For the eleven sources identified and simulated (See Table 6-1), a total of 17.5 Ci of*

Tc-99 was released from the WMA C in the upper bound case. Of this total number, about 10 Ci mixed in 20,500 gals was released from Tank C-105.

- *The releases were implemented within the model in accordance with the leak assessment report. For the C-105 leak, the upper bound inventory of 10 Ci was mixed in a volume of 20,500 gal and released into the vadose zone at the tank bottom over a five year period beginning in 1963. Results of this simulation, graphically provided in Figure 6-24 in Section 6.3.3 of the report, show the following about the flux of Tc-99 from the vadose zone to groundwater:*

- *The peak flux of Tc-99 from this source from the vadose zone to groundwater arrives just over 45 years after the source is introduced into the vadose zone.*

- *At the peak flux, the cumulative amount release to groundwater at this point is about 5 Ci.*

- *Over the next 100 years, another 4.2 Ci of the 10 Ci is released to groundwater.*

- *By year 2120, about 0.8 Ci has yet to be released.*

- *Some clarification and additional discussion of Ecology's comments on this topic is needed.*

2018 August 31: 3 Ways the C-Farm PA Misleads the WIR:

E-mail from (b)(6) to distribution:

The basis for the WIR determination rests mostly on the conclusion of the C-Farm PA. Once the C-Farm PA declared that all future seepage for the next 10,000 years from C-Farm residuals would be below drinking water standards at certain monitoring points, the WIR could use the same conclusion to determine that WIR criteria for public protection had been met.

Unfortunately, the WIR and PA neglected to address the large inventory of Tc-99 and other chemicals which reside beneath the tanks. And the PA also neglected the inflow into the excavation of C-Farm from up the hill where

ancient lake beds in the Hanford H1 formation are responsible for the lateral movement of liquids discharged from PUREX and the various A tank farms hundreds of feet down the slope into C-Farm. Stan Sobczyk's 12/1/2016 modeling report (Figure 30) illustrates those thin-layered ancient lake beds entering C-Farm at depths up to 40-50 feet....and a few beds lower which direct intruding liquid underneath C-Farm.

Therefore, the WIR is based on a faulty C-farm PA which fails in the following regards:

1. The lateral movement of UPRs and tank leaks out of C- farm are modeled for vertical transport through the vadose zone, even though there is firm evidence of lateral flow of Co-60 from C-Farm.
2. Liquid has moved down-slope into the C-farm excavation from upslope cribs, tank leaks and unplanned discharges and may continue for years. This has never been accounted for in the PA modeling.
3. The interaction of seepage from C-Farm or other nearby facilities with the chemicals and radionuclides in the soil beneath C-Farm has not been considered.

All three of these active phenomena will interact with each other for 10,000 years and more, yet the C-Farm PA only looks at the vertical movement of C-farm residuals. For these three reasons the PA should be re-written and the present WIR determination held back until a proper PA can be prepared.

CONCLUSION: The C-Farm PA does not Incorporate the Lateral Flow on Ancient Lakebeds Underneath C-Farm:

1. The flowpath from C-Farm tanks to the groundwater consists of lateral flows which are not reflected in the C-Farm PA.
2. Instead, a vertical flow model is substituted in the C-Farm PA which has no bearing on the actual flowpath to the groundwater.
3. Based on evidence in monitoring wells, the actual flowpath is likely a zig-zag flowpath laterally through many different lakebeds.
4. This zig-zag flowpath has the potential to contain orders of magnitude more radionuclide inventory than the artificial vertical flowpath used in the C-Farm model.

5. Given the erroneous model presented in the C-Farm PA of vertical flow only, estimates of soil inventory will likely under-report the actual soil inventory by orders of magnitude.
6. The actual dose to the public resulting from C-Farm will likely be orders of magnitude higher than reported by the Dept of Energy once the true soil inventory is considered as part of the C-Farm PA.
7. The Dept. of Energy should prepare a new flow model which incorporates lateral flowpaths on ancient lakebeds with vertical flow to groundwater.
8. The new flow model should be used in updating the C-Farm PA, the ERDF PA and the IDF PA and well as in the preparation of the Composite Analysis.

ERDF = Environmental Restoration Disposal Facility

IDF = Integrated Disposal Facility

THE END

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Re: Draft WIR Determination for the Closure of Waste Management Area C

Dear Mr. Bovier,

I urge you to withdraw the U.S. Department of Energy's (Energy) Draft WIR Evaluation for the Closure of Waste Management Area C at the Hanford Nuclear Site. Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as “low-level” waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm tanks includes technetium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose of the waste.

I urge Energy to abandon its short-sighted, dangerous proposal because:

- 1.) Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources, and the Columbia.
- 2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
- 3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia. Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities. People live downstream from Hanford and face serious threats from Energy's proposal. Energy must schedule hearings throughout the Pacific Northwest. Most of all, Energy must abandon its plans to re-label dangerous pollution and invest in cleanup solutions.

Sincerely,

#	First Name	Last Name	Email	Zip	State	Why should Energy not reclassify high-level waste to low-level waste?
1	(b)(6)		(b)(6)	97224	OR	...because radioactive waste is TOXIC!!!!
2				98665	WA	
3				97103	OR	
4				97124	OR	Because nuclear waste has already leaked and presently is leaking from these containers so if we reclassify nuclear waste, the problem will only be exacerbated.
5				60605	IL	
6				98607	WA	Re-naming radioactive waste is NOT cleanup.
7				51111	IA	
8				97031	OR	
9				97304	OR	
10				95616	CA	
11				85351	AZ	There have been numerous studies of Hanford and it's problems related to the Columbia. No Reclassification.
12	(b)(6)		(b)(6)	97214	OR	
13				32708	FL	
14				93446	CA	Ignoring the demise of how we blew things up in the past, is the opposite of life and how the universe put it together. Crimes against humanity!
15				53511	WI	
16				98503	WA	
17				98648	WA	
18				97202	OR	This waste needs to be recognized for the threat it actually is, and properly contained to prevent continued contamination of our river for generations to come.
19				98648	WA	
20				21617	MD	Radioactive waste is dangerous, changing the name is just trying to fool people. How can you say radioactive waste is low-level waste? That's ridiculous.

21	(b)(6)	(b)(6)	49651	MI	
22			59911	MT	Radioactive waste is dangerous to humans and our environment. Relabeling it as low-level waste is a lie and endangers life.
23			97230	OR	There will soon be a high price to pay for corruption in this country. What goes around comes around.
24			98199	WA	
25			99026	WA	
26			99353	WA	Because that is not going to solve anything. I live here, my kid is growing up here, let's make it a safe place!
27			98188	WA	The worksite is already unsafe as it is. No matter how far we go we find that more damage was done than originally assessed. Reclassifying waste as low level will make an unsafe area less safe and kill thousands in the process.
28			98683	WA	The Department of Energy must do a proper clean-up...for the environment and for public health--now and into the future.
29	(b)(6)	(b)(6)	98226	WA	Re-classifying the level does not change what that radioactive waste does to the water and all life in it. It is just another Trump administration LIE! There is enough pollution to clean up now...do not make more. All water belongs to all of us on earth. This is a global issue and deserves a global solution.
30			98683	WA	
31			98101	WA	
32			98661	WA	Don't reclassify high level waste to low level, that would be ridiculous in this day and age. Thank you.
33			98125	WA	
34			90016	CA	
35			97214	OR	Safety for people, plants and animals
36			53715	WI	
37			48081	MI	
38			97007	OR	Because IT is high level toxic waste and we need it cleaned up! For the future health of the entire NorthWest

39	(b)(6)	(b)(6)	94704	CA	
40			80220	CO	
41			18301	PA	
42			03225	NH	
43			98682	WA	
44			98030	WA	Protect the Columbia and properly clean up the highly toxic radioactive waste on and around the Hanford site.
45			98087	WA	
46			97206	OR	
47			97031	OR	Because it's fake news!
48			61111	IL	
49			60089	IL	
50			97219	OR	Relabeling high-level waste cannot change the harm it causes. Don't do it.
51			44606	OH	NUCLEAR WASTE IS NUCLEAR WASTE. ReClassifying it would be DISHONEST & MISLEADING Which, yes, is a BAD thing! NO NUKE WASTE!
52	(b)(6)	(b)(6)	81147	CO	Reclassification is a lie NOT a solution.
53			97103	OR	Radioactive materials are not toys, and not to be toyed with. Serious absolute clean up is critical, or we'll all " go critical"!
54			24018	VA	Lives are at stake!
55			98102	WA	This reclassification would put people and the environment at unacceptable risk.
56			08071	NJ	
57			98105	WA	Because it is dangerous. It must be treated as such. If it were to escape and enter groundwater and soil, it would be devastating to the surrounding communities and all communities that it would eventually reach. We must be responsible whenever we use nuclear energy or generate it. We must pay the costs to store the nuclear waste indefinitely, or until we can recycle it.
58			97142	OR	

59	(b)(6)	(b)(6)	98660	WA	
60			98635	WA	
					The tanks are not properly constructed nor up to code for holding radioactive waste. Lies were told to the American public about the dangers of radioactive waste and exposure to it. Money meant for workers at Hanford was not properly dispersed as claims were not addressed asfter filing and/or were blatantly stalled. This is a horrible cop out for not attending to nuclear waste properly the first time and now DoE/EPA are trying to get out of properly handling the matter that those respective agencies were responsible for.
61	(b)(6)		29208	SC	
62			16943	PA	
63			10549	NY	
64			11231	NY	
65			94703	CA	
66			97202	OR	
67	(b)(6)	(b)(6)	97221	OR	
68			98663	WA	It minimizes the severity of the serious hazard and the response for cleanup
69			01473	MA	This is an attempt to not make the piper (nuclear energy) pay for the tune (nuclear waste). Disposal of nuclear waste has always been a bill its proponents don't want to pay. Reclassifying so the cost of properly handling the waste can be avoided is one more breach of public trust and one more case of accountability being shelved in favor of profit.
70			98902	WA	Be honest about real risks and the impact on human health and well being.
71			m6j0a7	ON	
72			08215	NJ	
73			98502	WA	
74			87124	NM	
75			83860	ID	

76	(b)(6)	(b)(6)	42701	KY	
77			97018	OR	
78			55744	MN	
79			98661	WA	
80			98368	WA	It's extremely dangerous!
81			97914	OR	
82			97498	OR	
83			97225	OR	
84			97201	OR	Dangerous to all living things
85			90049	CA	That is the dumbest question I have ever read.
86			97034	OR	This must be cleaned up, not swept under the rug by renaming. The long term risk of this hazardous waste must be mitigated. A true containment and cleanup must be accomplished. The public must hear and weigh in on this process. It impacts our lives and the lives of our children and grand-children.
87			98034	WA	
88		(b)(6)	94086	CA	Ask some cancer patients in the area.
89	(b)(6)		12205	NY	
90			95030	CA	
91			08009	NJ	
92			75229	TX	
93			48138	MI	
94			98101	WA	
95			80005	CO	This is another example of this administration trying to avoid responsibility for the environment.
96			98250	WA	our land, your mistake, clean up your mess
97			48439	MI	
98			97222	OR	
99			97209	OR	It's a cop-out. Clean it up!
100			98354	WA	Because it's not!
101			97846	OR	

102	(b)(6)	(b)(6)	98503	WA	
103			97219	OR	
104			07030	NJ	
105			97221	OR	
106			84321	UT	Just clean up the damn mess, my dudes. Get off your asses and do it.
107			73170	OK	
108			29078	SC	
109			98612	WA	
110			97520	OR	
111			97045	OR	
112			32506	FL	
113			53959	WI	
114			03458	NH	Changing the name does not make this site safer. It would be a death sentence for everything and everyone around there
115			97302	OR	We need these areas safer not more dangerous.
116	(b)(6)	(b)(6)	98108	WA	his is lunacy. he different classifications have a real function--one ha saves or endangers lives! keep dangerous materials under specific protocols, even if it costs more for the overlords.
117			10024	NY	Because it is a high-level danger to people!
118			97225	OR	We need to know what is going on.
119			99362	WA	Reclassification is not a solution to the problem of radioactive waste. This issue is much too close to my home. I would like to see scientists come up with a safe way to store or dispose of this waste as it continues to be produced all over the U.S.
120			97850	OR	Reclassifying this waste would be a total shirking of duty by the DOE.
121			32259	FL	

122	(b)(6)	(b)(6)	17074	PA	In a word - safety. High level waste is deadly and will remain so for thousands of years, regardless of what some miserable politician decides to call it.
123	(b)(6)	(b)(6)	10512	NY	Let's not buy in to Trump's attempt to reclassify/minimize dangers of industrial pollution. Pretty soon any polluting activity will be deemed "OK", all in the cause of externalizing costs to increase corporate profits. It's bad enough that the public has to pay to clean up industry waste--we need to get to a place where cleanup costs are the responsibility of the polluters. I understand that in this case the public would probably have to pay one way or another, but let's not set a bad precedent that "reformers" at EPA can use to declare toxic waste sites safe.
124			33467	FL	
125			97206	OR	
126			98612	WA	Because the waste has not changed. The only need to reclassify is to allow further degradation of our environment. I don't consider that a worthwhile cause.
127	(b)(6)	(b)(6)	97058	OR	The radioactivity will reach the Columbia River and contaminate everything along its flow to the sea!
128			98607	WA	
129			98368	WA	This kind of waste MUST be lodged in much less vulnerable environments very deep underground.
130			90066	CA	
131			97303	OR	
132			80904	CO	
133			77396	TX	
134			25427	WV	
135			97308	OR	
136			97214	OR	

						Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources and the Columbia. This is irresponsible and wrong.
137	(b)(6)	(b)(6)		98103	WA	
138				91423	CA	Because the planet is dying already. Let's not speed it up to appease immoral businesses.
						This waste is toxic, radioactive and remains poisonous for many, many, many generations. That is not a low-level waste that can be "absorbed" without danger to people and the environment. Follow the science. Solving this problem is not done by "relabeling" it. Find ways to truly neutralize these dangerous toxins and invest in real cleanup solutions.
139				97214	OR	
140				08802	NJ	
141				08802	NJ	
142				99352	WA	
143				97111	OR	
144				98070	WA	Clean it up based on what it actually is. Not what you wish it was.
145				97202	OR	
146				97217	OR	
147	(b)(6)			97035	OR	
148		(b)(6)		99205	WA	The reclassification would put the Columbia River and all the people of our region at risk.
149				97218	OR	
150				98612	WA	
151				19086	PA	
152				97202	OR	This is not safe and has not been addressed in a public forum throughout the state. This is being rushed through.
153				08088	NJ	
154				34954	FL	

155	(b)(6)	(b)(6)	29169	SC	
156			89523	NV	Because it does not become low-level waste, and will continue to cause environmental and health problems long into the future.
157			98199	WA	
158			97202	OR	
159			97031	OR	GIVEN THE RISK TO THE PUBLIC
160			92115	CA	
161			97031	OR	
162			20906	MD	
163			95472	CA	
164			97814	OR	
165			97051	OR	
166			97624	OR	
					It is a decision obviously being pushed through by industry greed and corrupt government agency collaboration. The obvious and unnecessary risks this proposal poses to long term public health and safety are nothing less than criminal . The absurd nature of such a dangerous proposal should trigger an immediate investigation into the origination of such a dangerous proposal.
167	(b)(6)	(b)(6)	06824	CT	
168			10602	NY	
169			91505	CA	
170			97333	OR	
171			98119	WA	
172			46219	IN	
173			94520	CA	
174			01506	MA	
175			97203	OR	
176			97202	OR	This does nothing to remove the waste.
177			97850	OR	

178	(b)(6)	(b)(6)	46203	IN	
179			97211	OR	
180			97218	OR	
181			98664	WA	Renaming something that's toxic is a dangerous lie.
182			97141	OR	What kind of scientific proof is Dept. of Energy relying on to go from "high-level" to "low-level" waste? This administration depends on Fake Facts to further their agenda. Until they have solid proof of any such change and address how current pollution in Hanford's soils and groundwater will be impacted this should absolutely not happen.
183			98368	WA	
184			94063	CA	The public knows the sites producing radioactive and highly toxic residues are trying to evade responsibility or lawsuits for negligence, etc.
185			97219	OR	Protect our waterways and air!
186			98119	WA	
187	(b)(6)	(b)(6)	44074	OH	How can you make any progress by just renaming something to make it sound okay?
188			98052	WA	Leaving radioactive waste, esp. when you know it will seep into the Columbia - the kind of thing you will regret in this life or afterwards - what goes around, comes around!
189			97055	OR	Reclassification does not change the danger to the public or the environment. The Government created the contamination at the Hanford Site and has a responsibility to all Americans to clean the site up.
190			98092	WA	It's based on politics and not science and the health and safety of all that it negatively effects.
191			97215	OR	Because it is misleading and will undermine future cleanup efforts.
192			95519	CA	
193			11209	NY	Lowering standards will endanger everyone's health.

194	(b)(6)	(b)(6)	98282	WA	It is outrageous that we have not cleaned this area up long ago....we should not have a park in this toxic area, let alone fishing in it.....we can never return it to its pristine past, shame on us
195	(b)(6)	(b)(6)	98502	WA	
196	(b)(6)	(b)(6)	98106	WA	
197	(b)(6)	(b)(6)	97138	OR	High level waste is more dangerous than low level waste and must be treated as such. Don't avoid treating this waste by calling it something safer and OK to leave untreated!
198	(b)(6)	(b)(6)	28718	NC	
199	(b)(6)	(b)(6)	34209	FL	
200	(b)(6)	(b)(6)	19804	DE	
201	(b)(6)	(b)(6)	99362	WA	Changing the label from high-level radioactive waste to "low level waste" does NOT make the waste you are talking about ANY "safer"! This proposal is outrageous. Cover Up is NOT Clean Up! I am alarmed that once again the Department of Energy is shirking their responsibilities. It is not just people downstream that are threatened, but also those down-wind. Not just this generation, but generations to come. Please abandon this reckless proposal.
202	(b)(6)	(b)(6)	97504	OR	
203	(b)(6)	(b)(6)	60564	IL	
204	(b)(6)	(b)(6)	97266	OR	
205	(b)(6)	(b)(6)	28712	NC	Logic, science, our very humanity requires us to move forward, not backwards.
206	(b)(6)	(b)(6)	45209	OH	The thousands of gallons of radioactive waste buried at the site. The amount of waste pouring out/ already escaped into the ground. Stop trying to kill people. Stop dancing around the problem and fix it. No more band aiding. QUIT ACTING LIKE ITS NO BIG DEAL! UNDERGROUND PLOOM

207	(b)(6)	(b)(6)	60002	IL	
208			98856	WA	Reclassification changes the name but does not change the problem. As a retired physician with a science and biology background, I am very aware that the problem of nuclear waste is serious and requires attention.
209			98638	WA	how can nuclear waste be low level? clean up your mess. reclassifying is the same as sweeping it under the rug. so fed up with Federal thinking they are above environmental laws.
210			80227	CO	People will get sick and die if this waste is treated carelessly.
211			97202	OR	
212			99201	WA	
213			97215	OR	
214			97031	OR	
215	(b)(6)	(b)(6)	48416	MI	It doesn't change the very long-term danger of these wastes, and will allow people to be complacent with how it's treated. These wastes should be isolated from our food chain for over a million years because left anywhere unmonitored, it will eventually leak and poison the area it's left in. Radioactive poisons don't stay in one place if uncontained, but seep through soil, are carried in wind and water. Many of the radioactive elements bioconcentrate in the food chain, (sometimes thousands of times) - especially harmful to those at the top of the food chain, such as humans and birds. Some of these radioactive poisons last thousands of generations or longer. Why are we deliberately poisoning future generations?
216			08077	NJ	The Half-Life of these materials is 24,000 years. We're not even into the first 0.5% of the Half-Life. We can't determine for future generations the safety (of which there is little) for a waste product we made less than 0.5% into it's half-life.
217			85257	AZ	
218			98502	WA	

219	(b)(6)	23803	VA	
220	(b)(6)	97031	OR	As someone living many miles down stream from Hanford, my concern is that currently we can't eat the fish out of the Columbia except for the salmon coming from the ocean due to the chemical toxicity leaking from the Hanford source. U. S. Government oversight allowed this problem to occur and now you need to take responsibility and fix the problem. To reclassify the existing problem as not a problem is truly absurd! Thank you, (b)(6)
221	(b)(6)	97524	OR	Those radionuclides have extremely long half lives and must be cleaned up because if they are not they WILL end up in our environment causing irreparable harm.
222	(b)(6)	98663	WA	
223	(b)(6)	97386	OR	Typical GOP cop out, irresponsibility. A form of loophole.
224	(b)(6)	10301	NY	
225	(b)(6)	02151	MA	This site is a continuing, horrific tragedy. The government cannot allow everyone to shirk responsibility. There must be accountability. This cannot be done without keeping it under the correct classification.
226	(b)(6)	53213	WI	
227	(b)(6)	15228	PA	
228	(b)(6)	12604	NY	
229	(b)(6)	98072	WA	
230	(b)(6)	98104	WA	
231	(b)(6)	99301	WA	The Hanford site is in close proximity to the Columbia River, a river that we all drink out of daily. I dont want to turn into a mutant
232	(b)(6)	95482	CA	
233	(b)(6)	20069	ot	
234	(b)(6)	20069	ot	
235	(b)(6)	98034	WA	It is STILL deadly, toxic waste... Lipstick on a Pig ?
236	(b)(6)	97021	OR	
237	(b)(6)	97031	OR	Cause it is ignorant.

238	(b)(6)	90806	CA		
239		98010	WA		
240		99362	WA		
241		98332	WA	Because we need to be responsible and aware of our impact on the environment. We need to be diligent in our efforts to keeping this planet as clean as possible	
242		20737	MD	Save our planet! It's all we have!	
243		99354	WA	For decades, Hanford was used to produce nuclear materials without adequate planning for cleanup of toxic and radioactive byproducts. Now because of the enormity of scope and cost of cleanup, the federal government wants to cut corners in ways that result in unacceptable risk to future generations and restrictions on future use that violate treaties with Native American tribes and the states. Energy should stop trying to game the problem by reclassifying waste and instead focus on cleaning up that waste safely.	
244		(b)(6)	97214	OR	
245			76010	TX	
246			97203	OR	
247			92373	CA	It is an end run around having to clean up their mess. Doing so is a human rights abuse as it puts all of us at risk of becoming contaminated and experiencing life ending or life diminishing health conditions.
248	90048		CA		
249	97019		OR		
250	98105		WA	The Department of Energy should not reclassify high-level waste to low-level waste because it is scientifically wrong and it is dishonest and unethical.	
251	92064		CA		
252	98506		WA		

						How many of those fish would you eat now? Do you want to glow in the dark, or have inflammatory immunity problems, or an antibody response of abnormal protein signals in your blood. You know enough time has not passed to purify the ground/water to a safer level. You know what the right thing to do is, so just do it! Would you want to live there now?
253	(b)(6)			98071	WA	
254				07040	NE	
255				98506	WA	
256				62405	IA	
257				97040	OR	
258				97103	OR	
259				97301	OR	Reclassifying high-level waste to low-level waste would mean this waste does not receive the full measure of clean-up processing necessary to protect nearby and downstream communities.
260				53516	WI	
261				98133	WA	
262	(b)(6)			97205	OR	This is an attempt to avoid the important clean up work that must proceed to restore this area and the Columbia River.
263				58201	ND	
264				97219	OR	
265				97202	OR	The Department of Energy has a responsibility to the safety of the people in the NW to handle the radioactive waste appropriately. Changing course midstream to ignore the problem and not handle its responsibility appropriately is wrong.
266				98070	WA	
267				32779	FL	This would violate ALL THE RULES. Massive Trump government corruption.
268				50322	IA	Don't be idiots.
269				99167	WA	

						are you just fucking nuts? This is highly radioactive material with endless half life....it must be sequestered safely and monitored eternally....we have no business creating this unending threat but since we have, we must protect the planet from its danger forever, and repeatedly as long as it takes. Renaming it does not change what it is....we must clean up and monitor Hanford forever.
270	(b)(6)			97016	OR	
271				97218	OR	Energy has faialed to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
272				97035	OR	
273				98682	WA	Because of wildlife, humans downstream and dependent on it for livelihood, tourism, sport fishing.
274				98672	WA	
275				99101	WA	
276				47401	IN	
277				98661	WA	
278				03902	ME	
279	(b)(6)			33064	FL	
280				98270	WA	Because the long term damage to the neighboring communities just for a quick headline that makes it look like trump is doing something is not worth it. Our gvmt should be playing the long game and take care of our current AND future citizens.
281				19107	PA	
282				91423	CA	
283				97203	OR	
284				97124	OR	
285				88352	NM	Damage to Eco-system.

						Reclassifying high level waste to low level waste is false advertising. Call highly toxic waste what it is and treat it as such. These substances require the highest possible level of classification/treatment available, and even that is highly ineffective given the longevity of the threat. Be smart. Protect our communities for now and for the future -which is a long long time where nuclear waste is concerned.
286	(b)(6)			97206	OR	
287				85251/ 7006	AZ	
288				97219	OR	
289				98607	WA	
290				98220	WA	
291				98672	WA	I'm tired of swimming (weekly) in the high-level waste. Clean it up (don't rename/reclassify it)...
292				93940	CA	
293	(b)(6)			98801	WA	This proposal means we are agreeing to poison future generations with messes we made. It is our moral duty to bring the underground high level waste above ground and stored safely so future generations know where it is and can monitor the poison.
294				67203	KS	What an asinine question (especially if you've read the article)
295				v5t413	BC	
296				97217	OR	
297				95436	CA	
298				99712	AK	
299				79902	TX	
300				11229	NY	
301				98103	WA	
302				98110	WA	This would make nonsense of the classification system. We would not be able to trust it.
303				38104	TN	

304	(b)(6)	98660	WA	Because I want my river to be safe and clean again!!	
305		03290	NH		
306		97355	OR		
307		24018	VA	This stuff is DANGEROUS and will be for thousands of years!	
				nuclear Waste is THE WORST , MOST LETHAL , TOXIN and MANmade, ON THIS PLANET.....I DONT WANT ANY MORE NUCLEAR ENERGY EVER , NO more radiation leaks, No more lies about how safe they are,,,, AND ALL THIS NUCLEAR WASTE left since the 1950's..... it is high LEvel Hi risk ... and all you people in charge need to wake up to how DaNGEROUS THIS RADIATION IS TO PUBLIC HEALTHY, EARTH'S AND ALL HER LIFE FORMS..... THANK YOPU FOR OPENING YOUR MIND AND HEART AND PUT IN PLACE very strong rules to clean this up as URGENT.	
308		99223	WA		
309		97220	OR		
310		97224	OR		
311		(b)(6)	97220	OR	
312			12180	NY	
313	94541		WA	Hazardous and toxic nuclear waste must receive the careful treatment it needs to protect the public, the Columbia River and our environment.	
314	98684		WA		
315	97031		OR		
316	47448		IN		
317	40208		KY		
318	97213		OR		
319	10001		NY		
320	10011		NY		
321	11743		NY		
322	02476		MA		
323	97504		OR		

324	(b)(6)	98610	WA	
325		85719	AZ	
326		02446	MA	
327		97405	OR	
328		98660	WA	
329		98926	WA	Because Energy needs to actually clean up the waste.
330		94114	CA	Period.
331		32162	FL	
332		97213	OR	
333		86326	AZ	Energy should not reclassify high-level waste to low-level waster, because it is misleading and just another trick by the government not to have to take responsibility for the travesty of nuclear power and it's very harmful effects on Gaia.
334		98155	WA	

					Pre-emptive P.s. - Burying our heads in the sand like children solves nothing. We're adults. It's time we started acting like it. Dear U.S. Department of Energy, I urge you to withdraw the U.S. Department of Energy's (Energy) Draft WIR Evaluation. Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as "low-level" waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm includes technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose the waste. I urge Energy to abandon its short-sighted, dangerous proposal because: 1.) Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources and the Columbia. 2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste. 3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater. Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia.
335	(b)(6)			65804	MO
336				97031	OR
337				98121	WA

Doing that is reneging on a promise to clean up the toxic mess that was created. It's inconvenient and expensive but spend the money where it needs to be spent and stop trying to find ways to back out and do less. We ALL live downstream.

338	(b)(6)	98026	WA	
339		98672	WA	
340		97211	OR	a rose by any other name is just as beautiful....toxic waste
341		97031	OR	by any other name is still just as toxic!
342		02139	MA	Future generations' resources, health and prosperity is
343		89448	NV	dependent on us acting immediately, significantly and
344		97229	OR	broadly.
345		53403	WI	Downgrading danger does not make it less dangerous!
346		11762	NY	There are already health & safety issues. This should be
347		97206	OR	cleaned, pure and simple, not political!
348		97211	OR	
349		07410	NJ	
350	(b)(6)	81403	CO	It is dishonest, dangerous, expensive, counterproductive,
351		13068	NY	and bad for all living things and democracy.
352		97211	OR	
353		97031	OR	Nuclear waste is NOT low-level waste and letting it get into
354		98125	WA	the Columbia River will contaminate fish, communities and
				water supplies for years to come thereby depriving the
				Northwest of food sources and economic benefits as well
				as causing major health problems.
				Because it is bureacratic nonsense. I thought dear leader
				Trump was all about transparency?

						Energy absolutely should NOT reclassify high-level waste to low-level waste. Changing the name does not change the risk to the people who live in the area and to the environment surrounding the site. We need a cleanup that will last through the ages and long outlive us. Otherwise, this amazing area will never be fit for human or wildlife habitation.
355	(b)(6)			98671	WA	
356				97058	OR	Are we really leave a wasteland to our children?
357				97206	OR	
358				46902	IN	it is immoral
						Residents of Washington, Oregon, and tribal nations depend on the Columbia River for our recreation, wind-surfing, swimming, fishing, boating, and quality of life. Many of our salmon, birds, and other wildlife also depend on the Columbia River habitat. Keeping the groundwater free of radioactive waste products prevents future disasters and cancers. Once these products migrate into the water there is no solution and no way to remove them from the Columbia River ecosystem. The federal government promised to protect us and dispose of the waste. This is not just for our children, but many future generations for thousands of years will be hurt if this mess is not stopped before it can spread. How could anyone call such nuclear waste and toxic by-products "low level?" I would like to Know how this stuff could ever fit any definition of "low level?"
359	(b)(6)			98501	WA	
360				98664	WA	
361				KT22		
362				8RF	ot	
363				11958	NY	
364				80911	CO	
365				98310	WA	It's deceptive and unwarranted.
				08701	NJ	

						Do not reclassify high level waste at Hanford to low-level waste! This is a mistake of grave proportions for our environment; the health and safety of all people and nature in the Pacific NW is at stake. Do the right thing for our earth and for all our children's future, please. We must invest in the best clean up solutions possible for high-level waste.
366	(b)(6)			97202	OR	
367				75230	TX	
368				97215	OR	Nuclear energy needs to take the most rigorous steps to protect us from radiation, not be reckless with our land, water and community.
369				33478	FL	
370				94122	CA	
371				55313	MN	
372				98117	WA	This is a matter of public safety for us and future generations.
373				97459	OR	Clean it up properly, don't reclassify to take shortcuts!!
374	(b)(6)			20630	MD	The public depends on you to protect our health and safety. Please do your job. Thank you.
375				97219	OR	this is dangerous to all communities in Oregon and Washington
376				91042	CA	BECAUSE IT ISN'T LOW-LEVEL WASTE; IT'S HIGH LEVEL WASTE AND DEADLY! Changing the label will not change the science. How stupid are you to think that we-the-people are stupid enough to fall for your crap? This is just Nuclear Spin-Speak, trying to make things sound good when they're just plain awful.
377				98311	WA	
378				97239	OR	Because changing a label doesn't make lethal poisons safe. Do the science. Duh.
379				98115	WA	
380				98166	WA	Clean water in the Columbia is vital for all who rely on it. We need to take better care of our natural resources.

381	(b)(6)			98584	WA	The threat to the environment and human life has not changed, therefore this proposed reclassification is absurd and cruel.
382				08802	NJ	
383				98109	WA	
384				95012	CA	
385				53704	WI	IT's a terrible idea. People are already exposed to so many environmental toxins. We don't even know the effects of all of them. Poor people and minorities tend to suffer the worst. To give everybody an equal chance in life, we need to protect everyone from dangers like these.
386				97756	OR	If it was designated high level, changing the name will not change the FACT that it is high level nuclear waste.
387				08016	NJ	
388				94549	CA	
389				97330	OR	
390	(b)(6)			97031	OR	Because we need to stay vigilant in monitoring for health, and a reduced title would likely reduce the effort when cleanup has already taken far too long. The longer we take, the more exposure.
391				98672	WA	
392				53716	WI	
393				97322	OR	
394				44044	OH	
395				50312	IA	Reclassifying does not make the waste safer. High-level waste is dangerous and should be treated as such.
396				97217	OR	The long-term consequences of low- or high-level waste are not well-researched, whether impact on the smallest living organisms to humans. From all we know so far, these exposures are not safe. The types of waste involved include elements and isotopes deadly for a very long time.
397				10021	NY	
398				97225	OR	You cannot make it less poisonous by changing its name!

399	(b)(6)	22457	ot	
400		98112	WA	
401		91505	CA	
402		37902	TN	Because it poses a serious health risk for generations to come
403		85248	AZ	Killing American Citizens is NOT what our Government is supposed to be doing! Is trump the starting point of our Government working against it's Citizens?
404		97219	OR	Radioactive waste is a danger to all of us!
405		97202	OR	
406		99205	WA	
407		97455	OR	
408		97850	OR	

					As Portland Community College (b)(6) (b)(6) (b)(6) (b)(6) it would appear that your Dept. of Energy proposal has NOT been reviewed by anyone with a background in basic chemistry. It is appalling to me that the Department of Energy would even consider thinking of ignoring the true science of radioactive elements and toxic waste, trying an ostrich approach of "out-of-sight-out, of-mind" which could cause significant health problems to not only humans, but WILL destroy the precious salmon downstream! We were warned in George Orwell's "Animal Farm" that re-labelling and re-classifying simply do NOT make it so. There is NOTHING "safe" about these toxic elements, which have the staying power of thousands of years, still being radioactive enough to cause the cancers and leukemia to anyone in contact with the water supplies contaminated by waste leakage into the soil. We the People call for a complete unbiased Environmental Impact Statement Review based on a Cost-Benefit-RISK Analysis. The RISK and TRUE cost MUST include the actual costs to human health and environmental degradation which would mean millions of people impacted negatively and an entire species destroyed within that	
409	(b)(6)			97116	OR	to protect the environment.
410				97236	OR	
411				98103	WA	It is extremely irresponsible!
412				98664	WA	The federal government created this situation, and they have the responsibility to CLEAN IT UP! Simply renaming high-level waste as "low-level" won't do the job and is a cop-out.
413				22664	VA	
414				97213	OR	We need to take care of our messes and not pass on this toxic mess for future generations to clean up by reclassifying high-level waste to low-level waste. We need to protect the water quality of the Columbia River which is already compromised.

415	(b)(6)		97031	OR	The Columbia river is already badly polluted. Please clean up the Hanford site, do not reclassify the substances stored there so they can be ignored. Clean it up!
416			60647	IL	Nuclear cleanup, including secure, permanent neutralization of all high-level waste, is a responsibility we owe to future generations. Distorting the law to evade this responsibility is a crime against future humanity.
417			78736	TX	
418			97034	OR	
419			98118	WA	
420			10580	NY	
421			97477	WA	Radioactive is Radioactive, let's keep it clean!
422			97267	OR	
423	(b)(6)		97041	OR	This is a ridiculous proposal. And the people who came up with this idea apparently don't care about their children's future. I already don't eat fish out of the Columbia River because of its pollution and also hesitate to consume agricultural products grown near Hanford. This quick and easy "solution," if implemented, will come back to haunt us financially, environmentally and in public health issues.
424			98221	WA	
425			84405	UT	...
426			98103	WA	Have you SEEN the effects this plant has had on the people who worked there?! Devastating!! CLEAN IT UP!!!! PLEASE!!!
427			97302	OR	
428			97215	OR	If it's so safe to leave where it is, it should be even safer to relocate it to the White House or Trump Tower?
429			30121	GA	

						I, and many other organisms (both human and non-human) live and recreate on or near the Columbia River. The potential exposure of life to radionuclides from Hanford, if not properly cared for, is very high due to the concentration of cities, people, and organisms along the Columbia. Neglecting to adequately care for the waste at Hanford is a slap in the face to future generations that will inherit the earth and the decisions we choose to make on it today.
430	(b)(6)			97103	OR	
431				22152	VA	
432				99202	WA	You clowns made this mess so clean it up before it is too late.
433				38138	TN	
434				97215	OR	I want to thrive in my local waters and air and clean food. Hanford's C Farm Tanks should NOT be reclassified to satisfy political interests when they clearly have not changed. Please do the right thing for our animals, our air, our water, our food, our people.
435				97124	OR	
436				97211	OR	
437	(b)(6)			98270	WA	
438				99362	WA	Because it is toxic and dangerous. What suddenly made it "safer"???
439				97205	OR	The Department of energy has NOT fulfilled their obligations to insure that the toxicity from the Hanford Nuclear Site does not jeopardize the health of the people in and around the site itself, the water of the Columbia River and the fish which is a food source not only for Native Americans but for ALL residents of the area and visitors as well. It takes hundreds of years to reduce or change this type of contamination and it has been less than 65 years since the toxic dumping has started. Who knows when and if it has stopped? Just changing the name of the waste is NOT a magical formula for "cleanup"!! ENERGY is simply in denial and shirking its humane and legal responsibilities by not doing adequate cleanup.

440	(b)(6)	98070	WA	High-level waste is dangerous and threatens our water.	
441		97377	OR		
442		01060	MA		
443		97217	OR	Because data facts show it as high level	
444		97213	OR	They haven't done anything other than change the definition.	
445		98584	WA	A new label does not change the level of toxic harm to our environment. Pay attention to the science.	
446		49504	MI	Because wording does not change the ultimate danger	
447		98498	WA		
448		20850	MD		
449		97202	OR	This is a lie to Oregonians and the people of the United States. It is VITAL that this is cleaned up, Reclassifying is not a solution.	
450		(b)(6)	98155	WA	This idea of changing the label of some of the highest toxic waste in the world is just a camouflage to divert the money that should be used to clean it up to some wasteful corporate scheme of those who "run" this agency.
451			37069	TN	
452			98127	WA	
453			78240	TX	A rose by any other name smells as sweet. Gross, dangerous waste water by any other name is just as horrible. Clean it up!
454	97058		OR	Ladies/Gentlemen: Read this petition to your mothers and your children. I bet they would sign it. You know how dangerous this is. I am asking you to be hero's and clean up these scary, scary sites. If not for those of us who live downstream...for your own families!	
455	98625		WA	The damage that the Hanford site contamination has done to the American West is generational.	
456	98125		WA	Changing the classification of a toxic material has no effect on its toxicity.	

457	(b)(6)			97302	OR	Renaming high-level waste is no solution and the Nazis in the republican party know this. It's all about the money to these greedy money whores in the Nazi party. They will find their path to eternal hell unblocked. Until every last Republican on earth is dead, the world is in great danger.
458	(b)(6)			84664	UT	We need to clean up the environment. We can't close our eyes to damage and hope it goes away. We need to protect the Earth so we can live healthy lives here.
459	(b)(6)			94530	CA	Because it ignores the truth and sets a dangerous precedent. We can not just change a classification because we don't like it. We need to be honest about our impact on the environment.
460	(b)(6)			14608	NY	
461	(b)(6)			97239	OR	
462	(b)(6)			97058	OR	Too great a risk.
463	(b)(6)			97116	OR	Clean UP Your Mess & Continue to take Responsibility to bring this Area Back to How You Found IT !!! In Time it's affects on All Life will only become Worse !!!!
464	(b)(6)			98579	WA	I'm incredibly worried that this reclassification will lead to shoddy cleanup, and the health of the PNW will suffer. This site is already dangerous and mismanaged, and the last thing we need is to make the job of mismanaging it easier.
465	(b)(6)			97330	OR	
466	(b)(6)			98605	WA	Why? You know why you should not reclassify! For the Safety of everyone on the river system and future generations, Do Your Job to the fullest degree, Do What Is Right For The People!
467	(b)(6)			98105	WA	
468	(b)(6)			27713	NC	
469	(b)(6)			98248	WA	
470	(b)(6)			97601	OR	Nuclear waste is dangerous! Please think of future generations!
471	(b)(6)			98110	WA	

472	(b)(6)	97037	OR	
473		85650	AZ	Such a classification will irreparably harm the environment and living things.
474		05301	MA	Of course it should not be reclassified. There is a level system for a reason and high level is much more toxic and thus dangerous. It is deception and lying to reclassify it and would only benefit polluters.
475		85032	AZ	
				It is good to know that our government is so concerned about future generations. The scope of the damage and costs of cleanup surely will decrease if we all can just ignore it for awhile. They sure know how to kick the can down the road so others can deal with it. The mess was made and now we need to be adult enough to clean it up. It will not be cheap, it will take time and it needs to be done. It should not be an issue of cutting funds to make one look like a fiscal conservative so you can retain your seat in government. Real fiscal conservatives know that there are times and situations where spending in a proactive manner can save a bundle of money & grief down the line.
476	(b)(6)	98902	WA	
477		97211	OR	There are too many contaminated leaking from Hanford. The site MUST be cleaned up!
478		97203	OR	
479		98203	WA	
480		98683	WA	There is a likelihood that reclassification of higher level wastes to lower level wastes will reduce interventions that protect the water coming off Hanford and Columbia River and
481		97080	OR	
482		98304	WA	This would be false information.
483		98092	WA	
484		97212	OR	
485		97217	OR	It needs to be cleaned up properly for the health and welfare of humans and animals.

486	(b)(6)	97459	NT	
487		19128	PA	
488		99633	AK	Standards and rules for protecting clean water and human health cannot just be arbitrarily changed!
489		06249	CT	
490		95519	CA	
491		98650	WA	
492		74801	OK	
493		30338	GA	
494		98226	WA	Changing the rule will not speed up the process of radioactive half-lives. High level waste will remain high level dangerous regardless of any reclassification, and will continue to irradiate the waters of the Columbia River. Don't play word games! Find a REAL solution to our nuclear waste problem!
495		54843	WI	
496	(b)(6)	98607	WA	The environment is already under attack since the Trump administration took over. Pruitt dismantled what was the EPA. Need to halt this proposal!
497		00316	GA	
498		97031	OR	
499		98661	WA	
500		77099	TX	To do so is not in the best interest of our communities, our families, and most importantly, our children.
501		60202	IL	
502		98502	WA	Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources and the Columbia.
503		92630	CA	
504		99336	WA	Radioactive means just that!!!

505	(b)(6)	99352	WA	Water is life. It's the most import
506		02180	MA	
507		32534	FL	THEY MADE THE MESS! THEY MUST CLEAN IT UP!!
508		95472	CA	DON'T TRY TO HIDE IT UNDER A NAME CHANGE!!!
509		97850	OR	What will happen to us and future generations if we pollute our waters? We must be vigilant about the health of the planet.
510		98273	WA	
511		97215	OR	
512		97031	OR	
513		20815	MD	
514		98635	WA	High level waste right now does not meet the criteria of low-level waste.
515		98683	WA	It's a complete charade. It will do nothing to protect the citizens of the Columbia River watershed.
516		95004	CA	
517		98315	WA	
518	(b)(6)			Because it's dangerous. And stupid. And the earth is suffering enough because of all stupid environmental descisions that are being made. They won't be happy until we are dead.
519		88011	NM	
520		97031	OR	
521		98684	WA	
522		52317	IA	Because the majority of the waste located at the Hanford site is incredibly dangerous to life as we know it, and will remain so for LONG after anyone on earth now has passed away. We need to keep these dangerous materials labeled as such, not only for our safety, but the safety of those who come after us.
523		98233	WA	
		93277	CA	It's bureaucracy at its worst - our children will have to clean it up.

						This is an underhanded irresponsible way of walking away from an impending danger. Hanford should be cleaned up now. We would be foolish to wait until the ground waters of the Columbia are contaminated!
524	(b)(6)			97031	OR	
525				98107	WA	
526				20747	MD	
527				v8m 1s5	BC	Reclassifying high-level waste to low-level waste would be considered fraud.
528				95405	CA	
529				98144	WA	
530				97205	OR	
531				98026	WA	
532				98648	WA	
533				84105	UT	
534				98052	WA	
535				97211	OR	
536				97040	OR	Reclassification will not resolve the issues with this aging facility. It is a disaster in the making.
537	(b)(6)			98221	WA	
538				32301	FL	
539				97058	OR	
540				98501	WA	Because that would be incredibly dishonest as well as dangerous. The river is something to treasure.
						Ccalling it by another name doe not make it safer!
541				97309	OR	
542				48446	MI	
543				98144	WA	It's unconscionable to think that the United States could create such a wildly unsafe and unclean situation and then run from its problems, leaving my state of Washington on the hook for the bill -- which, without a doubt, we will be should the US abdicate its responsibility here.

544	(b)(6)	97540	OR	It's too dangerous and will adversely affect life far into the future.
545		97213	OR	
546		90009	CA	
547		19128	PA	
548		97203	OR	This nuclear waste is a danger to everyone in the Columbia River basin. It needs to be managed with the highest level of care, not just re-labeled.
549		53072	WI	
550		98125	WA	Because its effectively poisoning America
551		98221	WA	We need to treat it as seriously as the waste demands, not downgrade it. Thank you.
552		07950	NJ	
553		97031	OR	We must find a way to clean up nuclear waste for good. It is a health risk for our communities along to Columbia river and the wild fish, animals and birds that live within and near the river.
554	(b)(6)	97045	OR	Protect our eco-systems/animals and people. No to nuclear power and weapons.
555		97220	OR	This is a lazy and misleading step to take. Distraction will not solve the problem of high-level waste.
556		97212	OR	
557		98629	WA	It's time to stop kicking the can down the road. No more grout, no more soft fixes. Let's do this right and be done with it. Until nuclear waste can be safely disposed of, let's make no more.
558		19054	PA	
559		60616	IL	
560		98902	WA	Reclassification of HLW is illegal, not protective of HH and the environment, and does not honor the US government's Trust responsibility to the Yakama Nation.
561		10598	NY	
562		95037	CA	

563	(b)(6)	01301	MA	This would be insane this waste could potentially poison on of the largest waterways in America FOREVER	
564		98292	WA		
565		43230	OH		
566		99218	WA		
567		97212	OR	This is a dangerous and wreck less plan.	
568		98501	WA		
569		94526	CA		
570		98672	WA	Because it's of high level toxicity and should be treated as such.	
571		28676	NC		
572		08863	NJ		
573		94118	CA		
574		99507	AK		
575		97128	OR		
576		98661	WA		
577		55403	MN		
578		(b)(6)	98026	WA	
579			97131	OR	
580	97040		OR	This is deception.	
581	97040		OR	Re-classifying high-level to low-level waste erodes accountability. Accountability is essential to our citizens' safety and river and ecosystem health. Reclassifying waste is a slippery slope that amounts to deception.	
582	97203		OR		
583	85719		AZ	HELL NO, TOO DANGEROUS!!!!!!!!!!!!!!!!!!!!!!	
584	94804		CA	High level waste is much more dangerous. The department of energy must be responsible for protecting the health of people and the environment.	
585	97035		OR		
586	98625		WA		
587	97448		OR		

588	(b)(6)	92121	CA	because it's not the truth. Reclassifying it does not make it less dangerous! It only mirrors that the government does NOT care about it's people nor its environment.
589		96708	HI	It is killing many and babies are going to have to grow up with another pollution
590		97031	OR	
591		98604	WA	This is a real bad move. Do not reclassify. Our children deserve a future filled with clean air and water. Do Not reclassify.
592		98011	WA	We need to take better care of what is left of our environment.
593		90717	CA	Any Nuke Waste is Lethal
594	(b)(6)	97051	OR	My town gets its drinking water downstream, from a well in Columbia City. Pretending that the effluent from the mis-handled waste at Hanford is less hazardous or long-lived than it is will not protect anyone from the consequences of a failure at Hanford. The decision made in the 1940's, to poison ourselves as well as our enemies, must be opposed today and tomorrow. Including by sending good money after bad in the ongoing cleanup of the high-level waste in the leaking tanks.
595		97035	OR	Please protect the environment and the Columbia and Yakima Rivers
596		98019	WA	Reclassification of waste does not solve the problem. This waste should have been cleaned up long ago. Please stop slow walking this problem and clean it up already.
597		98026	WA	Because it isn't low-level waste!! That is why! What part of that is not understood!!! My God - has this country lost it's mind on what is good and what is bad? This is a dangerous idea and must be stopped!
598		06516	CT	
599		44024	OH	

						<p>Toxic and radioactive waste has already leaked. Groundwater and the Columbia River are too important to trivialize in this way. We have created a huge and convoluted problem, but the solution is not to rename it and look away.</p>
600	(b)(6)			97229	OR	
601				97049	OR	a name change is not a solution.
602				66204	KS	
603				46804	IN	
604				97218	OR	
605				55404	MN	
606				97031	OR	
607				67550	KS	
						<p>The reclassification is a politically motivated maneuver that negates potential health risks to the citizens of Washington state. Radioactive materials from the hanford site are poisoning fish in the Columbia which are consumed in large quantities by locals, especially Native American tribes along the Columbia River. This is a direct violation of the Bolt decision and an affront against humanity rights.</p>
608	(b)(6)			98506	WA	
609				33712	FL	
610				97302	OR	
611				98635	WA	Reclassifying high-level to low-level is a lie for the purpose of apathy.
612				97031	OR	We need to clean up the River, not pollute it more!
613				98245	WA	
614				97219	OR	Rdioactive waste is bad for my great nephew and all children. Make sure this site is cleaned up thoroughly!
615				97030	OR	
616				97222	OR	

					Dear U.S. Department of Energy, I urge you to withdraw the U.S. Department of Energy's (Energy) Draft WIR Evaluation. Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as "low-level" waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm includes technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose the waste. I urge Energy to abandon its short-sighted, dangerous proposal because: 1.) Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources and the Columbia. 2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste. 3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater. Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia. Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the	
617	(b)(6)			98201	WA	
618				99210	WA	Please stop the hat trick. Fulfill the responsibility to clean up following WWII weapons production. Washington State and its citizens deserves nothing less.
619				98225	WA	

						It is irresponsible for humans to create this waste without an adequate plan to dispose of it, let alone house it for an indefinite amount of time. The site at Hanford already has material leaking into the surroundings. This is a serious problem, it needs not be ignored or pushed aside due to a lack of knowing what to do with it!
620	(b)(6)			98408	WA	
621				98501	WA	
622				84741	UT	
623				94591	CA	
624				97365	OR	Present generations created a dangerous mess for future generations. We must be accountable for that and do the right thing for children, grandchildren, great grandchildren and many generations beyond that by cleaning up the mess, not reclassifying it as low-level waste.
625				99205	WA	It is absurdly illogical, and dangerous to boot.
626				33160	FL	
627				78715	TX	
628	(b)(6)			56537	MN	This toxicity will last for generations. Changing the words won't make anything cleaner or safer.
629				97215	OR	Are you kidding me? Clean it up!
630				11743	NY	
631				11729	NY	My health and safety is first and foremost in considering this reclassification. The US Department of Energy must be held responsible for the contamination they have produced.
632				97031	OR	

					<p>High-level waste is extremely dangerous to human health as well as the health of all living organisms including other mammals and plant-life. Once this high-level waste, under the fake label of low-level waste, is allowed to get out into the environment on planet earth, it can never be contained. The radioactivity alone is dangerous enough by itself, but this danger to health becomes rapidly accelerated when inhaled, ingested, drank as a radioactive molecule which will irradiate nearby tissues and organs inside humans, mammals, and plant-life from a stationary position, unless it happens to be able to continue to move to a stationary position or possible elimination, and this will cause tissue damage starting with membrane damage that can extend eventually into cancers and DNA damage. Chernobyl has a legacy of mutated babies born from both radioactive elevated exposure from the 1986 accident as well as dead and chronically sick nuclear operators, construction workers, and cleanup workers, most of whom had to be ordered to the Special 30 km Zone as Soviet military. There is no question that nuclear radiation destroys human health and must absolutely be contained. Those who try to claim hormesis are ignoring the facts which defies scientific vigor in analysis and thus are unscientific espousing what amounts to opinions. Please take every step and every policy with containment of every radioactive molecule as top priority. We were promised that this industry was clean, but that was a lie because we are finding humanity threatened by the waste and leakage of radioactivity that is absolutely unacceptable on the civilian or military side.</p>	
633	(b)(6)				53572 WI	
634					60118 IL	<p>The waste should be cleaned and actually become low-level prior to reclassification, rather than reclassifying it just for shits and giggles. I know it's no longer the stance of the government or any of it's departments to actually help the citizens of the country anymore, but maybe can we not do things that actively harm people?</p>

635	(b)(6)	98672	WA	It will surely create a lower priority for clean up and waste is leaking into our river.
636		98664	WA	
637		97031	OR	The Columbia is a vital river that needs to be protected. It is not beneficial to our river to reclassify the waste and thereby put our river and people that live nearby at risk. This reclassification needs to be discussed/explained in detail/justified to the public before being implemented.
638		98122	WA	
639		35757	AL	
640		79416	TX	Simply relabeling the waste won't actually mitigate the issue, and the waste will still present a threat to humans and the environment.
641		80304	CO	
642		97219	OR	
643		97219	OR	Because it will permanently degrade the environment with profound impacts on human health. It would be an unacceptable heritage to leave to my grandchildren and their grandchildren.
644		97212	OR	WHY? Reclassifying high-level radioactive waste as low-level radioactive waste isn't oft repeated desire. It sets a dangerous precedent and would not be scientifically sound in attempting to contain high level radioactive waste for our biosphere. The US DOE's plan to re-classify the high-level radioactive waste remains in the bottom of the C tank farm tanks and filling the tanks with grout (that is their plan) does absolutely nothing at all about the high level radioactive waste that has leaked out of the tanks, nor the radioactive plumes that are migrating to the groundwater. This is absolutely scientifically and ethnically WRONG.
645		98597	WA	nks you.

660	(b)(6)	60617	IL	
661		54660	WI	They need to hold public hearings
662		80247	CO	Because it is a flawed premise.
663		10993	NY	
664		97031	OR	They should keep all the radioactive materials contained to protect the Columbia river and our health
665		97239	OR	
666		97322	OR	This isn't a clean-up, it's a passing the buck.
667		55016	MN	
668		97206	OR	Renaming the problem does not make a solution. This is a huge environmental threat that the government needs to be accountable for. Clean it up.
669		97011	OR	The risk to the ecosystems and people of the Columbia Basin, as well as the rest of the Columbia River and its surrounding area, is too great to allow forward movement with this plan.
	(b)(6)			Do not reclassify. These high level wastes are a clear and present danger to our region. For the sake of our web of life this contamination needs to be cleaned up. No more procrastination!
670		97058	OR	
671		98031	WA	
672		97031	OR	
673		98668	WA	
674		97202	OR	
675		97031	OR	In order to consider changing the designation of Hanford's C Farm tanks from high to low level waste, the burden of proof lies with the DoE. The DoE has not (and can not) prove that the human and ecological health threat warrants the "low level" label. The environmental health ramifications of changing the labeling is huge.
676		47630	IN	
677		98274	WA	
678		99203	WA	

679	(b)(6)	97213	OR	
680		59758	MT	
681		98125	WA	
682		78250	TX	Because it's still high level waste
683		97005	OR	
684		83702	ID	Idaho's remaining salmon and steelhead require a clean Columbia for migration between the mountains and the sea - don't pollute the waterways that connect us all!!
685		98136	WA	
686		78744	TX	This waste poses a huge risk to all humans and wildlife living on/using the Columbia river in any way. Reclassifying this waste does not make it any less dangerous, and is extremely ignorant to believe it will.
687		98664	WA	
688		95006	CA	
689		98686	WA	Radioactive waste is the definition of high-level waste.
690	(b)(6)	97103	OR	hundreds of thousands of people rely on the waterways that flow past this site. Our health and safety is worth the cost of safely dealing with these materials properly!
691		97213	OR	
692		33755	FL	
693		97005	OR	
694		97440	OR	
695		98105	WA	
696		49460	MI	
697		95611	CA	
698		98661	WA	For all the reasons stated in the petition, and because it is the right thing to do to protect the River and surrounding areas, to protect the lives and health of wild animals and civilized people, to ensure a healthy future for all living things.

709	(b)(6)	98024	WA	
710		98292	WA	
711		92025	CA	To clean up the river.
712		99504	AK	
713		05452	VT	
714		73115	OK	Calling it something else doesn't change what it really is.
715		97051	OR	
716		97202	OR	We don't want this highly toxic waste polluting our waterways! The Columbia River runs to the Pacific Ocean and to the Willamette River. This river borders a lot of our watersheds and effects many people in our region when it is polluted. Declassifying toxic waste and shipping it elsewhere is not a solution either. It will still pollute our only planet and will circulate through jet streams and undercurrents to create an overall toxic ocean soup.
717		97041	OR	Because that would be a lie and endanger all live down river and in all communities nearby.
718	(b)(6)	97031	OR	This is simply another action that assumes we humans can exploit and contaminate our environment without limits. That is simply not true. And in this situation humans are potentially subject to immediate and leathel threats to say nothing of the virtually instant, total degradation of surrounding lands, water, plant and animal life. I can't imagine how another responsible human being believes this proposed policy is a good idea.
719		11554	NY	
720		96790	HI	You have all the space program technology you need to clean this up for good. What are you waiting for? How many generations of your children's children will be poisoned if you don't? You know all the earth is unstable regardless of how deep you store it. Please have some common sense and humanity for all of us.
721		97206	OR	
722		98155	WA	

						Simply reclassifying the radioactive waste at Hanford is lazy and false. These wastes, from processing plutonium and research, have been identified and described for over 30 years. The need for cleanup is acknowledged, many times over—the question for years has been where and how. The current proposal—to leave wastes in place—does not restore and protect the Columbia River and people in the area.
723	(b)(6)			98516	WA	
724				98584	WA	
725				98119	WA	
726				04562	ME	
727				98178	WA	because it's too risky.
728				98136	WA	Changing the label doesn't fix the problem.
729				98290	WA	Please, just do your damn job the right and proper way!
730				85712	AZ	
731				97206	OR	Because High-level waste not properly labeled, handled, or disposed of can contaminate our precious rivers and waterways and poison soils. We must protect our land and resources.
732				95421	CA	
733				93010	CA	Because it is dangerous, potentially harmful, and environmentally detrimental.
734				97304	OR	
735				97212	OR	I live down river, down wind, of Hanford.
736				98682	WA	
737				04401	ME	
738	(b)(6)			98815	WA	
739				97206	OR	
740				98516	WA	They should remove the waste, vaults are leaking into the river for years now.
741				97058	OR	BECAUSE IT'S HIGH LEVEL WASTE!!! I DON'T WANT ANY SHORTCUTS WITH RADIOACTIVE POLLUTION AT HANFORD. I LIVE DOWNSTREAM ON THE RIVER.

742	(b)(6)	97049	OR	Because that would be stupid
743		90732	CA	
744		97068	OR	We have a responsibility to clean up Hanford to protect fish, wildlife, water, soil, for the next generations to come and to return it to the pristine place it was before colonizers and imperialism changed the landscape and polluted it with radioactive waste that is a threat to humanity.
745		37912	TN	
746		97233	OR	
747		98635	WA	To reclassify high-level waste to low-level waste is insanity. Who came up with this brilliant idea. I was born in Hanford in 1944 so I have lived with radioactive iodine my whole life, it hasn't been pleasant and I don't wish that on anyone. How dare you take this so lightly! Clean up the mess we made however long it takes and start NOW. I can't express how utterly enraged I am at this folly, unbelievably stupid idea to simply change the classification.
748		98356	WA	
749		85749	AZ	
750		98119	WA	There must be no shortcuts in fully cleaning up Hanford's wate!
751		97031	OR	Slapping on a new label doesn't change what's inside.
752	02184	MA		
753	10009	NY	Protect the waters of the Columbia! Clean water and air are essential to life.	
754	98115	WA		
755	98663	WA		
756	97814	OR	It is poison and if it gets in the river everything and everyone down river will slowly die!!!!!!	
757	99202	WA		
758	98248	WA		
759	97212	OR		
760	98508	WA		

761	(b)(6)	97302	OR	
762		97214	OR	Because it's not low-level, it's dangerous.
763		98672	WA	Clean it up don't contaminate us down stream!
764		97213	OR	Because it could impact the river I live near, the wildlife, and my health.
765		92651	CA	
766		97202	OR	
767		98502	WA	
768		98672	WA	
769		04401	ME	
770		98148	WA	
771		81430	CO	
772		92501	CA	Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
773		18504	PA	
774		98516	WA	
775	(b)(6)	97814	OR	
776		95610	CA	
777		95610	CA	
778		07400	ot	
779		18062	PA	
780		85053	AZ	
781		19087	PA	
782		93704	CA	
783		97031	OR	
784		97814	OR	Too dangerous
785		23456	VA	
786		97321	OR	Because it is high level waste. Changing the title of something doesn't change what it is.
787		97701	OR	Not only does this endanger humans now, it sets dangerous precedence for the future.

788	(b)(6)	95558	CA	Lies don't change toxicity & death.	
789		11370	NY		
790		97031	OR	Because waste contains highly radioactive and chemically dangerous pollution! Not good.	
791		98640	WA		
792		90706	CA		
793		80403	CO		
794		87121	NM		
795		90405	CA	What would YOU want Your Family to be around????	
796		98115	WA		
797		97451	OR		
798		80205	CO		
799		99362	WA		
800		97317	OR	We can't clean up a problem by renaming it.	
801		98243	WA	Renaming radioactive waste doesn't make it go away. The waste remains a threat to people and the environment.	
802		(b)(6)	19056	PA	
803	02840		RI	For all the reasons you have listed above which prove it IS really high-level waste!	
					YOU have NO right to expose us to radiation just because you're too selfish to clean up properly. Sick and tired of you lying, corrupt ass wipes agreeing to do the RIGHT thing if something spills; then when you realize just how f****d up you are, you want to change the rules to get out of any responsibility. I think it's past time for communities to BAND together like the Bundy's did and kill us some rogue bastards that want to kill our children and bring brain damage to our babies. God says we have EVERY RIGHT to protect ourselves and our children, so does the constitution. So, we're going to take a look at claiming being in fear for our lives as the reason for why YOU ARE DEAD now.
804	85132		AZ		
805	97217		OR		

806	(b)(6)	23169	VA	It's dangerous and malicious to do so.
807	(b)(6)	97031	OR	We need to clean up this site properly to prevent further contamination of ground water and the environment for the health of our children and future generations.
808	(b)(6)	97050	OR	We deserve clean water
809	(b)(6)	98570	WA	Reclassifying nuclear waste does nothing to solve the massive problems it poses. It just changes the name so they don't have to deal with it. Calling it by another name doesn't change the nature and resulting problems of the waste.
810	(b)(6)	27858	NC	As a former resident of Washington state I have known of Hanford's poor control of radioactive waste for a long time. Hanford has known since it's inception that it was processing a highly dangerous substance. Seems like they would have devised a way to destroy or store safely the waste of their work. And the Federal government bears the oversight and monetary responsibility for making this happen. We have suffered more than enough downgrading in this country. Do not let this proceed.
811	(b)(6)	97405	OR	You cannot change radioactive waste's properties with a bureacratic re-classification!!
812	(b)(6)	95005	CA	
813	(b)(6)	21060	MD	
814	(b)(6)	97031	OR	It's a crime against humanity and all life in this Columbia Gorge and where the water flows.
815	(b)(6)	98376	WA	
816	(b)(6)	60565	IL	
817	(b)(6)	98133	WA	
818	(b)(6)	97040	OR	Renaming radioactive waste is not clean up. The Hanford site needs to be dealt with in a manner that continues the actual clean up process. The health and safety of all who depend on the Columbia River for fish, water, and recreation depend on a successful clean up.

819	(b)(6)	95407	CA	
820		98672	WA	This is radioactive, highly toxic and carcinogenic waste! It cannot be reclassified!
821		94804	CA	
822		03079	NH	
823		94107	CA	High level waste should not be reclassified as we don't want it to pollute our water or land.
824		06405	CT	This is unacceptable to put into our waterways. Thank you.
825		97239	OR	
826		98501	WA	Hanford's nuclear waste needs to be really cleaned up to protect the Columbia River.
				This is a non-sense question. Of course labels of high-level waste were determined scientifically and re-classifying it to be low-level waste is just a sloppy and obvious trick to try to deceive the public. Government is meant to protect the governed, not deliberately, egregiously put them in harm's way.
827		97212	OR	
828		97013	OR	
829	(b)(6)	43515	OH	
830		21703	MD	
831		97203	OR	It is careless, irresponsible and dangerous.
832		97212	OR	
833		52214	IA	
834		97205	OR	
835		48915	MI	
836		95610	CA	
837		97213	OR	We want to leave our children a clean place free of the threat of nuclear waste.
838		93121	CA	
839		64152	MO	

859	(b)(6)	97230	OR	We know what is going on here. Call it something else. Don't clean it up. It is cheaper. Give the savings to the rich.
860		97231	OR	The reclassification pose unacceptable risks to the health of citizens and the environment.
861		98052	WA	Reclassifying nuclear waste will threaten the health and safety of those that live in or visit the Columbia River Gorge.
862		53190	WI	
863		94553	CA	
864		44095	OH	
865		97219	OR	
866		53711	WI	
867		33777	FL	
868		98607	WA	Lying and/or holding denial in ones thinking always makes such situations worse, not better.
869	(b)(6)	98144	WA	it eventually make its way to the columbia river and kill everything including fish and people who live along it and rely on it for commerce, industry, food, recreation. and....to DRINK!!
870		97267	OR	Do NOT re-label high-level waste as low level waste. This is dangerous and a lie to the American people. This is a dishonorable proposition that is not in the interest of public health.
871		95389	CA	
872		98671	WA	C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm includes technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose the waste.

873	(b)(6)	98105	WA	We must commit ourselves to doing the best, safest, most transparent cleanup possible. Relabeling the waste, with no significant change in its composition, is misleading and potentially dangerous for health.
874	(b)(6)	97215	OR	Clean water is more critical each year as our fire seasons become increasingly severe and our salmon populations dwindle. Too many people live within the Columbia river region to ignore Hanford's toxic potential. High level waste must not be reclassified to low level. We cannot afford to minimize contaminants as a health hazard or ecological hazard. Thank you.
875		11238	NY	
876		98122	WA	
877		94904	CA	
878		03244	NH	
879		78745	TX	Because changing the name doesn't change how dangerous the waste really is. It needs to be cleaned up.
880		60408	IL	
881		(b)(6)	19083	PA
882	(b)(6)	98837	WA	2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
883		97070	OR	You will NOT back off on your responsibilities!!!
884		80305	CO	
885		97214	OR	
886		98223	WA	
887		98101	WA	because it is high-level radioactive waste
888		36265	AL	

						Obviously, because it is not a low-level threat. This is the primary reason we oppose nuclear power: we do not have the capability to deal with the waste. If you can't clean it up, don't make the mess. Hanford is the prime example of why we are not ready for nuclear power.
889	(b)(6)				78124 TX	
890					97814 OR	
891					98584 WA	
892					97045 OR	It's high level radioactive waste and has to be handled as such. This proposal is reckless and is contemptuous of the public and the environment.
893					80909 CO	It should remain known as toxic, not suitable for live organisms and the damned government should cleanup their mess. Maybe force the oil copmanies to clean up since taxpayer have funded so many of their screw ups!
894	(b)(6)				98665 WA	There is already yet another sink hole near a tank! The tanks are unstable in their entirety and are buried too close to the Columbia River. The Columbia is used for salmon and other fish, drinking and irrigation water, hydro-power, and Native American tribes have claims to it, too; it's too important to take yet another chance of contamination. Clean it up right, once and for all. No more delays or shortcuts.
895					97006 OR	
896					98020 WA	
897					97211 OR	
898					92677 CA	
899					86326 AZ	
900					64152 MO	
901					12418 NY	
902					22554 VA	

903	(b)(6)	97211	OR	
904		10023	NY	
905		97216	OR	Because it is high-level risk to all life! Face the facts and deal with it!
906		33771	FL	
907		98682	WA	
908		98177	WA	DO NOT avoid the responsibility to deal with severe toxic damage as imminent threat to our waters!
909		98672	WA	
910		59030	MT	
911		35405	AL	It's such an idiotic question, I don't know how to answer!
				Stop shuffling the wording and truly clean up what's been damaged. Stop wasting taxpayers' money by these delays and adjustments and just do what is RIGHT for all life to survive.
912		97214	OR	
913		98043	WA	
914		98672	WA	My son and daughter deserve better than this!
915	(b)(6)	98119	WA	
916		98136	WA	Because it is high level and needs to be cleaned up NOW!
917		98672	WA	
918		44135	OH	
919		98660	WA	Ridiculous and short-sighted!
920		97211	OR	
				I urge Enery to not reclassify the high-level waste stored in Hanfoy's C tanks as low-level waste as that wlll leave dangerous, toxic, long-lived radioactive material in the ground to contaminate our soil, precious ground water and the Columbia River.
921		98685	WA	
922		98466	WA	

						With the mighty Columbia River running through this site careful scrutiny of the storage of radioactive waste here should remain high, not be downgraded. A cave in of the ground covering buried waste has already happened in this aged storage facility.
923	(b)(6)			97103	OR	
924				99328	WA	Because it IS high level waste and it's leaking!
925				78733	TX	Re-labeling /re-classifying a toxic material is simply lying and in this case is criminal as it will lead to violations and ultimately to death and destruction. Nuclear waste is the world's most violent and volatile toxin, and to reclassify it is the exact opposite of what a govt agency should be doing to protect its citizens.
926				97055	OR	eliminate it all
927				60625	IL	
928				98060	WA	
929				19602	PA	
930	(b)(6)			97202	OR	
931				97214	OR	If the abandoned dry cleaner business has to undergo clean up then I don't understand why something as toxic waste should be given a pass. Clean it up.
932				97526	OR	BECAUSE YOU ARE STORING DANGEROUS HIGHLY RADIOACTIVE WASTE IN A CAVALIER MANNER NEXT TO AN IMPORTANT AND LARGEST RIVER IN THE NORTHWEST! ANY LEAKAGE POSES A SIGNIFICANT PUBLIC HEALTH DANGER!

						We need long term solutions not Short sighted, cost cutting, non solutions. Just like our mother taught us, if you make a mess you are responsible for cleaning it up. Changing the terms doesn't change the reality! Do the right thing.
960	(b)(6)			97814	OR	
961				98604	WA	
962				97405	OR	
963				81004	CO	It's toxic.
964				98021	WA	
965				06907	CT	
966				97215	OR	Preserve the Columbia, preserve groundwater, preserve salmon.
967				45734	OH	
968				98362	WA	
969				68844	NE	
970				98612	WA	Re-classifying high level waste as low-level waste sounds like a big & dangerous cover-up!
971				43223	OH	Highly dangerous waste should be cleaned up in a manner suiting the severity of the issue. Reclassifying high-level waste as low level underplays the threat level and allows the DOE to make false claims and use shortcuts to avoie cleaning these areas.

						<p>Hanford has already ruined the lives of thousands of people who were downwind of the plant as it spewed out poison in the mid 1940's. Perhaps the worst affected were babies, drinking their mother's milk. One of those babies was my (b)(6) who was born on the middle of Hanford's onslaught on the people. As a result, (b)(6) how deceased, literally lived fighting ravaging cancers caused by Hanford and the deceitful, greedy politicians that lied and covered up the devastation - telling the public that there was nothing wrong. (b)(6) was first diagnosed with (b)(6) which almost killed her at the young age of 27. She conquered that only to live thereafter with a (b)(6)</p> <p>With the help of our government Hanford has literally been able to get away with murder. Enough is enough! They need to step up to the plate and clean up their mess. Politicians - do the right thing. Take care of the people - not your pockets!</p>
972	(b)(6)			97217	OR	
973				97206	OR	
974				97202	OR	Reclassifying high level waste as low level waste will not make the waste low-level. It will only save money at the expense of human lives.
975				86305	AZ	
976				96753	HI	
977				97266	OR	
978				99712	AK	why? what a stupid question
979				97117	OR	
980				80302	WA	
981				98102	WA	Orwellian language games like this reclassification are dangerous for our communities.
982				19606	PA	
983				83854	ID	
984				98632	WA	
985				98665	WA	Prevent further contamination of the River!

986	(b)(6)	97330	OR	
987		98225	WA	
988		97203	OR	Changing the name does not reduce its toxicity!
989		32566	FL	Such dreadful contamination & pollution must hold those who did such pollution totalky responsible for a thorough clean up. The public must not be exposed to polluted air, soil & water and renaming such pollution in no way protects our soil , water nor air from polluting agents.
990		97211	OR	
991		97838	OR	
992		22031	VA	
993		80026	CO	
994		06443	CT	
995		97031	OR	High-level waste is deadly no matter what label the Government gives it.
996		94587	CA	
997		38701	MS	
998		00927	PR	
999	(b)(6)	62675	IL	By reclassifying high-level waste to low-level, you leave a very dangerous situation in place for eons to come. Would you let your child play on these grounds? When you can answer with an honest yes, then, maybe, the grounds are safe.
1000		98642	WA	Because it's not low level waste, it's still hi level waste that sickens and kills.
1001		33435	FL	
1002		12528	NY	
1003		97210	OR	

					Dear U.S. Department of Energy, I urge you to withdraw the U.S. Department of Energy's (Energy) Draft WIR Evaluation. Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as “low-level” waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm includes technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose the waste. I urge Energy to abandon its short-sighted, dangerous proposal because: 1.) Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources and the Columbia. 2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste. 3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater. Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia. Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the	
1004	(b)(6)			98070	WA	
1005				98020	WA	Do you want your grandchildren to live downstream of this pollutant? Me neither!!!!!!
1006				98501	WA	
1007				98661	WA	Because it isn't
1008				97068	OR	This is a dangerous idea.

1009	(b)(6)	98107	WA	Because it needs to be cleaned up! we literally have ONE PLANET to live on. We can't leave toxic crap around!
1010		97222	OR	
1011		98612	WA	Not safe for people, animals, and the river
1012		97060	OR	It's caused generational harm to families and the environment.
1013		97215	OR	
1014		97048	OR	I live along the Columbia and I want a clean river.
1015		97527	OR	
1016		97116	OR	

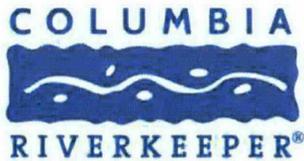
					Dear U.S. Department of Energy, I urge you to withdraw the U.S. Department of Energy's (DOE) Draft WIR Evaluation. DOE should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as "low-level" waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm includes technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. DOE must classify tank waste based on its dangerous nature—not DOE's failure to develop plans to dispose the waste. I urge DOE to abandon its short-sighted, dangerous proposal because: A. DOE failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater. B. DOE has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste. C. Changing a label will lead to cleanup shortcuts. For example, DOE will likely fill tanks with grout. The result: DOE will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources and the Columbia. Like other members of the public, I am very alarmed by DOE's proposal to re-label dangerous waste near the Columbia. DOE must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities. To date, DOE has	
1017	(b)(6)			97339	OR	
1018				48060	MI	There is no safe level of radioactivity! So to reclassify any waste only changes the name not how safe it is. High-level waste should not be reclassified!
1019				97296	OR	The public deserves a clean space.
1020				84060	UT	
1021				98112	WA	

1022	(b)(6)	98404	WA	
1023		97225	OR	Changing a label does not change the contents of these highly radioactive and dangerous chemicals. Pursue clean-up needed for this dangerous waste. Avoiding responsible clean-up will lead to greater costs in the future.
1024		99835	AK	
1025		97060	OR	
1026		98382	WA	
1027		98118	WA	Dangerous waste is dangerous waste. Changing the name won't change the danger. Give it a break with your weaseling ways!
1028		32708	FL	Changing the name HIDES the truth. We must tell all future generations what is in that waste. No matter how horribly it reflects on our selfish foolish generation of the atomic era. (I should call us perhaps "Atomic Era No. 1" because there will be many more down through the millenia, as future people re-discover our nuclear waste and think of "good" things to do with it, like make bombs as we have.)
1029	(b)(6)	97504	OR	
1030		97031	OR	This is high level waste! Clean it up our environment should be protected by our government. Do the job the tax payer is paying for without question!!
1031		97239	OR	The attached letter says it all. This ought to be self-evident. If the members of the Trump "administration" think this is such a great idea, let them live in and drink this water.

						Changing the name of a "rose" to "daisy" doesn't change what the rose is, it's characteristics or it's chemical makeup. Re-classifying "high-level" radioactive waste to "low-level" doesn't change it's chemical makeup either. It will still be just as radioactive, just as dangerous and just as great of a risk to the environment, the Columbia River, and people's health. You can NOT in clear concionce do this! It's unethical and it's dangerous!! The classification must stay "high-level" waste. I'm sorry that cleaning up radioactive waste is costly and difficult to dispose of (duh it's radioactive). Perhaps that should have been thought about a little harder before you opened the plant. Now is not the time to try to save money, not on this!
1032	(b)(6)			99037	WA	
1033				82201	WY	
1034				98109	WA	
1035				97814	OR	Increased potential for radioactive pollution of the Columbia River and the Pacific ocean!
1036				98672	WA	There is already an ongoing struggle to keep the clean up act at Hanford funded. The river is the life blood of the Columbia river basin. Without proper clean up, our river is slowly becoming a toxic pool. Help save our river!!!
1037				55423	MN	
1038				94541	CA	Really? It needs to be explained?
1039				94541	CA	What is the point. It is what it is and calling it something does not change what it is. What is the matter with you people. You do live here too.
1040				97031	OR	Why not just classify high level waste as food? Then we can eat the problem away! Cool! Not even more ridiculous than your current reclassification proposal. Why not call it "fake waste"? Get real. This poison cannot be wished away. Clean it up and so give taxpayers something for their money.
1041	(b)(6)			53593	WI	Do I really need to explain this?
1042				98012	WA	

1043	(b)(6)	80521	CO	
1044		98107	WA	
1045		97045	OR	
1046		97814	OR	Reclassifying waste does not change the chemistry of the waste. It is just as dangerous. This is a ploy that will harm all. NO RE-CLASSIFICATION!
1047		91506	CA	
1048		97215	OR	
1049		94542	CA	
1050		79938	TX	
1051		22308	VA	
1052		80525	CO	
1053		32174	FL	
1054		37082	TN	
1055		23294	VA	
1056	(b)(6)	97213	OR	It's a crime against all nature and humanity. It's like reclassifying cold-blooded murder as assault—it makes no sense, unless you're the murderer. Is DOE actually DOM (the Department of Murder)? Stop this nonsense and come back to reality. This highly toxic waste needs to be cleaned up. Follow the law, not the money! You'll take this decision to your grave. And you may hasten others into an early grave if you don't clean it up. Do it NOW!
1057		60516	IL	
1058		48060	MI	If any re-classification takes place, it should be to increase the severity levels of just how dangerous these materials are to public health and the environment. Reclassification to make it appear safer for the purposes of reducing regulations to make transporting it "easier/cheaper" for the industry is recklessly dangerous. I strongly oppose reclassification.
1059		98607	WA	
1060		97132	OR	Because it is dangerous!

1061	(b)(6)	98620	WA	Protect the Columbia from further irreversible contamination.
1062		11370	NY	



Columbia Riverkeeper
111 Third Street
Hood River, OR 97031
phone 541.387.3030

www.columbiariverkeeper.org

November 6, 2018

Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Sent via email

RE: Draft WIR Determination for the Closure of Waste Management Area C

Dear Mr. Bovier,

Columbia Riverkeeper is a 501(c)(3) nonprofit organization with a mission to protect and restore the Columbia River, from its headwaters to the Pacific Ocean. Since 1989, Riverkeeper and its predecessor organizations have played an active role in educating the public about Hanford, increasing public participation in cleanup decisions, and monitoring and improving cleanup activities at Hanford. On behalf of our 13,000 members in Oregon and Washington, Columbia Riverkeeper transmits the collected, attached 1,111 comments gathered through our website and public events.

The comment letter signed by the attached list of people states:

Dear Mr. Bovier,

I urge you to withdraw the U.S. Department of Energy's (Energy) Draft WIR Evaluation for the Closure of Waste Management Area C at the Hanford Nuclear Site. Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as "low-level" waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm tanks includes technetium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose of the waste.

I urge Energy to abandon its short-sighted, dangerous proposal because:

1.) Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources, and the Columbia.

2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.

3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia. Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities. People live downstream from Hanford and face serious threats from Energy's proposal. Energy must schedule hearings throughout the Pacific Northwest. Most of all, Energy must abandon its plans to re-label dangerous pollution and invest in cleanup solutions.

The signers in the first attachment submit the above comment for your consideration. Many added their own personalized comments, which are included in a table to ease your review. Please consider these as individual comments. The second attachment includes scanned, signed comments from 49 additional people, some of whom also offer individualized comments.

Thank you for accepting these comments on behalf of Columbia Riverkeeper, and please accept the enclosed 1,111 comments.

Sincerely,



Dan Serres
Conservation Director
Columbia Riverkeeper

RON WYDEN
OREGON

RANKING MEMBER OF COMMITTEE ON
FINANCE

221 DIRKSEN SENATE OFFICE BUILDING
WASHINGTON, DC 20510
(202) 224-5244

United States Senate

WASHINGTON, DC 20510-3703

November 5, 2018

COMMITTEES:

COMMITTEE ON FINANCE
COMMITTEE ON BUDGET
COMMITTEE ON ENERGY & NATURAL RESOURCES
SELECT COMMITTEE ON INTELLIGENCE
JOINT COMMITTEE ON TAXATION

The Honorable Rick Perry
Secretary, U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585-0800

Dear Secretary Perry:

I want to add my support the State of Oregon's concerns regarding the U.S. Department of Energy's (DOE) proposal to redefine high-level radioactive waste at Hanford. DOE contends that tens of thousands of gallons of residual high-level waste remaining in the C Tank Farm after retrieval should be reclassified as if it were not high-level waste and could be grouted in place. As the State of Oregon has noted in its comments, high-level waste that has leaked from the tanks would also be reclassified as non-high level radioactive waste.

No one disputes the difficulty of retrieving and treating high-level waste from Hanford's aging storage tanks, or the difficulty of remediating the soil and groundwater contaminated where waste has leaked from those tanks. However, lowering the bar for level of protection of future generations and the environment by changing the regulatory definition of what has always been considered high-level waste requiring permanent disposal raises more questions than it answers.

Although the current public comment process is focused on high-level waste that is being removed from one of Hanford's older high-level waste tank farms, the C Tank Farm, on October 4, 2018 DOE issued a request for public comment on changing the definition of high-level radioactive waste across the entire DOE complex. The decisions that DOE makes concerning how it defines this class of waste at the C Tank Farm has broad ramifications for how high-level waste at Hanford is handled as well as sites across the country.

I urge the Department to fully address the comments and recommendations that the State of Oregon has made in this proceeding.

Thank you for your consideration.

Sincerely,



RON WYDEN
United States Senator

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[HTTP://WYDEN.SENATE.GOV](http://wyden.senate.gov)

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Comments on Draft Waste Incidental to Reprocessing (WIR) Proposal

Thank you for the opportunity (which is too short) to comment on your evaluation of this effort to change the definition of High Level Waste. The Hanford Nuclear Reservation contains some of the worst contaminants of any Department of Energy site in the nation, much of which has, over the years contaminated the soils on site, as well as the Columbia River. It has contaminated drinking water, irrigation water (think our food), and the best mainstream habitat for spawning Chinook salmon. Making what appears to be a capricious change to the definition of High Level Waste will not insure the cleanup of Hanford that is protective of people, wild life and the environment. If you could scientifically prove, through thorough analysis that this strategy would truly minimize risk to this, then perhaps this could be considered. But the Department of Energy over the decades has not garnered the public trust.

If the DOE was considering the full scope of the effects of renaming high level waste, it would be considering the waste that has leaked under the tanks in C, it would look scientifically into the wisdom of dumping grout (cement) into the tanks and calling it clean up. DOE would as well consider all cumulative impacts through a composite analysis of the Hanford site.

Higher, protective standards have been set by the Washington Department of Ecology through collaboration with the Tribes, with the State of Oregon, and with the stakeholders of this region through the Hanford Advisory Board. We citizens of this region expect cleanup to be truly protective of health of the environment in which and from which we live. The rush to close tanks is premature. Saving money at the risk of our well-being is not acceptable. We live here, many of you decision makers do not. You have not earned our trust through this WIR evaluation.

I hope that the DOE will delay the rush to a decision on this proposal and complete a much more vigorous analysis of the long term risks that we are facing. Once you have done due diligence in your fact finding and analysis, I ask that you hold further public hearings with us. I also hope that the NRC continues to review your work and resulting decisions. Public trust is needed for successful cleanup endeavors.

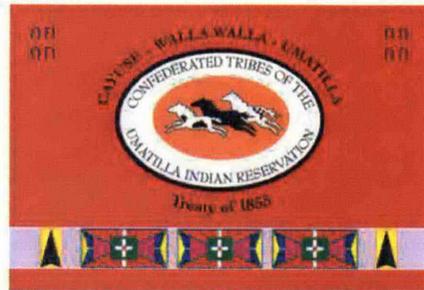
Sincerely,

(b)(6)

(b)(6)

Lake Oswego, Oregon 97035

**CTUIR DNR-EESP COMMENTS TO:
Draft Waste Incidental to Reprocessing Evaluation for
Closure of Waste Management Area C
at the Hanford Site**



October 2018

Prepared By:
Rodney S. Skeen, Ph.D., P.E.
Energy and Environmental Sciences Program

**Comments to:
Waste Incidental to Reprocessing Process Section 1
(DOE/ORP-2018-01, Draft D, Section 1)**

Page 1-3, Lines 3-5, text stating: *“In accordance with DOE O 435.1 and DOE M 435.1-1, DOE may determine (in a WIR Determination) that certain waste is incidental to the reprocessing of SNF, is not HLW, and may be managed as LLW if an evaluation shows that the criteria in DOE M 435.1-1 are met.”*

Comment: Given the definitions of Transuranic (TRU) Waste and Low-Level waste, it is not clear to this reviewer why some of the remaining tank waste is not required to be classified as TRU waste. Table 1 provides this reviewer’s estimate of the average concentration of alpha-emitting TRU isotopes (nCi/g) with half-lives greater than 20 years in waste that remains in each tank. The values in this table were calculated from the residual waste volumes in Tables 4-7 and 4-8 of the Draft WIR Evaluation, the estimated quantity of each applicable isotope from Table 2-5 of the same document (Columns 2 and 3), and from WMA-C inventory data downloaded from Phoenix on 18 October 2018 (Columns 4 and 5). A waste density of 2.05 g/cm³ (Draft WIR Evaluation, Table 6-3) was used.

The results in the second and fourth columns provide an estimate of the concentration of TRU in the waste remaining in each tank from the two data sources. The values in the third and fifth columns are an estimate of the TRU concentration if the residual waste is diluted into a full tank volume (530,000 gallons for 100 Series tanks and 53,000 gallons for 200 Series tanks) of grout. A grout density of 2.05 g/cm³ was assumed. Bold values indicate TRU concentrations over 100 nCi/g. Waste above 100 nCi/g fits the definition of TRU waste given in DOE M 435.1-1 Chapter 3, Part A.

Clearly, all but two tanks contain wastes that fit the definition of TRU prior to diluting in the grout and at least one of the tanks (C-107) fits the TRU criteria even if diluted by the grout (based on Table 2-5 data). Based on the Phoenix data, none of the grout-diluted waste contain more than 100 nCi/g of TRU. However, C-201 and C-202 are within 30% of this level and if grout addition does not account for the full tank volume due to unforeseen issues, then it is conceivable that the diluted waste in these tanks could be above the TRU waste designation level (100 nCi/g). Also, the waste in the cascade lines and one transfer line which are assumed to be plugged (See Page 2-69, Lines 38 and 39 in the Draft WIR Evaluation) likely contain waste similar in composition to the tank residuals represented in Columns 2 and 4 of Table 1 and thus contain levels of TRU materials above the 100 nCi/g.

Table 1: Estimated average concentration in of alpha-emitting TRU isotopes (nCi/g) with half-lives greater than 20 years in waste that remains in each tank

Tank Number	Table 2-5 Data		Phoenix Data Downloaded on 18 October 2018	
	Total TRU Concentration in Waste (nCi/g)	Total TRU Concentration if Waste is Diluted by Grout (nCi/g)	Total TRU Concentration in Waste (nCi/g)	Total TRU Concentration if Waste is Diluted by Grout (nCi/g)
C-101	8.21E+02	7.74E+00	9.78E+02	9.22E+00
C-102	9.54E+02	3.69E+01	7.11E+02	2.75E+01
C-103	7.12E+02	3.40E+00	7.40E+02	3.53E+00
C-104	2.20E+03	6.63E+00	2.44E+03	7.35E+00
C-105	2.95E+03	2.67E+01	8.09E+02	7.33E+00
C-106	4.88E+03	2.55E+01	5.13E+03	2.68E+01
C-107	6.52E+03	1.28E+02	4.07E+02	7.99E+00
C-108	7.68E+01	4.30E-01	7.80E+01	4.37E-01
C-109	1.00E+02	3.26E-01	1.11E+02	3.59E-01
C-110	1.25E+02	4.19E-01	1.32E+02	4.41E-01
C-111	6.15E+03	5.67E+01	2.32E+02	2.14E+00
C-112	1.01E+02	1.92E+00	5.12E+02	9.77E+00
C-201	2.73E+04	7.14E+01	2.93E+04	7.66E+01
C-202	2.32E+04	6.21E+01	2.50E+04	6.69E+01
C-203	8.35E+02	2.10E+00	8.98E+02	2.25E+00
C-204	3.97E+01	9.89E-02	4.10E+01	1.02E-01
C-301	--- ^b	---	---	---
244-CR vault	---	---	---	---
Pipelines	---	---	---	---

^a Bold values indicate an estimated TRU concentration over 100 nCi/g.

^b Supporting data was not found to compute TRU concentrations.

Requested Response: Please provide a detailed description of what regulations are being applied, and how they are being applied to support the choice to avoid classifying any waste residuals as TRU. Also, a discussion of precedent from past WIR reclassifications is needed to further demonstrate the applicability of the approach being applied in this WIR evaluation.

Page 1-4, Line 3, text stating: "...cleaned tanks..."

Comment: The term "cleaned tanks" does not correctly reflect the state of the WMA-C tanks. A more correct term would be "retrieved tanks".

Requested action: Please consider changing the text as indicate.

Page 1-5, Lines 9-12, text stating: *“This Draft WIR Evaluation does not address other facilities or systems, waste removed from the waste tanks and ancillary structures, or the contaminated soil and groundwater from previous leaks or unplanned or planned releases.”*

Comment: Limiting the WIR determination to include only tank residuals creates an artificial illusion that the waste remaining at the site will have minimal impacts on human health and the environment and is thus safe to leave in place. Conclusions on the future impacts of wastes remaining at the site can only be assessed using a comprehensive composite analysis that accounts for both tank residuals AND contaminated soils. A more detailed discussion of the inappropriateness of confining the WIR analysis to only residual tank waste will be provided in comments to Chapter 5 of this document.

Requested action: Evaluation of the WIR Criteria 2 (DOE M 435.1-1 II.B.2(a)) without considering background soil contamination does not produce realistic results. Criteria 2 calculations should include all sources of contamination.

Page 1-9, Lines 5-7, text stating: *“The specific design of the closure barrier has not been finalized, but it is likely to be based on the Modified RCRA Subtitle C barrier concept defined in DOE/EIS-0391, “Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site” (TC&WM EIS).”*

Comment: The TC&WM EIS states that *“...DOE prefers Tank Closure alternatives that would retrieve at least 99% of the tank waste.* It is not clear that the desired objective of 99% or greater removal has occurred in WMA-C. Data in the WIR evaluation indicate that waste retrieval activities at the WMA-C recovered approximately 96% by volume of the waste in the 100 and 200 Series tanks. This reviewer recognizes that the volume fraction removed does not necessarily equate to the removal fraction of individual species, but data on the fraction removed for individual isotopes and hazardous chemicals was not evident in the document. What are the implications on the analysis and conclusions derived from the TC&WM EIS if 99% removal of the radionuclides and hazardous waste did not occur within WMA-C? Figure S-14 of the TC&WM EIS (duplicated below) depicts the predicted risk from groundwater for various levels of waste removal. The maximum risks for 90% retrieval and 99% retrieval are between 10^{-5} and 10^{-4} . Risks associated with 96% retrieval will fall between these results, and thus are substantial.

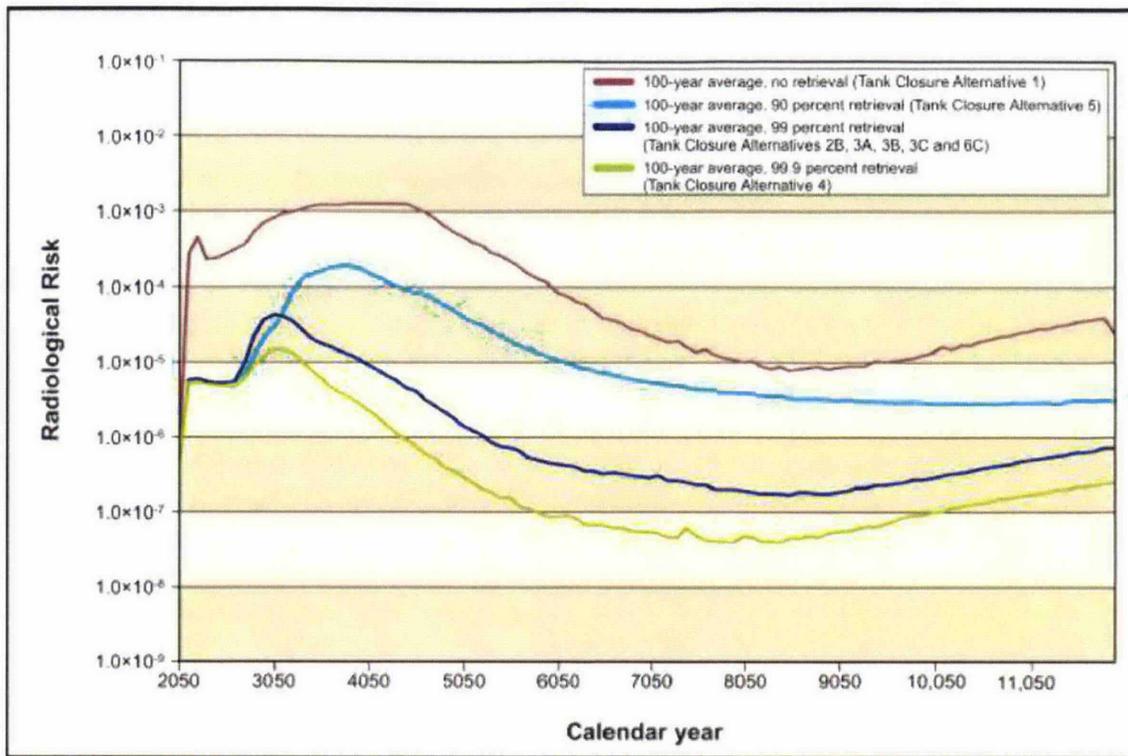


Figure S-14. Lifetime Radiological Risk for the Drinking-Water Well User at the Core Zone Boundary due to Releases from Tank Farm Sources Other Than Past Leaks

Requested action: Please indicate the removal fraction achieved for individual isotopes and hazardous chemicals. If 99% efficiency was not achieved, address the impacts on the analysis and conclusions derived from the TC&WM EIS. Is the USDOE prepared to defend a decision to leave the site in a state that will create future radiological risks to the public that are at or near 10^{-4} as indicated by the above figure? Note that the figure clearly indicates the computed risk is only accounting for Tank Farm sources OTHER than past leaks. Hence, the contribution from other waste disposal areas or past soil contamination are not represented and radiological risks may be even higher.

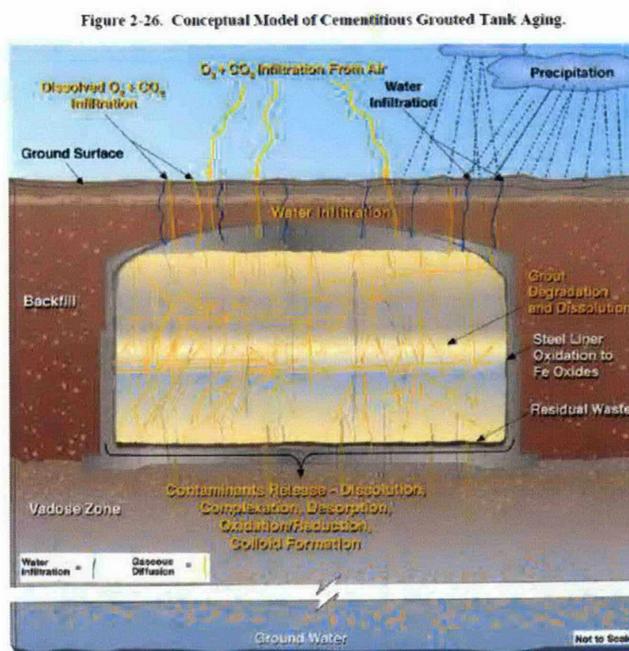
**Comments to:
Waste Incidental to Reprocessing Process Section 2
(DOE/ORP-2018-01, Draft D, Section 2)**

Page 2-70, Lines 2 and 3, text stating: “After the completion of the modeling for WMA C PA, waste from six additional SSTs have been retrieved (C-101, C-102, C-105, C-107, C-111 and C-112).”

Comment: Comparison of inventory values from Table 2-5 and those downloaded from Phoenix on 18 October 2018 indicate that the actual estimate of the total radiological inventory is less than that used in the WMA-C PA¹, several individual isotopes had a higher inventory in the final data set (i.e. the Phoenix derived data). These isotopes are ²⁴³Cm, ²⁴⁴Cm, ⁶⁰Co, ¹³⁷Cs, ¹⁵²Eu, ¹⁵⁴Eu, ¹⁵⁵Eu, ⁶³Ni, ²³⁷Np, ²⁴²Pu, ²²⁶Ra, ¹⁵¹Sm, ¹²⁶Sn, ²³⁰Th, ²³⁴U, ²³⁵U, ²³⁶U, ²³⁸U, and ⁹³Zr. Spot checks of the Phoenix data against Table 2-6 of the WIR evaluation indicate that this data set contains the more recent sampling results.

Requested action: The Performance assessment for WMA-C should be updated using the full set of tank sampling data and those results included in the WIR evaluation.

Page 2-74, Lines 12-14, text stating: “Figure 2-25 shows the conceptual model of an SST shortly after the emplacement of the grout, while Figure 2-26 shows the conceptual model of an aged tank system.”



¹ WMA-C PA denotes the WMA-C Performance Assessment (RPP-ENV-58782, Rev 0)

Comment: The residual tank waste in Figure 2-25 and 2-26 is depicted as a uniform layer. Section 6.2.1.1 of the WMA-C PA indicates that this waste geometry was assumed for the Performance Assessment modeling. Furthermore, Section 6.2.2.1.1 of the Performance Assessment states:

“Contaminant releases from the grouted tanks and ancillary equipment are expected to remain diffusive, with no (or negligible) advection occurring through the tanks and ancillary equipment because sufficient degradation of the tank-wall and infill grout material is unlikely to occur within the simulated time period of 10,000 years.”

Hence, release of contaminants from tanks is assumed to occur by molecular diffusion over the surface area of the tank bottom. Advection caused by water migration through the tank grout is assumed to be negligible.

Another reasonable conceptual model for source release that should be considered in the performance assessment takes into account the following:

1. Displacement of the loose waste materials toward the sides of the tanks as grout is added.
2. Diffusive flow of contaminants through the tank walls to the soil matrix followed by vertical advection by soil pore water.

The above conceptual model may result in larger mass releases due to larger concentration gradients since diffusive mass flux is proportional to the concentration gradient. In one-dimension, the diffusive mass flux is given by:

$$J = -D \frac{\partial c}{\partial x}$$

Where:

- J = Mass flux (mole/area-time)
- D = Diffusion coefficient (length)²/time
- c = Concentration (mole/(length)³)
- x = Spatial dimension (length)

The assertion of larger concentration gradients ($\frac{\partial c}{\partial x}$) is based on the assumption that there will be substantially more advective flow of pore water around the sides of the tanks than below the tanks since the tank acts as a barrier to vertical infiltration. Hence, if a material diffused out the side wall, it will be removed through advection while material that diffuses from below the tank will continue to move downward predominately by diffusion. The slower diffusive process under the tanks will result in higher soil concentrations at the soil/concrete interface and thus a smaller concentration gradient.

This conceptual model is supported by the following quote from Page 6-66, Lines 28-32 of the WMA-C PA:

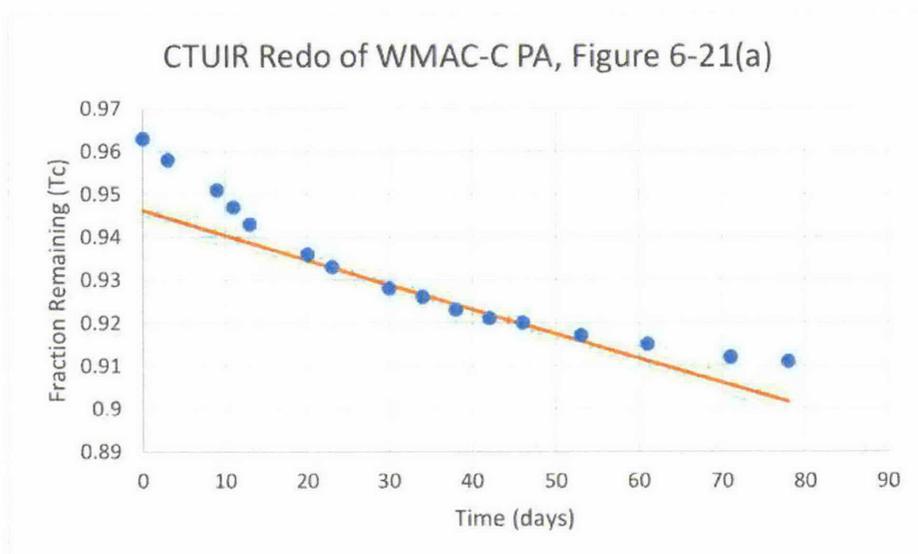
“The backfill material surrounding the tank structure will provide a preferential pathway for any water infiltrating through the surface cover. Due to large

contrast in relative permeability (several orders of magnitude) between gravel-dominated backfill material and grout monolith inside the tank under ambient conditions, most of the infiltrating water will flow around and bypass the tank structure.”

Requested action: Please include the source release mechanism described above in the performance assessment supporting this WIR evaluation. The WIR should subsequently take into account the results of these alterations to the performance assessment model.

Page 2-74, Lines 8 and 8, text stating: “Pacific Northwest National Laboratory (PNNL) has conducted numerous studies to understand release of 99Tc, chromium, and uranium from residual waste left in the WMA C SSTs (C-103, C-104, C-106, C-108, C-202, C-203, and C-204) after closure using distilled water, as well as water in equilibrium with a young grout and with an aged grout.”

Comment: Figures 6-20 through 6-23 of the WMA-C PA depicts experimental results used to derive the source release model for 99Tc. The lower portions of each figure indicates the results for a best fit of a first order release rate model to the data. The following is a recreation of this fit done by this reviewer for the data in Figure 6-21:



Blue points represent a recreation of the data (estimated from the figure) and the orange line is predicted fraction modeled in the same manner as reported in the WMA-C-PA. Namely, the data between approximately 20 days and 53 days were fit to the equation:

$$FR = A * EXP(k * t)$$

Where FR represents the fraction remaining, A and k are parameters varied to minimize the error between the model results and the data, and t represents time in days. The resulting values for A

and k were found to be 0.95 and -0.0006 (day⁻¹), respectively. These values are near those reported in Figure 6-21 (0.94 and -0.0006).

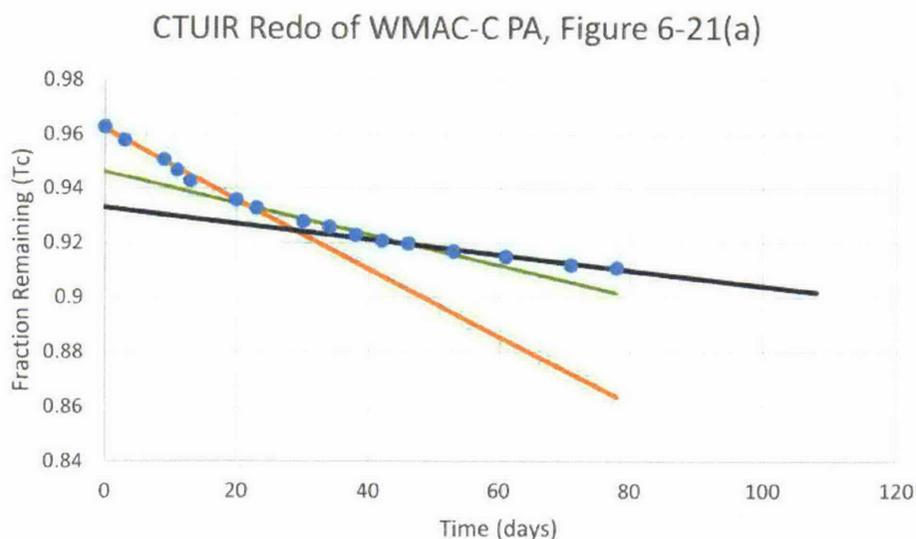
It is clear from the figure that a first-order rate model does not fit the data and that a fundamentally different conceptual model is needed. This assertion is made for several reasons. First, if the release of ⁹⁹Tc were first order in ⁹⁹Tc mass then the release rate would be expressed as:

$$\frac{dm}{dt} = -k * m$$

Where m is the mass of ⁹⁹Tc in the system. The proper solution to this equation starting at $t=0$ and $m=m(0)$ is:

$$FR = \frac{m(t)}{m(0)} = EXP(-k * t)$$

Thus, the parameter “A” should be 1.0 and not a variable used to fit the model to the data. Second, the data and the model do not agree over the full range of the data. In fact, it appears to this reviewer that the data indicate at least two, or possibly three, distinct trends. The following figure depicts this using lines of various colors to represent the regions:



The three lines are all fits to various portions of the data using the equation:

$$FR = A * EXP(k * t)$$

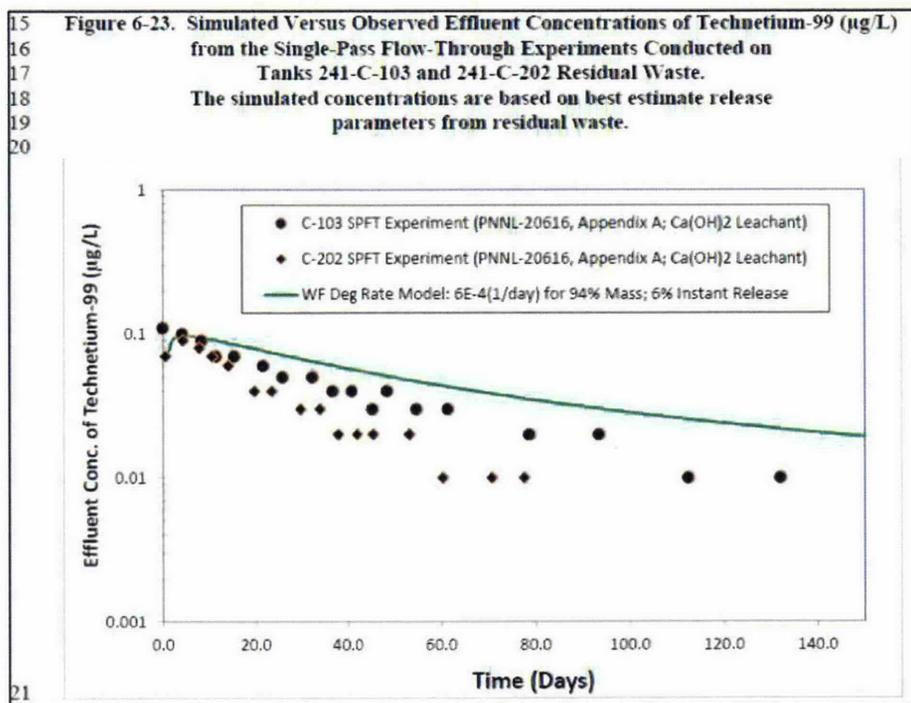
The results of each fit are shown in the table below. Each prediction is equally accurate at representing the portion of the data used to create the model fit, but none represent the full range of the data.

Table 2: Results for First Order Model Fit to WMA-C PA Figure 6-21 Data

Line	Data Range (days)	A	k (day ⁻¹)	r ²
Orange	0 to 23	0.96	-0.0014	0.9907
Green	20 to 53	0.95	-0.00062	0.976
Black	42 to 78	0.93	-0.00031	0.986

It appears to this reviewer that the release of ⁹⁹Tc in the experiments may be occurring by at least two separate mechanisms, one being rapid and the other being slower. If two mechanisms were considered then the early portion of the data may be dominated for the former and the later data by the slower mechanisms. The mid-range data represents a transition period when both mechanisms are contributing to the release of the ⁹⁹Tc.

Use of a first-order release model and the coefficient derived as indicated in the WMA-C-PA to estimate long-term release of ⁹⁹Tc will create substantial errors in estimated ⁹⁹Tc in the environment. This error is abundantly evident in WMA-C PA Figure 6-23 (reproduced below):

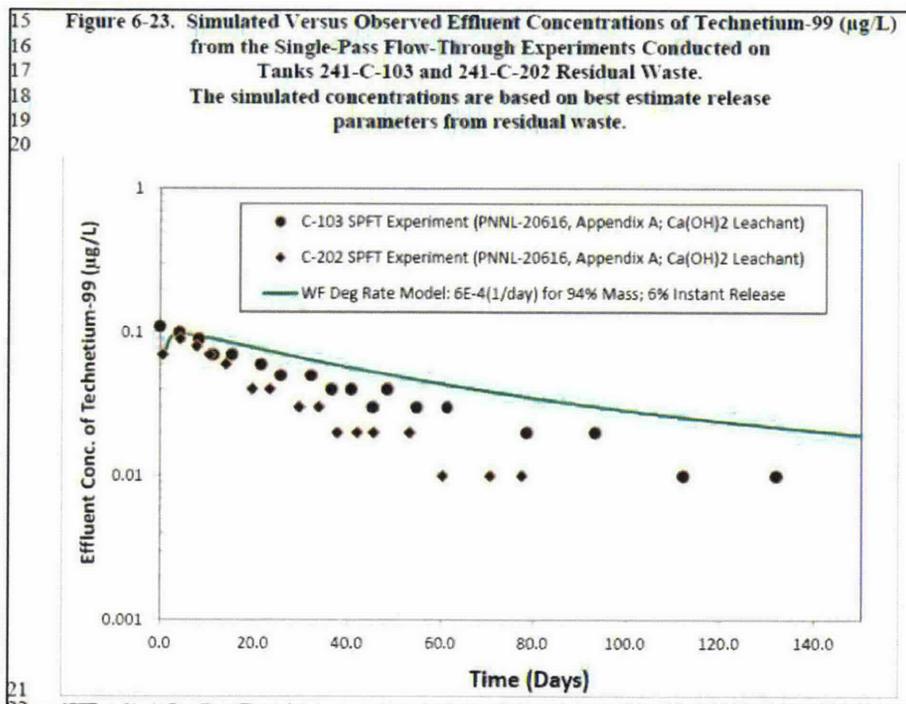


Furthermore, assessing uncertainty in the first order rate coefficient (see WMA-C-PA Section 8.1.3.3) will not bound the potential error since the form of the model is fundamentally incorrect.

Requested action: Reconsider the assessment of the ^{99}Tc release rate as a first order phenomena. This work will require re-examining the experimental results, developing a new conceptual model and refitting the data to the model. The WIR Evaluation will need to account for the new results.

Page 2-74, Lines 8 and 8, text stating: “Pacific Northwest National Laboratory (PNNL) has conducted numerous studies to understand release of ^{99}Tc , chromium, and uranium from residual waste left in the WMA C SSTs (C-103, C-104, C-106, C-108, C-202, C-203, and C-204) after closure using distilled water, as well as water in equilibrium with a young grout and with an aged grout.”

Comment: The ^{99}Tc release model depicted in Figure 6-23 of the WMA-C PA (reproduced below) over-predicts leaching. This phenomena will result in predicted groundwater concentrations of ^{99}Tc peaking higher and earlier than would occur with a release rate that better fits the data. The Performance Assessment states this is a conservative assumption. However, since the possible dose from other radiological compounds increase at later times, holding ^{99}Tc within the tanks longer may result in a larger total peak exposure than currently predicted (see Figure 7-31 RPP-ENV-58782, Rev. 0).



Requested action: Please consider the impacts of a slower release of ^{99}Tc on the overall groundwater pathway effective dose.

Comments to:
Waste Incidental to Reprocessing Process II.B.2(a) Criteria 1
(DOE/ORP-2018-01, Draft D, Section 4)

Page 4-2, Lines 6 and 7, text stating: *“DOE views key radionuclides to be those that, using a risk-informed approach, contribute most significantly to radiological dose to workers, the public, and the environment.”*

Comment: The fundamental assumption that underlies the discussion provided by the USDOE to justify compliance with WIR Criteria 1 (removal of key radionuclides to the maximum extent technically and economically practical) is that if the site does not pose unacceptable levels of radiological risk to workers, the public or the environment, then Criteria 1 has been met. This assumption is evident by how the USDOE defines the three key terms of Criteria 1. These three terms are:

1. Key radionuclides
2. Economically practical
3. Technically practical

As quoted above, key radionuclides are defined in the document as *“...those that, using a risk-informed approach, contribute most significantly to radiological dose to workers, the public, and the environment”*. The definition for “Economically Practical” assumed in the document is illustrated in Lines 7 through 9 on Page 4-12 where it states:

“As discussed further in Section 4.3.2 of this Draft WIR Evaluation, when the limit of technology is reached, continued retrieval also is not economically practical (emphasis added) because the benefit of retrieval – reduction of radiological risk to workers, the public, and the environment – remains static as well.”

That is, if continued retrieval does not reduce computed risk then additional work is not economically practical. Finally, “Technically Practical” is also defined using risk as seen in Section 4.3.5 where it states:

“From a risk-informed perspective, additional removal of waste and key radionuclides from the ancillary structures (beyond that discussed above) would not be technically practical (emphasis added) (i.e., sensible or useful), given that the residual waste, including that in the pipelines, is well below Class C concentration limits, as shown in Section 6.0 of this Draft WIR Evaluation.”

This approach to defining the elements of Criteria 1 lays the foundation for the USDOE arguing that they only need to remove the amount of waste from the tanks at Hanford that is necessary to meet risk objectives. This assertion is further supported by the October 10, 2018 notice in the Federal Register published by the USDOE Office of Environmental Management entitled *“Request for Public Comment on the U.S. Department of Energy Interpretation of High-Level Radioactive Waste”*. This public notice states that it is the USDOE’s interpretation that waste

resulting from the reprocessing of spent nuclear fuel (such as Hanford tank waste) is not high level waste if the waste:

1. Does not exceed concentration limits for Class C low-level radioactive waste as set out in Section 61.55 of title 10, Code of Federal Regulations; **or**
2. Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable regulatory requirements.

It should be noted that if NUREG-1854 is applied as in this Draft WIR Evaluation, then the first item in the above list becomes a risk based criteria identical to the performance assessment objectives defined in 10 CFR 61 Part 42 (for all but TRU waste). The second item is also a risk based criteria and will rely on compliance with 10 CFR 61 Parts 40 through 42. Clearly, the above method of reclassifying HLW removes the necessity to comply with WIR Criteria 1 (removal of key radionuclides) and relies solely on estimated risk (Similar to WIR Criteria 2 and 3).

If risk is going to be the sole basis for making decisions on how much waste should be removed from the Hanford tanks before they are grouted and capped, then it is vital to ascertain how certain we are in the conceptual and mathematical models used to project human health and environmental risks thousands of years into the future. Based on a review of some of the fundamental data found in the WMA-C PA, this reviewer is not convinced that gambling the future of the Columbia Basin with the current modeling tools is wise.

Requested action: The USDOE needs to rethink its assumption that risk is the basis for deciding when to stop removing waste from the tanks.

Page 4-12, Lines 30-32, text stating: *“Although in different ways both the HFFACO and Consent Decrees employ a 360 ft³ volume standard – under the Consent Decrees as a residual goal and under the HFFACO as a retrieval requirement – DOE has complied with both in retrieving waste from the WMA C tanks.”*

Comment: Table 4-7 indicates that only C-104, C-109, and C-111 have residual volumes below the HFFACO and Consent Decree volume standards of 360 ft³.

Requested action: Please clarify how the current state of WMA-C tank retrieval has complied with the volume standard. If the USDOE means that they have complied with the HFFACO and Consent Decrees through the deployment of the correct number of technologies (see the third paragraph on Page 4-13), then state the volume standard was not met, but the technology standard was met.

Page 4-74, Line 1, text stating: *“...given that the residual waste, including pipelines, is well below Class C concentration limits...”*

Comment: Pipeline waste cannot take advantage of dilution by grout and must be assumed to have a composition similar to the original waste. Table 1 of these comments show that the residual waste in most the WMA-C tanks contain more than 100 nCi/g of long-lived alpha emitting compounds and would therefore not be Categorized as Class C waste under 10 CFR 61.55.

Requested action: Please explain how the residual waste in the pipelines, especially those that are plugged, meet the concentration limits of Class C waste.

Page 4-78, General Comment

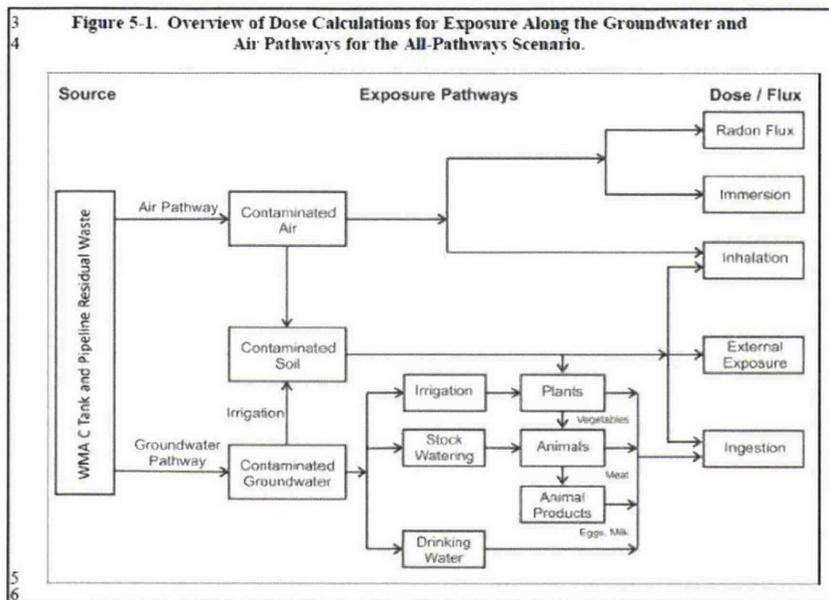
Comment: There is a problem with the document after line 4 and again on Page 4-80.

Requested action: Please determine if any critical information was omitted due to these errors.

Waste Incidental to Reprocessing Process II.B.2(a) Criteria 2 (DOE/ORP-2018-01, Draft D, Section 5)

Page 5-3, Section 5.2, General Comment on the All Pathways Scenario.

Comment: The “all pathways” scenario used to assess protection of the general public assumes exposure via the following pathways:



The conceptual model assumes a hypothetical individual resides at the boundary of the DOE-controlled area until the assumed period of active institutional controls ends at 100 years. At this time, the person moves to the point of maximum exposure at, or outside, the 100-m buffer zone. Exposure occurs through the transport of contaminants to the receptor through the use of groundwater to drink, to grow crops, and to water livestock. Only contaminants from tanks and ancillary equipment is considered. Exposure also results from contact with soils contaminated by the application of groundwater and through inhalation of gaseous species that diffuse from the subsurface into the breathing zone and are transported to the point of contact at the edge of the 100-m buffer zone. Three exposure mechanisms are considered for the air pathway; air immersion, inhalation, and external exposure to the contaminated ground surface resulting from wet and dry deposition of a fraction of the waste.

The following table summarizes the exposure scenarios, performance objectives, and points of assessment for the WMA-C PA, including those for the All Pathways scenario (Table extracted from the WMA-C PA):

Table 2-1. Exposure Scenarios, Performance Objectives and Measures, and Points of Assessment for the Waste Management Area C Performance Assessment.

Exposure Scenario	Performance Objective and Measures	Point of Assessment	
		Operational and Active Institutional Control Periods ^a	Post-Institutional Control Period
All-pathways ^b	25 mrem/yr ^c	Facility boundary	100 m (328 ft) ^d
Air pathway ^b	10 mrem/yr ^c	Facility boundary	100 m (328 ft) ^d
Radon ^b	20 pCi/m ³ /s	Flux rate at facility surface	Flux rate at facility surface
	0.5 pCi/L ^e	Facility boundary	100 m (328 ft) ^d
Water resources	Washington Department of Ecology requirements on concentrations of radionuclides	At the source and 100 m (328 ft) ^d	100 m (328 ft) ^d
Intruder ^b	100 mrem/yr Chronic ^{c, f}	Not applicable	Facility
	500 mrem Acute ^{c, f}	Not applicable	Facility

^a The active institutional control period includes final closure.

^b Chapter IV – Low-Level Waste Requirements of DOE M 435.1-1. Radioactive Waste Management Manual.

^c Excluding radon in air.

^d The point of highest projected dose or concentration beyond a 100 m (328 ft) buffer zone surrounding the disposed waste. Additionally, concentrations found in tank residuals will be compared against the standard Model Toxics Control Act three-phase model.

^e Alternative radon Performance Objective.

^f Performance Measure.

There are two key assumptions in the above discussion and table for the All Pathways scenario which do not reflect the full, credible, exposure potential for a future member of the public living at this area. These assumptions are:

1. The maximum exposure point is at, or outside the 100-m buffer zone. Once the period of institutional control is over (100 years) there will be no barriers to stop people from living on, or farming, all the lands within WMA-C, including the cap. This assertion is supported by the statement in the WMA-C PA that (Page 2-4, Lines 11 through 14 of the WMA-C-PA):

“The closed facility is assumed to remain under institutional control for a period of 100 years after closure, at which time control and memory of the facility is assumed to be lost (emphasis added), and potential inadvertent human intrusion can occur.”

Furthermore, the inadvertent intruder scenario evaluated in the PA assumes access to the area above the tanks for drilling. This assumption is not consistent with the assertion that only wells 100-m from the boundary will be used to extract water, nor is it consistent with assuming that the multiple acres of cap area will not be used by humans. The All-Pathways scenario should include the area within the WMA-C when determining the point of highest concentration of extracted groundwater. The scenario should also include water infiltration rates that account for irrigation over the cap. Finally, the area

within the WMA-C should also be evaluated to determine the point of highest inhalation exposure.

2. The source term for this analysis excludes residual soil contamination from past leaks and only includes the residual waste from the tanks and ancillary equipment. While there may be a regulatory justification to bifurcate the assessment of exposure from these two types of source terms (See Section 2.0 of the WMA-C PA), the resulting decisions are not protective of human health and the environment. It is not sufficient to independently demonstrate compliance with each individual regulation if the composite results demonstrate the potential for harmful exposure. Compliance with WIR Criteria 2 cannot be truly demonstrated without considering all contamination at the WMA-C.

Requested action: For the post-institutional control period, the All-Pathways scenario should include:

1. The area within the WMA-C when determining the point of highest concentration of extracted groundwater and inhalation exposure.
2. Water infiltration rates that account for irrigation over the cap.

The All-Pathways scenario should also include existing soil contamination as a source of contaminants.

Page 5-12, Line 1, text stating: “...residua waste is small...”

Comment: Radon flux analysis should include both residual soil contamination as well as the waste remaining in the tanks and ancillary equipment. As stated in the preceding comment, it is not sufficient to independently demonstrate compliance with each individual regulation if the composite results demonstrate the potential for harmful exposure.

Requested action: Please include existing soil contamination as a source of contaminants in the radon flux analysis.

Page 5-14, Section 5.3, General Comments for the Inadvertent Intruder Scenario.

Comment: The following table summarizes the Inadvertent Intruder scenarios evaluated in the WMA-C PA. In all cases the source of contamination is assumed to be derived from drilling through residual waste within a tank or ancillary structure. Exposure from pathways associated with groundwater extracted from the well is not included in the analysis. A tillage depth of 15 cm was assumed for the Rural Pasture, Suburban Garden, and Commercial Farm scenarios.

Table 3: Summary of the Inadvertent Intruder Scenarios Assessed in the WMA-C PA.

Scenario	Well Diameter	Source	Start Time for Analysis	Pathways
Acute, Well Driller	--- ^a	Drill through a 3-in. waste transfer line, 5% full, waste diluted by all well cuttings (WMA-C PA, Eq. 9-3).	100 years after closure.	Inhalation of soil, External exposure, Ingestion of soil
Chronic, Rural Pasture	10.5-in	Drill through a 3-in. waste transfer line, 5% full, waste concentration diluted by soil in tilled 1.24 acre pasture (WMC-PA Eq. 9-8).	100 years after closure.	Inhalation of soil, External exposure, Ingestion of soil, Ingestion of milk
Chronic, Suburban Garden	6.5-in	Drill through a 3-in. waste transfer line, 5% full, waste concentration diluted by soil in tilled 0.62 acre pasture (WMC-PA Eq. 9-8).	100 years after closure.	Inhalation of soil, External exposure, Ingestion of soil, Ingestion of plants
Chronic, Commercial Farm	16.5-in	Drill through a 3-in. waste transfer line, 5% full, waste concentration diluted by soil in tilled 0.62 acre pasture (WMC-PA Eq. 9-8).	100 years after closure.	Inhalation of soil, External exposure, Ingestion of soil
Acute, Well Driller	---	Drill through tank, waste diluted by all well cuttings (WMA-C PA, Eq. 9-3)	500 years after closure.	Inhalation of soil, External exposure, Ingestion of soil
Chronic, Rural Pasture	10.5-in	Drill through tank, waste concentration diluted by soil in tilled 1.24 acre pasture (WMC-PA Eq. 9-8).	500 years after closure.	Inhalation of soil, External exposure, Ingestion of soil, Ingestion of milk
Chronic, Suburban Garden	6.5-in	Drill through tank, waste concentration diluted by soil in tilled 0.62 acre pasture (WMC-PA Eq. 9-8).	500 years after closure.	Inhalation of soil, External exposure, Ingestion of soil, Ingestion of plants
Chronic, Commercial Farm	16.5-in	Drill through tank, waste concentration diluted by soil in tilled 0.62 acre pasture (WMC-PA Eq. 9-8).	500 years after closure.	Inhalation of soil, External exposure, Ingestion of soil

^a Acute well driller exposure was did not depend on well diameter.

The scenarios defined above do not describe the full, credible exposure that would occur if a future individual were to drill into waste within WMA-C. The following are sources and pathways that are neglected for each of the scenarios described in Table 3:

Acute Well Driller:

1. The current analysis ignores the possibility of drilling through a plugged cascade line. Page 9-3 of the WMA-C-PA states that the transfer lines were considered in the assessment since they represent 98% of the total buried pipe length. Even though there are fewer cascade lines, they still are present and represent a credible source of contamination and should be included in the analysis. Note that if plugged line are used as the source of contamination then the acute dose limits in WIR Criteria 2 will likely be exceeded. For example, Draft WIR Evaluation reports a peak acute dose of 36 mrem/yr for a 5% pipe waste loading. The acute WIR Criteria 2 limit is 500 mrem/yr. Since all

the exposure pathways are linear in the amount of waste exhumed, scaling these results to a 100% pipe waste loading will result in a peak acute dose of 720 mrem/yr.

2. If a well were to be drilled within the WMA-C it would not only potentially encounter a waste line, but would exhume soil contaminated by past leaks and spills. The acute well driller scenario should include existing soil contamination as a source term in the analysis along with waste from buried lines.

Chronic Rural Pasture:

1. If a well were to be drilled within the WMA-C it would not only potentially encounter a waste line, but would exhume soil contaminated by past leaks and spills. The Chronic Rural Pasture scenario should include existing soil contamination as a source term in the analysis along with waste from buried lines.
2. Plugged cascade lines are a credible source of contamination and should be included as the pipe source term rather than a 5% filled transfer line.
3. The purpose for drilling a well is to extract groundwater. As such, pathways associated with extracting groundwater should be included in this scenario. These pathways include:
 - Consumption of the water by animals.
 - Irrigation of the pasture.
 - Ingestion of the groundwater as drinking water.
 - Showering using the groundwater.
4. The location of the pasture should be immediately above the WMA-C so that infiltration of irrigation water impacts buried waste.
5. Animals raised in the pasture will not only be used for milk, but also meat. Ingestion of beef raised on the irrigated, contaminated pasture should be included in this scenario.
6. Ingestion of homegrown vegetables which have been raised in the contaminated soil using contaminated groundwater should be an exposure pathway since it is very likely that an individual who is raising their own meat and milk will also raise their own vegetables.
7. Inhalation of airborne contaminants that diffuse from the subsurface should be included as an exposure pathway.

Chronic Suburban Garden:

1. If a well were to be drilled within the WMA-C it would not only potentially encounter a waste line, but would exhume soil contaminated by past leaks and spills. The Chronic Suburban Garden scenario should include existing soil contamination as a source term in the analysis along with waste from buried lines.
2. Plugged cascade lines are a credible source of contamination and should be included as the pipe source term rather than a 5% filled transfer line.
3. The purpose for drilling a well is to extract groundwater. As such, pathways associated with extracting groundwater should be included in this scenario. These pathways include:
 - Irrigation of the garden.
 - Ingestion of the groundwater as drinking water.
 - Showering using the groundwater.

4. The location of the garden should be immediately above the WMA-C so that infiltration of irrigation water impacts buried waste.
5. Inhalation of airborne contaminants that diffuse from the subsurface should be included as an exposure pathway.

Chronic Commercial Farm:

1. If a well were to be drilled within the WMA-C it would not only potentially encounter a waste line, but would exhume soil contaminated by past leaks and spills. The Chronic Commercial Farm scenario should include existing soil contamination as a source term in the analysis along with waste from buried lines.
2. Plugged cascade lines are a credible source of contamination and should be included as the pipe source term rather than a 5% filled transfer line.
3. The purpose for drilling a well is to extract groundwater. As such, pathways associated with extracting groundwater from beneath WMA-C should be included in this scenario. These pathways include:
 - Irrigating farm crops.
 - Ingestion of the groundwater as drinking water by farm workers.
4. Inhalation of airborne contaminants that diffuse from the subsurface should be included as an exposure pathway.

Requested action: Please revise the Inadvertent Intruder Scenarios to include the sources and pathways discussed above.

**Waste Incidental to Reprocessing Process II.B.2(a) Criteria 3
(DOE/ORP-2018-01, Draft D, Section 6)**

Page 6-1, Table 6-5, General Comment

Comment: Application of the Category 3 site-specific approach from NUREG-1854 using the intruder-driller scenario results in a methodology for WIR Criteria 3 that is identical to the inadvertent intruder analysis from WIR Criteria 2. This assertion is demonstrated by the fact that Table 6-5 from the Draft WIR Evaluation is identical to Table 9-7 in the WMA-C PA. For this reason, all comments provided for the Inadvertent Intruder Scenario under WIR Criteria 2 also apply to WIR Criteria 3.

Requested action: Please revise the Inadvertent Intruder Scenarios used in WIR Criteria 2 and 3 to include the sources and pathways discussed above.



29 October 2018

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Re: Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C

Dear Mr. Bovier,

On behalf of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources, Energy and Environmental Sciences Program (DNR-EESP), I am submitting the following comments to the Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site.

The peoples of the CTUIR have a long and rich history with the Hanford landscape and the many natural resources it supports. Since the mission of the Hanford Site shifted from plutonium production to clean-up, the CTUIR has worked collaboratively with the United States Department of Energy (USDOE) to regain access to clean and abundant natural resources on, and near, Hanford. We are now approaching a time where we can foresee that portions of the Hanford landscape may be open for limited access, including access for public recreation opportunities, industrial development, and access for Tribal members to exercise their treaty-reserved rights.¹ It is exciting to consider that the CTUIR people may soon be able to once again catch and dry fish at Tawšápa² and Íxyawna³ and gather white clay from Puuxpáwas.⁴

The Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C (hereafter termed the Draft WIR Evaluation) is setting an important precedent for clean-up decisions that will impact the Hanford natural resources for many thousands of years. Increased access to Hanford lands and resources by Tribal Members makes it important to the CTUIR that cleanup decisions, including those for the central plateau, are protective of human health and the environment for generations to come. Simply put, the final condition of the site must not harm future users of the land, groundwater, and Columbia River.

The decision on whether or not the current residual tank waste at waste management area C (WMA-C) is safe to reclassify as low level waste (LLW), and so leave it in place, must be made considering the totality of the impacts of all waste that will remain at Hanford. For the WMA-C, this requirement mandates that analysis of

¹ USDOE, 1999. Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP-EIS), DOE/EIS-0222; September 1999.

² The word means "rabbit brush" and represents a fishing village of the Walla Walla peoples.

³ The word means "Make dry salmon" and represents a village near White Bluffs on the Hanford site.

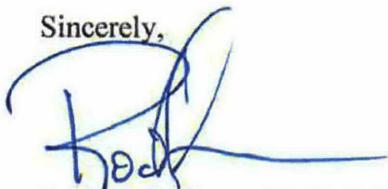
⁴ Puuxpáwas means "white powder" and is a traditional mining site located on east bank of the Columbia River between the 100-F Area and the Hanford Dunes.

the impacts of leaving a portion of the tank waste should include potential exposure to all waste that will remain, including residual soil contamination. In addition, the cumulative impacts of the waste management areas surrounding WMA-C on the groundwater should be included in the assessment to understand if specific closure decisions at WMA-C will result in usable resources. The current DRAFT WIR Evaluation fails to evaluate either of these issues.

Given that the current Draft WIR Evaluation does not provide a complete assessment of the potential for harmful exposure at, or near, the WMA-C, the CTUIR DNR-EESP cannot recommend supporting the analysis as being sufficient to support a WIR determination for the residual waste in the tanks and ancillary equipment. Furthermore, the CTUIR DNR-EESP is not aware of an immediate health and safety reason to pursue near-term tank closure at WMA-C and so there is time to complete an analysis that includes the breadth of waste forms at the WMA-C as well as the cumulative impacts from the surrounding WMAs. Taking the time to complete a full analysis will help avoid the disastrous consequences of implementing irreversible actions, such as grouting tanks, and later determining that the end-state is not protective of the environment.

Detailed comments on the Draft WIR Evaluation are provided in the enclosed document. If you have any questions concerning this matter please feel free to contact Matt Johnson, DNR-EESP Program Manager at (541) (b)(6)

Sincerely,



Rodney S. Skeen, Ph.D, P.E.
Hazardous Waste Analyst

Cc:
File

Enclosure (1)

Heart of America Northwest

"The Public's voice for Hanford clean-up"

4500 9th Ave NE Suite 300 Seattle, WA 98105 – phone (206) 382-1014 – www.hanfordcleanup.org – office@hoanw.org

Comments of Heart of America Northwest and HoANW Research Center (HoANW) to US Department of Energy on Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site (Draft WIR Evaluation)

Heart of America Northwest is the region's largest citizens' group working for the cleanup of Hanford – as "The Public's Voice for Hanford Cleanup" since 1987. Our members reside in every area of the Northwest. Our members use the Columbia River, they live downwind and at risk from future releases of radioactive and chemical contamination from accidents or to groundwater and the Columbia River. Wherever our members reside, they care about protecting the Columbia River and the health of future generations from Hanford's contamination. USDOE's proposed actions discussed in these comments put the River and health of future generations at risk for ten thousand years.

USDOE summarizes its proposal as follows:

"The Draft WIR Evaluation is an important step toward closure of the 16 single-shell tanks at Hanford's C Tank Farm, also known as Waste Management Area C (WMA C). Waste from these tanks has been successfully retrieved, and safely closing the emptied tanks would be a significant achievement in DOE's Hanford cleanup mission. DOE has a record of safely and successfully closing emptied underground waste tanks at the Savannah River Site in South Carolina and the Idaho National Laboratory in Idaho. The Draft WIR Evaluation demonstrates that the tanks, ancillary structures and remaining residuals at closure of WMA C will meet the waste incidental to reprocessing (WIR) criteria in [DOE Manual 435.1-1, Radioactive Waste Management Manual](#), are not high-level radioactive waste and may be managed (disposed of in place) as low-level radioactive waste."¹

Summary of Key Comments:

1. USDOE should stop wasting huge amounts of time and money in pursuing the untimely and premature closure of Tank Farm C. Renaming (reclassifying) High Level Nuclear Waste in the C Farm tanks is a necessary precursor for USDOE to adopt its overall plan to "close" tanks under RCRA with the remaining High Level Nuclear Waste (proposed by USDOE to be reclassified to be "low level") covered in grout and abandoned without further effort at removal.
 - a. There are at least six Single Shell Tanks which are currently, or have recently, leaked. USDOE should be focusing on emptying those tanks to protect the environment and groundwater, instead of spending time on renaming High Level Nuclear Wastes in tanks or leaked from tanks. USDOE should be focusing on moving waste to be treated, rather than a renaming waste to claim it "closed" a tank farm by abandoning the renamed waste.

¹ Copied from summary for comment period at:
<https://www.hanford.gov/pageaction.cfm/calendar?IndEventId=9993>

- b. USDOE has NOT successfully retrieved all waste exhausting all practical and available removal of wastes from C Farm tanks. Rather, it now wishes to skip any consideration of whether the tanks themselves should be removed (in whole or in part) along with the 4 to 10% of waste remaining in these tanks. USDOE conflates having Washington Ecology's approval to end pumping out of the tanks with a final decision to remove 99% or better of the waste from tanks as USDOE formally committed to do in the Record of Decision on the Tank Closure and Waste Management EIS (TCWMEIS) (2012). USDOE is now impermissibly abrogating its commitment to only consider alternatives which remove 99% or better of tank wastes for final closure.
- c. USDOE's performance assessment for this proposal fails to even mention, much less consider, the applicable health and environmental standards for closure under RCRA (as well as CERCLA; and, Washington's cleanup statutes: MTCA and HWMA). The standards USDOE seek considered are so lax as to allow cancer risks hundreds of times higher than permitted under the applicable RCRA, CERCLA, MTCA and HWMA standards. Consideration of those standards requires completing cumulative impact analyses – which are years away. USDOE also fails to utilize the required standards for reasonably foreseeable “inadvertent intrusion” into the waste sites. Indeed, as we document, based on the best scientific consensus reports on health impacts of radiation exposure, **USDOE's scheme relies on standards that allow for fatal cancers in 1 out of every 201 women, and 1 in every 302 males**, exposed in the unrestricted areas.²
 - i. To “demonstrate compliance,” USDOE says it will base decision on 25% of the exposure and dose on which its standard is based. This 25 millirem dose is a standard which EPA has rejected as not protective of human health and the environment at Superfund (CERCLA) sites, which includes Hanford's tank farms; and, which would allow fatal cancers in approximately 1 out of every 800 women 1 out of every 1,200 adult men exposed via groundwater and other pathways.
 - ii. For inadvertent intrusion, USDOE would allow exposure to astronomical levels of cancer risk – literally being genocidal for Tribal Members using treaty right and cultural resources and practices. USDOE refuses to consider a tribal exposure scenario in calculating risks for these decisions. Washington's RCRA decision on closure must include examination of risk based on the Reasonable Maximum Exposure Scenario – which would be the tribal exposure.
 - 1. USDOE relies on a dose standard for the exposure to foreseeable inadvertent intrusion which fails to consider how the intruder digging a well or excavation would go through the contaminated soil before reaching the tank waste – bringing both to the surface.
 - 2. USDOE's dose standard would allow 500 millirem dose per year to pregnant women or inadvertent intruders. This results in a cancer risk

² Sections 5.4.7 and 5.4.8. See separate more detailed analysis of the human health impact from exposure to an allowable dose of 100 millirem per year and 2 millirem per hour in unrestricted areas. Health impact from dose based on BEIR VII Table 12-D.-3. EPA Blue Book Guidance calculation based on 30 years exposure from these allowed lifetime doses would result in an estimated 8% fatal cancer rate in adult males and 6E-3 for 30 years.

of fatal cancer in 1 out of every 40 women.³ In contrast, CERCLA bars making decisions leaving contamination which would result in a risk of cancer in greater than 1 in every 10,000 persons exposed, and MTCA is generally ten times more protective.

- d. USDOE impermissibly substitutes consideration of the impact of contamination levels in groundwater at a point 100 meters downgradient – outside the level of control – instead of using the legal point of compliance under RCRA and HWMA.
2. USDOE has failed to consider the cumulative impacts of this specific proposal AND of interrelated proposals, which USDOE has already announced. This violates the National Environmental Policy Act (NEPA). USDOE made no effort to have NEPA analyses accompany this proposal.
 - a. USDOE has “piecemealed” consideration of impacts from this proposal – to the degree it considered them at all.
 - b. USDOE has not considered the impacts of chemical waste releases from the C Farm tanks – saying that it expects to release such an analysis in three years or more. However, to “close” tanks pursuant to either federal RCRA or CERCLA laws and Washington State’s Hazardous Waste Management Act (HWMA), USDOE must meet standards of these laws. Those standards require that the cumulative impact of all cancer causing (carcinogenic) substances released into the environment – summing the risks from both radionuclide and chemical hazardous substances. Instead, USDOE’s performance assessment considers only its own lax standards which – as we describe at length below – would allow cancer risks that are astronomically high. Indeed, the cancer risks from exposure to the levels of contamination that USDOE relies upon (and parallel NRC standards) are so high as to be nothing short of tragic for Native Americans exercising Treaty rights to use the resources on ceded lands, and utilizing resources or religious and cultural sites and pursuant to the National Historic Preservation Act (NHPA) (USDOE has not even conducted required NHPA cultural surveys for these areas). NEPA (and Washington’s SEPA) require that USDOE disclose and consider the impacts relative to these standards under CERCLA, RCRA, HWMA using tribal exposure scenarios (and not relying on analyses for impacts to groundwater 100 meters outside of the RCRA point of compliance).
 - c. USDOE has failed to consider and share analyses of the impacts of its already proposed closure plan for Tank Farm C, which involves leaving both the waste in tanks in place under grout, and leave in place, under soil and / or asphalt caps, the waste leaked or released from tanks and pipelines in soil, ancillary pipes and facilities. NEPA does not allow USDOE to consider only the impact from the related proposal to leave approximately 4% of the waste in tanks, without considering the overall impact of leaving all the waste in the tank farm.
 - i. In 2008, USDOE issued a “WIR by citation” seeking to reclassify High Level Nuclear Waste which is already leaked, discharged or spilled into the soil. This is a related decision which USDOE failed to ever disclose in any documentation considering impacts for the C Farm WIR. USDOE failed to provide any public notice or comment opportunity for this decision in 2008.

³ BEIR VI, CERCLA based exposure duration

Through public records and FOIA requests we have confirmed that USDOE did not even provide notice of this decision before it was made to the States of Oregon and Washington or to the impacted Native American Nations (violating duties to consult). USDOE seems unable to offer any formal interpretation of whether the 2008 WIR reclassification for waste in soil applies solely to new leaks or releases after 2008, and, if so, how it differentiates between prior contamination and new contamination during cleanup. Because this has just been publicly disclosed, legal challenges remain timely – including for USDOE’s total failure to consider potential significant environmental and health impacts from the 2008 WIR decision (this was issued years before the TCWMEIS, so USDOE has no pretense to say it considered impacts in that document).

- d. USDOE has failed to consider the cumulative impact of its plan to repeat this same WIR process and closure scheme at all Single Shell Tank Farms, greatly increasing the cumulative impacts to groundwater, the River, natural resources and on the Treaty rights of Tribal Nations with rights to use those resources.
 - e. USDOE has issued a formal proposal in the Federal Register to redefine High Level Nuclear Waste, and thus avoid even its own Order 435.1 WIR process. This is a closely related proposal, whose cumulative impacts must be considered in one NEPA review of this first decision in the set of related proposals. The redefinition is clearly aimed to allow leaving waste in place in tanks and in tank farm contaminated soils across Hanford tank farms, going far beyond C Farm.
 - f. USDOE has failed to consider and share analyses of these cumulative impacts.
3. USDOE lacks legal authority to reclassify the Tank Wastes or the wastes leaked to soil (2008 WIR decision discussed above). The Nuclear Waste Policy Act (NWPA) defines High Level Nuclear Waste and requires its disposal in a deep geologic repository – not left near the surface. USDOE can not rely on Order 435.1 as authority to violate the NWPA.
- a. Congress forcefully mandated that USDOE is barred from considering its reclassification of waste in tanks at its Savannah River and Idaho National Lab sites as a precedent for any effort to reclassify tank wastes at Hanford, pursuant to Section 3116 of the National Defense Act of 2005. Yet, even in its summary of the proposal, USDOE impermissibly cites being allowed to reclassify waste in South Carolina and Idaho as a precedent and basis for reclassifying Hanford tank wastes (described at length in our comments).
 - b. Even if USDOE has authority under 435.1, it fails to meet its own 435.1 criteria of removing key radionuclides to the extent practicable prior to reclassifying. That requirement clearly requires separation of the most radioactive wastes prior to being able to issue a WIR for the remaining “low activity waste.” It has always been intended to allow for disposing of “low activity waste” in near surface landfill at Hanford AFTER pretreatment to remove Cesium, Strontium and other very hot elements prior to vitrification. The Order also requires that the waste be solid – after treatment – as opposed to having never been treated and remaining in the bottom of a tank.

Overview of USDOE's Proposal to Rename (Reclassify) and Leave 4% of High-Level Nuclear Wastes in Hanford's C-Farm Single Shell Tanks

In 2004, USDOE sought to reclassify High Level Nuclear Wastes in tanks at its Savannah River, SC, Idaho National Lab and Hanford sites to be "Low-Level Waste" using a designation it called "**Waste Incidental to Reprocessing**" (WIR). This would have allowed USDOE to proceed to leave waste in the tanks, add concrete and declare the tanks cleanup up or "closed" under federal and state hazardous waste laws. The federal Nuclear Waste Policy Act (NWPA) of 1982 defined the tank wastes as High-Level Nuclear Wastes because they were created by melting down fuel rods removed from reactors to extract Plutonium and Uranium ("reprocessing"). The NWPA laid out a process requiring High Level Nuclear Waste to be disposed in a deep underground repository, not mixed with cement and left near the surface, where it may result in future exposures and contamination of groundwater.

Congress authorized reclassifying of tank waste and cementing in place for South Carolina (SC) and Idaho (ID) in Section 3116 of the Defense Authorization Act for 2005, but specifically rejected this for Hanford. However, USDOE cites what it has done in SC and ID as precedent⁴ and guidance for a new proposal to reclassify waste in, leaked or discharged from, Hanford's tanks, as Low-Level Waste using a Waste Incidental to Reprocessing procedure.

This guide from Heart of America Northwest examines if that is allowable and what the consequences may be. It starts with a recap of USDOE's prior effort to reclassify tank wastes and Congress' explicit exclusion of Hanford from authority it gave to USDOE to reclassify tank wastes at USDOE's Savannah River Site in South Carolina and Idaho National Lab.

USDOE proposes to leave 70,315 gallons in C-Farm tanks – which USDOE estimates as 4% - of the High-Level Nuclear Waste remaining in the C-Farm tanks based on "reclassifying" the waste from High Level to Low Level Waste.⁵ Tanks C-102 and C-112 have 20,500 gallons (6.5%) and 10,100 gallons (9.7%) remaining. See Figure at end for examples of some wastes remaining in tanks.

⁴ USDOE's own presentations on June 18, 2018 repeatedly used the word "precedent" regarding SC and ID in relation to the Hanford C Farm WIR proposed action.

⁵ Draft WIR Evaluation, Tables 4-7, 4-8, with 5,500 gallons estimated remaining C-105 per USDOE June 18, 2018.

Sen. Cantwell's Floor Statement on Proposed Reclassification of Nuclear Waste May 20, 2004

The PRESIDING OFFICER. The Senator from Washington.

Ms. CANTWELL: (T)he Department of Energy think they can sneak in language to this Defense authorization bill that would allow the reclassification of hazardous, high-level nuclear waste and basically call it incidental waste. Basically, it would reclassify nuclear waste that is in existing tanks in my State, in South Carolina, in Idaho, and in New York, and basically say that waste can be covered over with cement, with sand, and could be grouted. Basically, it says we can take high-level nuclear waste and grout it--grout it.

For most Americans, grout is something they see in their bathroom, not something they do with nuclear waste. Yet this is what we have before us in the underlying Department of Defense authorization bill. It is a shame. It is a shame that this body would allow such a significant change, really a change to the Nuclear Waste Policy Act on how nuclear waste is classified in this country, without public debate, without a public vote, without a public hearing, even without legislation discussing that change...Fifty-three million gallons of nuclear waste reside at the Hanford nuclear reservation in the State of Washington.

This Senator wants to see that waste cleaned up. I do not believe that can happen by pouring cement on top of it and putting sand in those tanks and all of a sudden now say we have cleaned up waste. Nowhere has that policy been promulgated as sound science.

NDA "WIR" Section 3116 process excludes Hanford and Washington:

The National Defense Authorization Act of 2005 (NDA) states the term "high-level radioactive waste" does not apply to radioactive waste resulting from reprocessed spent nuclear fuel that the Department of Energy (DOE), in consultation with the Nuclear Regulatory Commission (NRC), has deemed (1) no longer requires isolation in a deep geological depository, (2) has had as much highly radioactive radionuclides removed as is practical, and (3) which will nonetheless be disposed of in a manner compliant with the relevant federal regulations pertaining to low level waste disposal. **However, the section explicitly excludes USDOE from applying this special authority and WIR process in regard to "the management, storage, treatment, and disposition of radioactive and hazardous materials" at Hanford in Washington State.**⁶

⁶ Section 3116(e)(2).

DOE authority for Order 435.1

Because Washington was excluded from section 3116 of the NDAA, DOE pursued another process to reclassify the high-level nuclear waste in the C-Farm tanks. The Atomic Energy Act (AEA) originally gave authority to the Atomic Energy Commission (AEC) to manage the nuclear waste at sites like Hanford. *See* 42 U.S. Code § 2113 (b)(5)). Congress replaced the AEC with the DOE for production of nuclear material for weapons and the NRC for regulating commercial nuclear power and waste at non-DOE sites. Pursuant to this basic authority, DOE issued Order 435.1, in which adopts the process to reclassify waste.

Three Requirements of Order 435.1

The relevant section of Order 435.1 permitting waste reclassification contains three separate requirements for wastes:

- (1) remove key radionuclides to the maximum extent that is technically and economically practical;
- (2) managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, Performance Objectives; and
- (3) are to be managed, pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, Waste Classification; or will meet alternative requirements for waste classification and characterization as DOE may authorize.

DOE Order 435.1 (2)(a).

The DOE claims in its Draft that all three have been met regarding the C-Farm tanks.

However, the determination of whether key radionuclides have been removed to the maximum extent and economically practical is one which is subject to challenge, and clearly conflicts with the TPA and state/federal hazardous waste laws for final closure decisions (a final closure decision is the final cleanup decision under those laws and permits issued by Washington Ecology.

- USDOE's Process Impermissibly Conflicts with the Hanford Cleanup Agreement (TPA), USDOE's Formal Record of Decision on the Tank Closure and Waste Management EIS (TCWMEIS) and State Hazardous Waste Law In Determining How Much Waste May Remain in Tanks and What Constitutes Removal to the Extent Practical in Determining Final "CLOSURE":

Section 3116(e)(1) states that a reclassification cannot supersede⁷ the TPA and the relevant standards it incorporates for Hanford cleanup, e.g., CERCLA standards. However, Ecology has formally stated that, for final "closure" decisions under hazardous waste laws and the TPA, the standard for what is "practical" in the TPA is significantly stronger than what the DOE deemed "practical" in its Draft WIR. For example, *for purposes of making a final "closure" decision*⁸ for a tank farm, in its formal statement for incorporation into the USDOE's Tank Closure and Waste Management EIS (TCWMEIS), Ecology stated that its preferred alternative was removal of 99% of waste in the tanks. USDOE's formal Record of Decision on the TCWMEIS formally committed to only consider alternatives which remove 99% of waste from the tanks, or better, to the limits of technology. USDOE now seeks to proceed with reclassifying waste after retrieving only 96% from C Farm Tanks (and not retrieving any key radionuclides from discharges to soil).⁹ USDOE is illegally abrogating its commitment from the Record of Decision.

USDOE has proceeded to offer a plan and seek permission to proceed with final closure leaving the residual 4% (and up to 9.7% in individual tanks) in place under concrete, after reclassifying the average 4% remaining.

The WIR is proposed as a precursor ("an important step toward closure" per USDOE's own words) for determining if the waste left in the tanks can meet land disposal restrictions (RCRA, see 40 CFR 268). Ecology has agreed that USDOE has pumped out as much waste from the tanks as is practicable under TPA and Consent Decree requirements. However, this should not be

⁷ "(e)(1) Nothing in this section shall impair, alter, or modify the full implementation of any Federal Facility Agreement and Consent Order or other applicable consent decree for a Department of Energy site."

⁸ Ecology has agreed that USDOE has met the limits of pumping retrieval technology for each of the C Farm tanks it has reviewed pursuant to the TPA. USDOE appears to seek to conflate the determination that the limits of pumping retrieval have been met with the requirements that residues in tanks must not exceed 1% for purposes of final closure decisions (prior to determining if all practicable removal of waste has occurred).

⁹ USDOE estimates that approximately 70,315 gallons of waste remain in the C Farm Tanks. Tables 4-7, 4-8, with 5,500 gallons estimated remaining C-105 per USDOE June 18, 2018. There is a wide range of the amounts remaining in tanks with C-102 and C-112 having 20,500 gallons (6.5%) and 10,100 gallons (9.7%) respectively.

confused with whether the final closure standard has been met. DOE cannot replace the TPA and state hazardous waste law final closure standard with its own standard under the NWPA, Section 3116 or the AEA.

Ecology forcefully noted the importance of retrieval of tank wastes “to the maximum extent practicable in the Foreword to the TCWMEIS:

To Ecology, the results of this EIS clearly indicate that some basic tenets concerning future Hanford cleanup are needed to reduce the impacts. They include the following:
Waste from the tanks needs to be removed to the maximum extent possible. It is not the shell of the tanks or the act of landfill closing that increases the environmental impacts, it is the extent of retrieval from the tanks and the amount of vadose zone remediation.

Specifically, in regard to Retrieval of the single Shell Tanks (SSTs) and tank farm closure, Ecology further stated (at 6):

“based on the hazardous waste tank closure standards of the Dangerous Waste Regulations (WAC 173-303-610(2)) and the TPA requirements, Ecology supports only alternatives that involve tank waste retrieval to the maximum extent possible or 99 percent, whichever is greater, from each of the 149 SSTs.”

Retrieval to the maximum extent possible, or 99%, whichever is greater, is a significantly more protective closure standard than what USDOE seeks to apply to itself in its Draft WIR under Order 435.1. In adopting Section 3116, Congress said it did not intend for that authorization for reclassifying wastes in SC and ID to diminish, impair or alter in any way compliance with a CERCLA Agreement or Cleanup Order, including the TPA.¹⁰

Ecology said in its formal statement for the TCWMEIS that, for any final closure decision, the TPA and state hazardous waste law require retrieval to the maximum extent practicable; and that it interprets the TPA as applying this standard AFTER achieving 99% retrieval. USDOE now seeks to supplant this with a unilateral determination of practicality adopted by USDOE when 4% to 10% of the waste remaining in the tanks. As discussed in the NEPA section of our comments, USDOE has never considered alternatives for achieving 99% or better (after pumping out wastes) for purposes of final closure. Ecology’s formal statement for the TCWMEIS said that only alternatives which removed 99% or better were acceptable. Ecology has also said that its closure permit

¹⁰ P.L. 108-375 Section 3116(e)(1), 2004.

decisions will be made utilizing a “risk budget tool”, pursuant to which analyses must demonstrate that wastes remaining in soils or tanks will not result in long-term contamination exceeding 75% of the standards protecting groundwater.

USDOE issued a formal Record of Decision adopting a “preferred alternative” for the TCWMEIS which included leaving no more than 1% of waste in tanks. USDOE is now apparently seeking to change that formal Record of Decision via a backdoor using the WIR determination with an average of 4% of waste remaining in C Farm tanks (and up to 9.7% in one tank).

USDOE’s adoption of terms in Order 435.1 and the proposed WIR Determination for Hanford Tanks conflicts with the Congressional intent stated in Section 3116 and leaves serious doubt as to USDOE’s authority to adopt and apply Order 435.1 as proposed in the draft WIR and as it did for tank wastes in C Farm soils.

- A prior court decision invalidated Order 435.1 on the basis that it conflicted with the Nuclear Waste Policy Act (NWPA) and that it adopted standards which were “at the whim” of DOE; that decision was only reversed because the issue was not yet “ripe”:

There has been a previous challenge to USDOE’s use of Order 435.1 to reclassify tank wastes and allow them to remain without retrieval. *See Nat. Res. Def. Council v. Abraham*, 271 F. Supp. 2d 1260 (D. Idaho 2003), *rev’d*, 388 F.3d 701 (9th Cir. 2004). In that case, the lower Court struck down Order 435.1 as invalid. *Id.* at 1266. The court’s reasoning was two-fold. Firstly, and most importantly, the court pointed out that DOE “does not have the authority to adopt a policy that directly conflicts with its governing statute.” *Id.* (quoting *Maislin Indus., Inc. v. Primary Steel, Inc.*, 497 U.S. 116, 134–35, 110 S.Ct. 2759, 111 L.Ed.2d 94 (1990)). It explained that the Nuclear Waste Policy Act’s (NWPA) definition of high-level nuclear waste reflects the Act’s allowance for reclassification of solid wastes but not of liquid wastes that are produced directly by reprocessing. *Id.* at 1265. This conflicts with Order 435.1, which treats the two types of waste as the same; both are capable of being reclassified as low-level waste. Secondly, the Court also stated that the third criteria of Order 435.1 “are not defined, and thus are

subject to the whim of DOE.” *Id.* Therefore, due to both reasons, the court held that Order 435.1 was invalid. *See id.*

The appellate court reversed the lower court’s decision. *See Nat. Res. Def. Council v. Abraham*, 388 F.3d 701, 704 (9th Cir. 2004). It is worthy to note that the court only reversed on the basis that it “must await the coming of a proper time for decision.” *Id.* at 707. Hence, the court reasoned that the issue was not “ripe” because the DOE had not yet applied its order to any specific wastes. *Id.* at 707. Thus, the reasoning of the lower court was not technically overturned or discounted, and still has significant weight regarding DOE’s decision to use Order 435.1 to reclassify tank wastes at Hanford.

USDOE’s Draft WIR Evaluation for Hanford C-Farm Tank wastes does not appear to reflect any significant changes to meet the objections cited by the US District Court’s holding that the adoption of Order 435.1 and its potential application were invalid. Congress’ subsequent adoption of the language guiding construction of Section 3116 strengthens the likelihood that a similar challenge specific to application of Order 435.1 to Hanford tank wastes would succeed. Additional concerns, such as USDOE’s “piecemeal” lack of consideration of the impacts from related decisions, such as USDOE’s stated intent to leave C-Farm soil contamination in place – might also be ripe for review. NEPA and SEPA (the National and State Environmental Policy Acts) requires consideration of the impacts from all related decisions and cumulative impacts in a process allowing for public review and comment, rather than proceeding on a piecemeal basis (for which the impacts of each decision may appear low while the total impacts are significant). In the next section we discuss how USDOE’s piecemeal approach and reliance on Order 435.1 does not appropriately consider human health protection standards for exposure to contamination from wastes reaching the environment from all sources in a tank farm and across all the tank farms and related contaminated sites on Hanford’s Central Plateau (“200 Areas”). Those related decisions include:

- USDOE reclassified leaked and discharged High Level Tank Waste from C-Farm tanks in a previously unpublicized 2008 WIR Determination for which we have documented there was no opportunity for public review and comment¹¹:

¹¹ Both Washington Ecology and Oregon Dept. of Energy have confirmed that they have no record of any public notice or comment opportunity from USDOE in regard to the 2008 WIR Determination. Ecology formally responded that it has no responsive records regarding such notice.

- while the language of the 2008 Determination does not limit this reclassification to wastes which are spilled or leaked during cleanup, USDOE officials at USDOE's June 18, 2018 WIR workshop said that it only applied to the recent leaks
- regardless of USDOE's verbal claims that the 2008 WIR determination is limited to reclassifying waste spilled during recent operations, the rationale presented appears aimed equally to justify reclassifying the hundreds of millions of gallons of tanks waste deliberately discharged to the soil or leaked (e.g., saying that waste contaminating the soil "did not originate during SNF reprocessing;" and, that release to the soil changes the makeup of the waste).¹²
- Under USDOE's rationale, waste from reprocessing of Spent Nuclear Fuel is transformed from being High Level Waste if it leaks – creating a perverse incentive to have more waste leak to the soil.
- USDOE has issued a plan to utilize "landfill" closure for the C-Farm leaving very large quantities of leaked and discharged tank wastes in place under soil and/or asphalt caps

If USDOE proceeds with a WIR Determination to reclassify C-Farm Tank wastes review by the federal courts would most likely be considered "ripe" for a similar legal challenge to proceed regarding the 2008 Determination. Now that we have uncovered that USDOE – without public notice – adopted a WIR Determination to reclassify wastes leaked from tanks into the soil, a challenge of that decision is also likely to be deemed ripe. The District Court's opinion that USDOE lacked authority to reclassify liquid wastes would undoubtedly apply to leaks and spills.

¹²USDOE's 2008 soil WIR determination stated rationale to justify the decision: "Tank farm soil and debris did not originate during SNF reprocessing. Once mixed with tank farm soil and debris (e.g., gravel) any released tank waste will eventually be absorbed within the soil column, losing its in-tank waste characteristics. Radionuclides at one time associated with the tank waste will migrate at varying rates, consistent with their chemical characteristics and oxidation states, through the soil column soil and debris via various in-ground contaminant transport mechanisms; e.g., precipitation infiltration, gravity, surface tension.

The Human Health and Environmental Impacts of USDOE's Proposed Actions are Very High. USDOE Has Not Considered Those Impacts because USDOE Has Not Issued Any Notice of How it Plans to Follow NEPA for the WIR Determination and the Related Proposed Actions:

Even if DOE's authority to reclassify waste under Order 435.1 is later found to be valid, the proposed WIR Determination and associated proposal to leave 4% of tank wastes in place are subject to review under the National Environmental Policy Act (NEPA). The NEPA process is triggered when a federal agency proposes to take a "major federal action." A major federal action includes "specific projects, such as construction or management activities located in a defined geographic area... [or] actions approved by permit or other regulatory decision[s]." (40 CFR 1508.18).

Because USDOE did not issue any notice that it was adopting any analyses of impacts from the TCWMEIS for the WIR Determination, we can only surmise that USDOE may claim that it is relying on some "bounding" analysis of the impacts from an alternative considered in the TCWMEIS under which up to 10% of the waste would remain in tanks coupled with "landfill closure" (e.g., putting caps over the contaminated soil instead of removing the contamination). Even if USDOE does cure this problem with a belated notice, there are serious violations of our rights under NEPA to have alternatives considered along with updated analyses of the cumulative impacts of USDOE's proposed actions – which conflict with the formal Record of Decision on the TCWMEIS. In that formal Record of Decision (RoD), USDOE adopted the Preferred Alternative urged by Ecology under which less than 1% of waste would be left in tanks *for final closure* (due to the documented impacts from leaving more than 1% of waste in tanks for final closure – see section above). Yet, USDOE proposes to adopt the WIR based on an average of 4% of waste remaining in tanks (and up to 9.7% in one tank) for purposes of a final closure decision which would be at clear odds with the TCWMEIS RoD.

NEPA requires the relevant federal agency to conduct an Environmental Impact Statement (EIS) when the federal action is determined to have a potential significant impact on the human environment. This includes publishing a Notice of Intent in the Federal Register to inform the public of the upcoming analysis, as well as providing a public comment period on the EIS draft before finalization of the proposed action. Even if the agency proposes to rely upon an existing NEPA EIS, such as the Hanford Tank Closure and Waste Management EIS (TCWMEIS), notice

of how the agency will utilize an existing EIS must accompany the proposal; the analyses must be updated (when, as for C Farms, we have substantial new data that was developed on contamination and wastes since the EIS was published); and, human health and environmental impacts must all be considered in the decision making process.

Because the WIR Determination has been stated by USDOE to be the precursor to related plans for obtaining a final “landfill closure” leaving waste under caps in the soil and up to 10% of the waste in a tank, USDOE is proposing to take actions which conflict with the formal Record of Decision on the TCWMEIS, which adopted only the alternatives with 99% waste removed from tanks.

The TCWMEIS never considered the alternative methods to achieve that goal of removal of 99% or better for tank wastes. Nor did the TCWMEIS consider how leaving waste in tanks would preclude or impair removal of contamination under tanks. USDOE has issued proposals, even published in the spring 2018 tank farm update, to close tank farms with soil contamination in place. NEPA requires that all reasonable alternatives must be considered in an EIS. Thus, even if USDOE adopted the bounding analysis in the TCWMEIS, it would still need to provide an update with the new data on wastes, contamination and consideration of the full range of alternatives to attain 99% or greater removal. USDOE is also required to consider the impact on abandoning waste in the tanks on the ability to remove contamination under and adjacent to tanks. For Ecology to issue a HWMA / RCRA closure decision leaving tanks wastes in place, SEPA will require not only consideration of, but mitigation of, the considerable impacts of the wastes in the soil column. That necessarily includes consideration of how removal of tanks would allow for removal of soil contamination.

Thus, a new analysis should accompany the proposal, which USDOE has not provided.

For any final closure permit to be issued by Ecology, under SEPA, Ecology will likewise have to require that these analyses, including of alternatives to meet 99% or better, have been considered in an EIS or supplement to the TCWMEIS.

USDOE’s draft WIR relies upon a “performance assessment” for the C Tank Farm which assumes that meeting USDOE’s and NRC’s radiation dose standards are adequate for protecting human health and the environment.¹³ Even if the USDOE and NRC standards cited were the legally applicable standards for the Tank Farm closure decision, a NEPA analysis of the potential

¹³ Section 5 of the Draft WIR Evaluation.

health impacts of the allowable releases and subsequent exposures over time considering the new data developed for C Farms since the TCWMEIS, and considering alternatives for achieving 99% or better waste removal, would be necessary.

Those human health impacts would be incredibly high if the standards relied upon by USDOE are utilized – allowing for fatal cancers in 1 out of every 201 women, and 1 in every 302 males, exposed in the unrestricted areas.¹⁴ Children are 3-10 times more susceptible to cancer than adults from the same exposure (dose). “(T)o demonstrate compliance” USDOE says it relies on a 25 millirem¹⁵ dose to a hypothetical adult, a standard allowing essentially 25% of the cancers in adult women and males from the 100 millirem dose standard. Thus, to “demonstrate compliance,” USDOE is relying on a standard which EPA has rejected as not protective of human health and the environment at Superfund (CERCLA) sites, which includes Hanford’s tank farms; and, which would allow fatal cancers in approximately 1 out of every 800 women 1 out of every 1,200 adult men exposed via groundwater and other pathways.¹⁶ This risk does not include the higher risks from failure of “institutional controls,” such as people excavating contaminated areas for future construction.

Under the State Hazardous Waste Management Act (HWMA), Ecology’s final closure permitting standards rely upon (by incorporation under the rules) cleanup standards from the state and federal hazardous substance cleanup laws, e.g., MTCA, CERCLA and federal Drinking Water Standards. MTCA’s cancer risk based cleanup standard is generally thought of as ten times more protective than the federal CERCLA standard. For this discussion, because CERCLA is more generally known and is used for most Hanford soil cleanup decisions for radionuclides, we compare the standards USDOE says it is relying on for its performance assessment for C Farm to the CERCLA standards. The relevant CERCLA standard, for a final closure decision involving soil contamination¹⁷, is one additional cancer for every ten thousand exposed

¹⁴ Sections 5.4.7 and 5.4.8. See separate more detailed analysis of the human health impact from exposure to an allowable dose of 100 millirem per year and 2 millirem per hour in unrestricted areas. Health impact from dose based on BEIR VII Table 12-D.-3. EPA Blue Book Guidance calculation based on 30 years exposure from these allowed lifetime doses would result in an estimated 8% fatal cancer rate in adult males and 6E-3 for 30 years.

¹⁵ Section 5.2.2.1, DPE-ORP 2018-1, Draft D. Draft WIR Evaluation for Waste Management Area C, citing 10 CFR 61.41.

¹⁶ 1 in 800 women and 1 in 1,200 men are directly based on the calculation from BEIR, cited above, for 100 millirem. Here we are adjusting to 25% of the impact from 100 millirem per year doses down to 25 millirem, as USDOE says it will strive to meet that (although its standard remains 100 mr/year).

¹⁷ Ecology’s RCRA / HWMA permit decision for closure is legally required to meet the stricter cancer risk standard from MTCA as well as the CERCLA standard. The applicable state standard is generally viewed as ten times more

individuals. Congress in Section 3116, made its intent clear that the TPA and applicable CERCLA standards were not to be preempted or supplanted at Hanford (regardless of what USDOE was allowed to do in SC and ID).

EPA's binding guidance for cleanup decisions at CERCLA sites bars use of dose based standards in lieu of cancer risk standards. EPA's guidance says that in no event may a cleanup decision cite or rely upon a standard resulting in doses above 12 millirem per year to a potentially exposed individual due to residual contamination¹⁸.

Yet, USDOE proposes to utilize dose based standards for WIR decisions (which are the same as NRC's rules for dose from licensing facilities) that would allow doses of 25 to 100 millirem per year to members of the public (See WIR Process Guide Sections 5.2.1 and 5.4.7); or, 500 millirem per year to a fetus of a pregnant worker (Section 5.4.6),¹⁹ and 500 millirem dose to the inadvertent public intruder.²⁰

The cancer risks to the public from use of groundwater or direct exposure to the wastes which USDOE proposes to leave in place, if these were the only standards met, would be unconscionable. As discussed above, under the USDOE's self adopted goal for standards (and NRC's), the wastes and contamination left in place would be allowed to result in fatal cancer in 1 out of every 800 adult women; and 1 out of every 1,200 adult men exposed. Children are generally three to ten times more susceptible to cancer from the same dose. Fortunately, these standards are not allowed to be relied upon for final cleanup (closure) decisions in lieu of standards that allow no more than 1 additional cancer for every ten thousand of the most vulnerable exposed populations.

protective for cancer due to exposure to contamination left at a cleanup site. For simplicity of comparison, we use the CERCLA standard for comparison in this analysis.

¹⁸ Pursuant to the EPA policy for CERCLA site decisions – which includes Hanford - applicable “appropriate and relevant” standard for Hanford cleanup may not exceed the 12 millirem dose for cleanup levels; it bars use of dose based cleanup levels (which is what the USDOE WIR Determination proposes to utilize); and, requires choice of a remedy based on cleanup levels (or PRGs) resulting in a cancer risk “meeting the 10⁻⁴ to 10⁻⁶ cancer risk range. June 13, 2014 updated version of OSWER Directive No. 9285.6-20, ‘Radiation Risk Assessment at CERCLA Sites: Q and A’.

¹⁹ USDOE also proposes to use a standard allowing 2 millirem per hour for a member of the public in unrestricted areas (Section 5.4.8). 2 millirem per hour would result in 17,520 millirem per year in unrestricted areas, e.g., nearly 100% cancer risk for men or women. Presumably, the 100 mr/yr standard would supersede this (but why would USDOE reference and discuss it if it is not going to utilize it?)

²⁰ 10 CFR 61.42 (NRC regulation) for inadvertent intruder. CERCLA and MTCA require meeting the basic public risk standard (1 in ten thousand for CERCLA) due to reasonably foreseeable exposure due to failure of institutional controls. 500 millirem / year dose from activities such as unplanned excavation and exposure could result in fatal cancer in 1 in 40 adult women.

Thus, we ask: why waste millions of dollars and years of people effort on the WIR and C Farm performance assessment that does not consider the relevant final cleanup standards?

C Farm tanks have leaked – or spilled in the C Farm - approximately 201,000 gallons of High-Level Nuclear and chemical hazardous wastes into the soil (vadose zone), including:

- 1.5 curies of cobalt-60
- 39,000 curies of cesium-137
- 18 curies of technetium-99 (with a half-life of 211,000 years, Tc99 poses a very high risk for contamination of Hanford's groundwater and for long term exposure risk)
- 31 kilograms of uranium
- 40,000 kilograms of nitrate

See graphics at end of comments

NEPA and SEPA require consideration of the cumulative impacts of leaving these wastes in place under USOE's 2008 WIR and the other proposals integrally related to the current proposed C Farm tank WIR, which are all part of one USDOE plan for closure of the tank farm.

Piecemeal consideration, first of just radionuclides in the tanks, and later in a composite of wastes in the tanks in several years, is not permissible because it evades consideration of the overall waste USDOE proposes to leave in this Tank Farm and all others.

Under the **State Environmental Policy Act (SEPA)** Ecology must consider the human health and environmental impact of these proposed related actions for closure. To be issued a closure permit by Washington, either an adequate NEPA analysis (which may be a supplement to the TCWMEIS or a new EIS) or SEPA analysis must accompany the proposal. That analysis must include the cumulative impacts from related proposed actions, which include USDOE's proposal to merely cover much of the contaminated soils in the C Farm with soil or concrete barriers; and, consider the alternative technologies for removal beyond pumping to achieve 99% or better removal. USDOE, EPA and Ecology have all acknowledged (in the TCWMEIS) that merely capping contamination in tank farm soils, or adding concrete on top of waste in tanks, will not prevent significant contamination of groundwater. The cumulative health impacts will be even greater than the impact of the WIR decision for the tank waste residues. SEPA also requires a mitigation analysis for the individual proposed actions and their cumulative impacts.

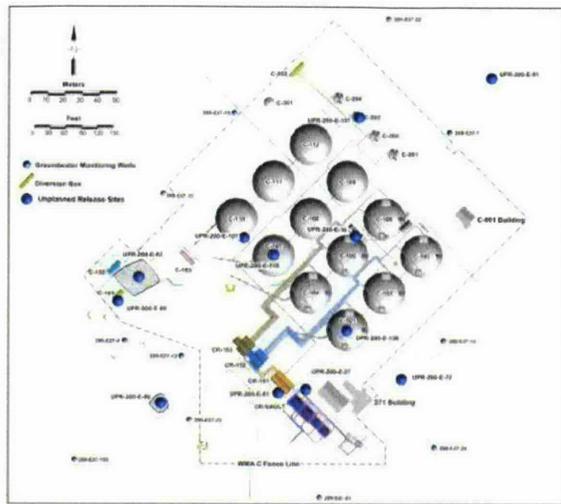
If USDOE's notice for its current proposal had provided notice that it was adopting the TCWMEIS and supplementing it using a "tiered" analysis from the WMA C Performance Assessment and other reviews, NEPA would still require that the public and USDOE decision makers be provided analyses of the cumulative impact on human health from, and alternatives to, the related decisions USDOE is proposing. Those related decisions include reclassifying the leaked and discharged High Level Tank Wastes in the soil as LLW and leaving the wastes in the soil as part of the "closure" of the C Farm, and the decision to change from retrieving 99% of waste in the tanks to a range including as little as 90% having been retrieved. Of course, NEPA also requires consideration of the total risk from all wastes on Hanford's Central Plateau, not one tank farm at a time.

USDOE has no plan to consider the cumulative impact of its proposed actions which are related to / decisions to utilize WIR to both reclassify the High Level Nuclear Waste in C Farm Tanks and the massive amount of liquid waste discharged and leaked to soils.²¹There is no disputing that USDOE has one plan for landfill closure, which relies on the WIR decision as merely the first of many interrelated actions. A "composite" analysis of chemical waste impacts limited solely to tank waste releases – ignoring soil contamination – is not a substitute for the required NEPA analyses. NEPA and SEPA require the cumulative impact on human health to be considered, not just examining if each individually meets USDOE's (inadequate) standards. This applies to the chemical contamination releases as well as radionuclide releases. There is no consideration of those chemical releases and risk in the Draft WIR evaluation. The "piecemealing" of consideration of the risks from the related but separate USDOE decisions is not permissible under NEPA and will not meet SEPA requirements when USDOE seeks approval of a closure plan from Ecology.

Contact: Gerry Pollet, Executive Director. Our appreciation to Angelo Marchesini and Derek Martin; SU Law JD Candidates 2020 for their research and significant drafting of elements of these comments under supervision of Gerry Pollet, J.D., Heart of America Northwest and faculty UW School of Public Health.

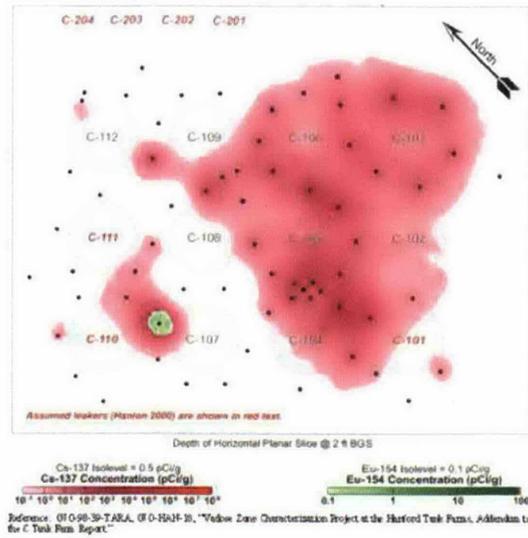
²¹ USDOE's formally adopted plan guiding this WIR Evaluation for C Area states that USDOE-ORP has already issued a WIR by citation decision to reclassify the "soils contaminated by tank waste have already been classified as LLW by DOE-ORP using the WIR by citation process." RPP-Plan-47325 Rev. 0 (2010) at 3.0. On June 18, 2018 at a public forum, USDOE's representative stated that this was limited to newly leaked or released tank wastes, which is not reflected in the language of RPP-Plan-47325 Rev. 0 (2010) which laid out this current process. However, the rationale and dividing line between new releases versus prior releases is not apparent and other USDOE documents for WMA C call for landfill closure with the contaminated soils left in place.

Figure 2-15. Waste Management Area C Tanks, Infrastructure, and Associated Unplanned Releases.



WMA = waste management area

Figure 6-1. Near Surface Spectral Gamma Activity in 241-C Tank Farm



C Tank Farm soil contamination (note and graphic courtesy of Yakama Nation ERWM Program):

Figure 1. WMA C tanks and associated structures (left, DOE-ORP-2018-01) and estimated extent of cesium-137 and europium-154 in soil based on surficial radiation measurements (right, RPP-RPT-42294 R.2) . Additional radionuclides are present in soil and groundwater.

Technetium 99 is contaminating groundwater already far above the drinking water standard “due to the migrating contamination from tank releases.. All of this contamination should be mentioned, and it will all require some form of remediation.” Ecology comments to USDOE OPA 1-2.

As discussed in comments above, USDOE has not considered how leaving waste in tanks may prevent remediation of the soil contamination – and is likely to recontaminate the soil if remediated. NEPA and SEPA will require consideration – and, SEPA will require mitigation measures for any closure permit.

Washington Ecology’s comments note that there are three area of soil contamination which were too radioactive to sample:

“lack of consideration of risks from soil contamination that was investigated in Phase I of the WMA C RCRA Facility Investigation, such as the large direct contact risks associated with 3 non-tank unplanned releases in WMA C, and other shallow contamination in zones that were too radioactive to sample.”

Waste remaining in C Farm Tanks – which USDOE would abandon under grout after renaming from High-Level Nuclear Waste to Low-Level Waste:

- 187,000 curies of strontium 90
- 5,880 curies of cesium-137
- 2.26 curies of technetium-99
- 167 curies of fissile plutonium-238
- 158 kilograms of fissile uranium-235
- 10,000+ kilograms of uranium-238

TO: WMACDraftWIR@RL.gov

CC: Ecology

FR: Gerry Pollet, Heart of America Northwest

Gerry@hoanw.org; office@hoanw.org

RE: 1- Request for public meetings for comment on Draft WIR Evaluation and proposed decision

2- Questions requested to be submitted to USDOE at June 18, 2018 public meeting

1. Heart of America Northwest is the region's largest citizens group working to educate and involve the public in Hanford Cleanup decisions with thousands of members in Washington and Oregon. Hanford cleanup decisions, current contamination and future potential risks have serious potential impacts on our members and their interests, whether they live in Spokane, Seattle, downriver in Hood River or Vancouver, or Portland.

USDOE's proposed WIR decision and related decisions for Waste Management Area C are of the highest public interest and concern. The proposal to reclassify tank waste has previously been covered as front page and leading news stories in media across the region, as well as being of the utmost concern to the congressional delegations of Washington and Oregon.

The reclassification of C Farm Single Shell Tank residues (4% of prior tank volume) would clearly be a precedent for reclassifying soils and waste residues in other tank farms. Further, USDOE is clearly seeking to change the decision issued on the Tank Closure Waste Management EIS to adopt a preferred alternative (2B) which called for retrieval of 99% of tank wastes, prior to determining if USDOE has reached the limits of practical retrieval and determining how to "close" tank farms. Thousands of people attended hearings or submitted comments on the Tank Closure Waste Management EIS.

USDOE has held a single public workshop on the proposed WIR decision. This was held as a day time, workday meeting in Richland. It was not accessible for participation to either people outside Richland nor to the average concerned citizen. Furthermore, USDOE only issued notice via email a few days prior.

Heart of America Northwest therefore requests two public meetings in Seattle and Portland to be held with 30-45 days of notice after location and time are determined. We would collaborate in providing notice (if we have adequate notice) and with location, logistics and how to effectively plan to present essential information to the public in a compressed time. We believe the meetings should enable public comment to be taken following opening presentations on the proposal and questions, including a role for Washington Ecology and the State of Oregon.

2- Questions Regarding soil and a soil WIR which were not answered and which we were requested to submit in writing:

- What was reclassified in the soil decision? Please link the documents.
- Please identify other proposed related decisions involving reclassifying contaminated soils, residues in tanks, or closure with soils in place. Please link all documents related to such proposed or prior actions relating to C Farm in one location for C Farm decisions.

- If citation process was used, what is basis for citation since not equipment contaminated incidental to work?
- What rationale differentiates newly released tank wastes, e.g., during a transfer, from prior contamination in regard to utilizing a WIR determination by citation or otherwise?



November 7, 2018

Via Electronic Mail

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354
Email: WMACDRAFTWIR@rl.gov

RE: NRDC/Hanford Challenge and Columbia Riverkeeper Comments on *Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site, Washington*

Dear Mr. Bovier:

The Natural Resources Defense Council (NRDC), Hanford Challenge (HC), and Columbia Riverkeeper (CRK) write today to comment on the Department of Energy's *Notice of Availability of the Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site, Washington*. 83 Fed. Reg. 25657, June 4, 2018 (hereinafter "Area C Draft WIR Determination") (comment deadline extended to this date, 83 Fed. Reg. 40758, August 16, 2018).

The Area C Draft WIR Determination is contrary to law, technically indefensible, and sets a precedent for abandoning extraordinary amounts of the most toxic waste in the world adjacent to the Columbia River without protection from external regulatory oversight or, indeed, any meaningful environmental standards. Rather than continue a course that is sure to end up in litigation, we urge you to withdraw the Draft Determination and commence working with the immediately affected States of Washington and Oregon, the Confederated Yakama Tribes, and interested members of the public on a cleanup trajectory for the high-level radioactive wastes (HLW) in the more than 177 tanks at the Hanford Nuclear Reservation that is both scientifically defensible and publicly accepted.

I. NRDC, HC & CRK Statement of Interest

NRDC is a national non-profit membership environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Los Angeles and Beijing. NRDC has a nationwide membership of over one million combined members and activists. NRDC's activities include maintaining and enhancing environmental quality and monitoring federal agency actions to ensure that federal statutes enacted to protect human health and the environment are fully and properly implemented. Since its inception in 1970, NRDC has sought to improve the environmental, health, and safety conditions at the nuclear facilities operated by the U.S. Department of Energy ("DOE" or "Department") and its predecessor agencies.

Hanford Challenge is a non-profit, public interest, environmental and worker advocacy organization located at 2719 East Madison Street, Suite 304, Seattle, WA 98112. Hanford Challenge is an independent 501(c)(3) membership organization incorporated in the State of Washington and dedicated to creating a future for Hanford that secures human health and safety, advances accountability, and promotes a sustainable environmental legacy. Hanford Challenge has members who work at the Hanford Site and within the Tank Farms who are at risk of imminent and substantial endangerment due to DOE's handling, storage, treatment, transportation, and disposal of Hanford's solid and hazardous waste. Other members of Hanford Challenge work and/or recreate near Hanford, where they may also be affected by hazardous materials emitted into the environment by Hanford. All members have a strong interest in ensuring the safe and effective cleanup of the nation's most toxic nuclear site for themselves and for current and future generations, and who are therefore affected by conditions that endanger human health and the environment.

Columbia Riverkeeper (CRK) is a 501(c)(3) nonprofit organization with a mission to protect and restore the Columbia River, from its headwaters to the Pacific Ocean. Since 1989, Riverkeeper and its predecessor organizations have played an active role in educating the public about Hanford, increasing public participation in cleanup decisions, and monitoring and improving cleanup activities at Hanford. Columbia Riverkeeper and its 13,000 members in Oregon and Washington have a strong interest in protecting the Columbia River, people, fish, and wildlife from contamination at Hanford, including pollution originating in Hanford's tank farms.

II. Summary Comments

It is rare that we express amazement in a formal letter of comments for a public record, but we do so in this instance. This past summer, the DOE announced the availability of the Draft WIR Determination for the closing 16 HLW tanks in Area C in the Hanford Nuclear Reservation. DOE asserts that its Draft Determination demonstrates that the tanks and ancillary structures, from which waste has been or will be removed, is waste that is incidental to reprocessing, is not high-level radioactive waste (HLW), and may be managed (disposed in-place) as low-level radioactive waste (LLW).¹ DOE prepared the Draft WIR Evaluation pursuant to DOE Order

¹ See U.S. Department of Energy, Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site (March 2018).

435.1, *Radioactive Waste Management*, and the criteria in DOE Manual 435.1-1, *Radioactive Waste Management Manual*.²

Fundamentally, DOE has proposed a straightforward action. The Department plans to reclassify thousands of gallons of HLW in 16 tanks at the Hanford site, and thereby leave that waste in place, under a layer of grout. Nowhere, not in the 312 pages of the Draft WIR Determination itself or the 1023 pages of the appended Performance Assessment, does the DOE mention, discuss, analyze, or even acknowledge the *years of litigation and the ferocious battle before the United States' Congress on precisely this issue*, that is, the reclassification of HLW, followed by abandonment in place, under a layer of grout. Indeed, those years of litigation, from 2001-2005, elicited an act of Congress to (partially) legislatively reverse the Federal District Court decision that barred DOE from unlawfully reclassifying HLW, with specific and explicit implications for the draft action under consideration this day. That act, Section 3116 of the 2005 National Defense Authorization Act, receives a brief nod in its direction in the text of the Draft WIR Determination. But again, nowhere does DOE discuss, analyze or even acknowledge that the gruesomely contentious battle over Section 3116 explicitly bars DOE's reclassification effort at Hanford.

NRDC et al. believes that the WIR evaluation should have included consideration of the Hanford Site Composite Analysis to ensure that risks from multiple waste sites and sources were all considered. In the public meetings and materials provided by DOE during this public comment period, there were many statements that the Hanford Site Composite Analysis would be considered and that the waste in the soils below the tanks would be dealt with separately. We do not agree with the piecemeal approach.

Although DOE held public meetings in Richland, WA, Portland, OR and Seattle, WA, we were disappointed that there was no effort to hold public hearings to gather comments around the region. Comprehensive public process on this issue concerning some of the most dangerous waste at Hanford is essential. We hope that future public comment periods related to Hanford's tank waste will include regional public hearings to allow for the kind of deliberation that is required for the public to learn about, ask questions, and share input related to decisions that impact the environment and future generations for hundreds of thousands of years.

We will detail all of this in the pages that follow, but we stand amazed that something as profound as this—the abandonment of tens of thousands of gallons of the most toxic waste in the world next to the Columbia River, the lifeblood of Washington and Oregon—entirely omits the most meaningful events in recent history that go right to the heart of whether the Trump Administration DOE can even take this action. An action which, in its most clear terms, violates the law that was the result of the legal battles that will be described in the next several pages. Despite this baffling omission of relevant history, it is plain that DOE's Draft WIR Determination violates the law, fails as a technical cleanup policy document, will not protect human health and the environment, and therefore must be withdrawn. We urge the Department to

² U.S. Department of Energy, [Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site](#) (March 2018), p. 1-1.

go back to the drawing board and commence a transparent public process, led by the States of Washington, Oregon, the Confederated Tribes and Bands of the Yakama Nation, and concerned members of the public that can finally put the cleanup of the Hanford HLW tanks on a course that is both scientifically defensible and publicly accepted.

III. Background History

A. Historical and Legal Background

The roots of this matter date back to the Manhattan Project of World War II. DOE, through almost 50 years of nuclear fuel reprocessing, generated approximately 525 million gallons of High Level Waste (“HLW”) at Hanford alone³, most of it associated with the production of plutonium and tritium for nuclear weapons. This waste is so radioactive, toxic and dangerous to manage that it merited passage of its own law outlining the requirements of final disposal, the Nuclear Waste Policy Act (“NWPA”), 42 U.S.C. § 10101 *et seq.* Passed by Congress decades ago, in 1982, after significant inquiry and debate, the NWPA requires deep, geologic isolation for all HLW, as far from the human biosphere as possible.⁴

The Early Years

But the relevant history dates back even a bit farther. In a 1957 report, prepared at the request of the U.S. Atomic Energy Commission (AEC), the National Research Council of the U.S. National Academies “endorsed the concept of geological disposal—placing high-level waste (HLW) in a carefully selected deep underground formation, where it would remain isolated from human beings and the environment long enough for the radioactivity to decay to near natural background levels.”⁵ Notably, this 1957 technical observation remains the consensus for federal and state governments, tribes, industry, and public interest groups. Parallel, related, but ultimately distinct from the long history of commercial spent nuclear fuel, the AEC first formally defined the term “high-level radioactive waste” in Appendix F to its reactor licensing rules in 1970,⁶ based on the waste’s origin rather than the hazard posed by its various components. The AEC wrote that high level radioactive waste means:

those aqueous wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuels.⁷

³ R.E. Gephart, A Short History of Hanford Waste Generation, Storage, and Release, PNNL-13605 Rev. 4, (2003), p. 6.

⁴ See H.R. Rep. No. 97-491, 97th Cong., 2d Sess. at 26-30 (1982).

⁵ National Research Council, Disposition of High-Level Waste and Spent Fuel: The Continuing Societal and Technical Challenges, Washington, D.C.: National Academy Press, 2001, p. ix.

⁶ Policy Relating to the Siting of Fuel Reprocessing Plants and Related Waste Management Facilities, 35 Fed. Reg. 17530, 17532 (Nov. 14, 1970) (10 C.F.R. Part 50, App. F). Until this treatment, the AEC had informally defined high-level waste in terms of the hazard it posed. Office of Technology Assessment, Managing the Nation’s Commercial High-Level Radioactive Waste 204-205 (1985), available at http://govinfo.library.unt.edu/ota/Ota_4/DATA/1985/8514.PDF.

⁷ *Id.*

It was in 1972 that Congress first used the term. In the Marine Protection, Research, and Sanctuaries Act of 1972, which prohibited ocean dumping of HLW, Congress wrote a definition that adhered to that of the AEC's, but also included the spent fuel from commercial reactors. HLW was, at that time:

the aqueous waste resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated waste from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuels, or irradiated fuel from nuclear power reactors.⁸

As DOE is well aware, the AEC was abolished with the Energy Reorganization Act of 1974, and Congress transferred all civilian regulatory responsibilities to the Nuclear Regulatory Commission (NRC) and nuclear weapons activities to the Energy Research and Development Administration (which was replaced by DOE in 1977). ERDA did not specifically authorize external regulation (by the NRC) of the weapons activities. It did, however, specifically authorize the Commission to license and regulate any "facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Administration...."⁹

The ERDA/DOE Years & Continued Management in the Tanks

The Energy Reorganization Act, focused on the transfer of power among newly created federal agencies, did not define "high-level radioactive waste." The term was, however, interpreted to mean the same thing in the Energy Reorganization Act that it meant in the AEC's Appendix F and the Marine Sanctuaries Act.¹⁰ ERDA plainly viewed the material stored in the tanks at Hanford and Savannah River to be high-level radioactive wastes.¹¹ Those wastes in the tanks remained under the self-regulatory purview of the newly created DOE a few years after, even as it was becoming clear that the industry dream of a closed fuel cycle would not come true and this waste would have to be prepared in some fashion for disposal in deep geologic repositories.

In managing the HLW in the tanks and with theoretically readying that waste for final disposal, DOE has kept the HLW in huge, underground interim storage tanks at the Savannah River Site ("SRS") in South Carolina, the Idaho National Engineering Laboratory in Idaho ("INEL") and the Hanford Nuclear Reservation in Washington. Over these many decades of storage, hundreds of thousands of gallons of this waste have leaked into the environment, primarily at Hanford. Because this HLW contains highly corrosive components, organics, and heavy metals, it is also a mixed waste regulated under the Resource Conservation & Recovery Act ("RCRA"), 42 U.S.C. §§6901-6992k.

⁸ 33 U.S.C. 1402.

⁹ 42 U.S.C. 5842 (4).

¹⁰ 52 Fed. Reg. 5992, 5993 (Feb. 27, 1987).

¹¹ *NRDC v. Administrator, ERDA*, 451 F. Supp. 1245, 1251 (D. D.C. 1978), *aff'd in part and rev'd in part*, *NRDC v. NRC*, 606 F.2d 1261 (D.C. Cir. 1979).

The affected public, States, Tribes and even the Trump Administration DOE would likely agree that management and (hopefully someday) disposal of the HLW tanks is one of DOE's most difficult problems in addressing the environmental legacy of the Cold War. Various plans for tank waste management and disposal have been forwarded, acted upon, or discarded, including transferring pumpable liquids from single-shelled tanks to double-shelled tanks (at Hanford), heating the waste to convert it to a powdery form (called calcining at INEL), and vitrifying the waste (a process that stabilizes radioactive waste by mixing it with molten glass) for disposal at a geologic repository pursuant to the NWPA (currently ongoing at the SRS's Defense Waste Processing Facility ("DWPF") and in the process of being attempted at the Hanford site now for decades without success). Since the passage of the NWPA in 1982 and a Presidential Directive issued pursuant to that Act in 1985, defense HLW has been required to be removed from the tanks and disposed of in a deep geologic repository pursuant to the requirements of the NWPA.¹²

The Nuclear Waste Policy Act (NWPA)

The first draft of the definition of "high-level radioactive waste" used in the NWPA was initially modeled after the definition found in the West Valley Demonstration Project Act, but its evolution is worth noting. The West Valley Act definition, like the AEC's original in 1970 and the first statutory definition that closely followed in 1972, defined the term as waste "produced by the reprocessing ... of spent nuclear fuel," and included "both liquid wastes which are produced directly in reprocessing" and "dry solid material derived from such liquid waste." The NWPA definition, however, also provides that the NRC may include "such other material" as may be necessary "for purposes of protecting the public health and safety."¹³ Significantly, the West Valley Act gave the Commission the power to add material other than reprocessing wastes to the definition, but not to exempt any part of the reprocessing wastes from it. DOE objected to the definition and recommended that it be rewritten to "permit the regulatory agencies to exclude materials from 'high-level radioactive waste' that need not be disposed of in a repository because of low activity."¹⁴ Congress rewrote that definition, but not as the Department asked. As enacted, the final definition provides that "high-level radioactive waste" means:

(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.¹⁵

¹² 42 U.S.C. § 10107(b)(2).

¹³ Public Law 96-368, sec. 6(4) (42 U.S.C. § 2021).

¹⁴ H. Rept. 97-491 (part 2) at 17 (1982) (letter from Eric Fygi to Chairman Price).

¹⁵ 42 U.S.C. § 10101(12). The Price-Anderson Amendments Act of 1988, Public Law 100-408, later incorporated the Nuclear Waste Policy Act's definition of "high-level radioactive waste" into the Atomic Energy Act of 1954 by reference. 42 U.S.C. § 2014(dd).

The NRC has interpreted subparagraph (A) as “essentially identical” to Commission’s regulatory definition,¹⁶ with one major difference. NRC’s definition includes “solids into which such liquid wastes have been converted.”¹⁷ The NWPA’s definition states “solid material derived from such liquid waste *that contains fission products in sufficient concentrations.*”¹⁸ NRC read the distinction to “reflect the possibility that liquid reprocessing wastes may be partitioned or otherwise treated so that some of the solidified products will contain substantially reduced concentrations of radionuclides.”¹⁹

NRC’s Advance Notice of Proposed Rulemaking

In 1987, the NRC sought public comment on “whether the Commission should (1) numerically specify the concentrations of fission products which it would consider ‘sufficient’ to distinguish” high-level radioactive waste from non-high-level radioactive waste under subparagraph (A) of the statutory definition; or (2) define high-level radioactive waste “so as to equate” subparagraph (A) wastes “with those wastes which have traditionally been regarded as” high-level radioactive waste “under Appendix F ... and the Energy Reorganization Act.”²⁰ After some significant discussion of its authorities, vis-a-vis setting standards for what might constitute sufficient concentrations of HLW, NRC concluded “that the preferable construction” of the NWPA’s definition should “conform to the traditional definition” found in all the earlier iterations and 10 C.F.R. §60.2. What had been HLW remained HLW.²¹

B. Reclassification of HLW and the History of HLW Litigation Omitted by DOE

After NRC’s effort at rulemaking; after some years in consultation and preparation; and after the permanent abandonment of thousands of gallons of HLW in two tanks in South Carolina, DOE issued an internal rule, Order 435.1, on July 9, 1999. NRDC and the Snake River Alliance initially filed suit in the United States Court of Appeals for the 9th Circuit in January 2000 challenging one section of Order 435.1, the “waste incidental to reprocessing exemption” (“WIR” or “incidental waste exemption”). After finding that it lacked original or exclusive jurisdiction to entertain Plaintiffs’ claims under 42 U.S.C. § 10139, the 9th Circuit did not dismiss the case. Rather, the Court transferred the matter to the United States District Court for the District of Idaho, expressly leaving issues of standing, ripeness, and the merits to the District Court.²²

After the transfer, NRDC *et al.*, was joined by the Yakama Nation and Shoshone-Bannock Tribes. The combined set of plaintiffs filed a Complaint in February 2002. DOE filed an Answer in April 2002 and a Motion to Dismiss the Complaint in May 2002. At this point, the states of

¹⁶ See 52 Fed. Reg. at 5994. NRC’s HLW disposal rules, adopted before NWPA’s 1982 enactment, include: (1) irradiated reactor fuel; (2) liquid reprocessing wastes as defined in the AEC’s Appendix F; and (3) “solids into which such liquid wastes have been converted.” 10 C.F.R. § 60.2.

¹⁷ 10 C.F.R. § 60.2.

¹⁸ 42 U.S.C. § 10101(12)(A) (emphasis added).

¹⁹ 52 Fed. Reg. at 5994.

²⁰ 52 Fed. Reg. at 5994.

²¹ 53 Fed. Reg. 17709 (May 18, 1988).

²² *Natural Resources Defense Council v. Abraham*, 244 F.3d 742, 747 (9th Cir. 2001).

Washington, Idaho, South Carolina, and Oregon entered appearances as “Amici Curiae” in the proceeding. The District Court issued an opinion denying DOE’s Motion to Dismiss on August 9, 2002.²³ The Court found that Plaintiffs had standing²⁴ and that Order 435.1 was both final agency action and ripe for purposes of judicial review.²⁵ The District Court found that Plaintiffs had presented claims upon which relief could be granted and that the law of the case did not prevent consideration of those claims.²⁶ The District Court found that Order 435.1 and its accompanying Manual and Guidance necessarily implicate the disposal provisions of the NWPA by reclassifying HLW as low-level radioactive waste (“LLW”).²⁷ The Court also held that DOE do not operate with unfettered discretion with regard to the disposal of radioactive waste.²⁸

NRDC *et al* and the Bush Administration’s DOE then filed cross-motions for summary judgment. The District Court reaffirmed two earlier rulings: (1) its ripeness decision; and (2) its decision that DOE does not have discretion to dispose of defense HLW somewhere other than a repository established under the NWPA.²⁹ Specifically, the court found that the NWPA plainly required the Department to use the civilian repository for defense high-level radioactive waste once President Reagan decided that a separate repository was not required, and that the tank wastes at Hanford, Savannah River, and INEEL fall within the definition of high-level radioactive waste. The Department’s assertion that it can exempt waste streams based on technical and economic constraints, the court found, “directly conflicts with” the Act’s definition of high-level radioactive waste.³⁰ The District Court also found that Congress has spoken clearly on the subject and that DOE’s Order 435.1 directly conflicts with the NWPA’s definition of HLW (citing *Chevron v. NRDC*, 467 U.S. 837, 842 (1984)).³¹ Accordingly, the District Court granted Plaintiffs’ Motion for Summary Judgment and denied DOE’s Cross-Motion for Summary Judgment.³²

Notably, the Court was clearly cognizant that we, NRDC in that instance, did not challenge the traditional notion of “incidental” waste materials contaminated during reprocessing operations that has long been recognized by the AEC and the NRC. The Court was also aware that at no point did we challenge the NRC’s authority to exempt solid materials derived from liquid reprocessing waste that contain sufficiently low concentrations of fission products to not require deep geologic disposal as provided by the NWPA. Judge Winmill held that NWPA does not give the Department the authority to adopt an alternative disposal regime for high-level radioactive wastes merely because the Department decides “that it is too expensive or too difficult” to dispose of it in a deep geologic repository.³³

²³ *Natural Resources Defense Council v. Abraham*, 2002 U.S. Dist. LEXIS 28418 (D. Id. Aug. 9, 2002). See Attachment F for District Court opinion.

²⁴ *Id.* at 20.

²⁵ *Id.* at 7-11.

²⁶ *Id.* at 15.

²⁷ *Id.* at 17.

²⁸ *Id.* at 19.

²⁹ ER 354-58; see published opinion, *NRDC v. Abraham*, 271 F.Supp.2d 1260, 1263-64 (D. Id. 2003).

³⁰ *Natural Resources Defense Council v. Abraham*, 271 F. Supp. 2d 1260 (D. Ida. 2003).

³¹ *Id.*

³² *Id.* at 1263.

³³ *Id.* at 1265.

DOE appealed the matter to the United States Court of Appeals for the 9th Circuit. The 9th Circuit subsequently found that the matter was not ripe for review.³⁴ Importantly, the Ninth Circuit did not reach the merits of the Idaho Federal District Court's decision and put the legality of DOE's waste reclassification actions off for another day. Washington, South Carolina and other States filed Amicus briefs in support of NRDC at both the District Court and appellate court stages.³⁵ The 9th Circuit avoided deciding the issue in 2004. It may not be able to do so if DOE finalizes its Draft WIR Determination as it's currently written.

C. The Legislation that Emerged from the HLW Litigation – Section 3116

Contemporaneous with the Ninth Circuit's review of the Idaho Federal District Court's decision, the then Bush Administration DOE sought to have the District Court decision legislatively reversed by Congress. DOE succeeded in part, and failed in part, with this effort, named Section 3116 of the *FY 2005 Defense Authorization Act*. See P.L. 108-375, *The Ronald Reagan National Defense Authorization Act of Fiscal Year 2005* (hereinafter "NDAA" and "Section 3116"). Senator Lindsey Graham (R-SC) was the primary proponent for Section 3116 and succeeded in inserting a provision into the 2005 Defense Authorization Act that substantially amends the Nuclear Waste Policy Act (NWPA).

Section 3116 spelled out criteria for the Energy Secretary to determine that the HLW can be reclassified as incidental waste (and thus can be disposed of on-site and in place) via amendments that provided DOE with authority to reclassify HLW as "waste incidental to reprocessing." Therefore, under this law, DOE can dispose of this reclassified HLW according to requirements other than those specified by NWPA (*ie.*, the HLW will no longer have to be disposed of in a geologic repository and can be disposed of according to standards and performance objectives applicable to low-level radioactive waste (LLW)).

But the law restricted this activity to South Carolina and Idaho. The law states in pertinent part: "COVERED STATES.—For purposes of this section, the following States are covered States: (1) The State of South Carolina. (2) The State of Idaho." Section 3116(d)(1)(2). Thus, DOE was expressly barred by the terms of Section 3116 from reclassifying HLW in Washington and New York. Under those criteria, in SC and ID only, DOE may reclassify as "incidental" waste that exceeds the performance objectives for the disposal of low-level radioactive waste, 10 C.F.R. §61.40 (*i.e.*, waste that is not actually low-level waste), so long as it has (1) removed highly radioactive radionuclides "to the maximum extent practical" and (2) has obtained a state issued permit, authority for the issuance of which is conferred on the State outside of Section 3116. At SRS, pursuant to this authority, DOE "determined" that certain HLW in the underground tanks is "incidental" waste. 71 Fed. Reg. 3,838 (Jan. 24, 2006). As a practical matter, this means that DOE can undertake a process to reclassify HLW in South Carolina and Idaho. Conversely, DOE

³⁴ *NRDC v. Abraham*, 388 F.3d 701 (9th Cir. 2004).

³⁵ *Id.* at 707, 708, ("Despite NRDC's anxiety, the courts must await the coming of a proper time for decision, if, in the long run, that time ever comes. Maybe it never will come because DOE will not take actions that require—or even seem to require—court intervention. Who knows? In fine, the issue is not yet ripe.").

cannot reclassify the HLW that currently rests in the tanks at the Hanford site in Washington and West Valley site in New York.

As NRDC has repeatedly noted, this does not mean that DOE cannot remove waste from the tanks, treat it such that it no longer has fission products in sufficient concentration, and dispose of that waste in a manner other than in a geologic repository. What DOE cannot do in Washington or New York is declare the HLW in the tanks to “waste incidental to reprocessing.” *See* 271 F.Supp.2d at 1265.

D. The Congressional Fight over Section 3116

The alteration of the HLW definition authored by Senator Graham in Section 3116 was a controversial rewrite of longstanding nuclear waste policy, and the Senate Armed Services Committee (SASC) approved it via a legislative amendment offered by Senator Lindsey Graham with no opportunity for public debate or hearings in the committee of jurisdiction.

The fight began with a reported letter from (b)(6) to (b)(6) following DOE’s loss in court.³⁶ While the letter requested a legislative solution, the House version of the NDAA featured no such language, either in committee or on the floor.³⁷ The Department’s letter asserted that it cannot continue cleanup of nuclear weapons production sites without the authority provided in Section 3116. This was not accurate. Four states, including South Carolina, addressed just this point in response to the original letter:

DOE’s recent statements to Congress appear to exaggerate the impacts of the recent judicial decision high-level waste classification. The federal court decision only confirmed long-standing national policy, which requires disposal of high-level waste in a geologic repository while allowing properly treated, less radioactive wastes to be disposed of elsewhere. . . . What the court rejected was giving DOE free rein to override national policy as expressed in the Nuclear Waste Policy Act.³⁸

As initially introduced in March of 2004, the Senate version of the NDAA also contained no provision relating to the court’s decision.³⁹ Over the course of numerous days of hearings on the bill before its markup, the only Senator to raise the issue of HLW cleanup was Mr. Allard of

³⁶ *See Energy Dept. Seeks Power To Redefine Nuclear Waste*, Matthew L. Wald, Oct. 1, 2003, found online at <https://www.nytimes.com/2003/10/01/us/energy-dept-seeks-power-to-redefine-nuclear-waste.html>.

³⁷ *See* H.R.4200 - Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 108th Congress, <https://www.congress.gov/bill/108th-congress/house-bill/4200/text/pcs>.

³⁸ *See also* the August 28, 2003 letter from the Attorneys General of Idaho, South Carolina, Oregon and Washington making precisely the same point, submitted as an attachment, Attachment B.

³⁹ *See* S.2229 - National Defense Authorization Act for Fiscal Year 2005, 108th Congress, <https://www.congress.gov/bill/108th-congress/senate-bill/2229/text>.

Colorado, partially in the context of the ongoing cleanup of the Rocky Flats nuclear weapons site in his state.⁴⁰

During the markup itself, which was closed to press, Sen. Graham offered and successfully added an amendment that essentially overturned a federal court ruling that DOE may not arbitrarily and unilaterally reclassify high-level radioactive waste and it provided DOE sole discretion to decide what is HLW in South Carolina and any other state with HLW. This amendment exempted DOE from any meaningful compliance with the Nuclear Waste Policy Act in South Carolina and effectively subverted two decades of congressional work, oversight and compromise on nuclear waste policy. Senator Carl Levin, the then-Ranking member of the Armed Services committee, noted during later (and the only) public debate that “this language was debated quite heatedly in our markup at committee. There were a couple of votes that were cast.”⁴¹ Thus, there is evidence that this language was just as controversial in the Armed Services committee markup as it turned out to be on the Senate floor, described below.

An additional provision was added in committee that denied hundreds of millions of dollars in necessary nuclear waste cleanup funding to other states that store HLW (Idaho and Washington) unless and until they agreed to allow DOE the same unilateral discretion to reclassify HLW as “waste incidental to reprocessing.”⁴² This, of course, was a transparent and explicit threat to necessary cleanup funding, pressuring those states to bend to DOE’s intention to reclassify HLW as the Department saw fit.

During Senate floor consideration of the bill, two amendments were raised regarding these two provisions. The first was Senate Amendment 3170, which amended Sec. 3119 in a way that Sen. Graham claimed was an offer of additional money from DOE rather than denying money to states that did not follow DOE’s reclassification plan.⁴³ Sen. Hollings, the other Senator from South Carolina, took the opportunity to discuss his recent awareness of the provision (having apparently not been informed by his fellow Senator from South Carolina) and his objections to it. Ultimately, this amendment was voice voted after a failed attempt to amend the amendment by Sen. Crapo of Idaho in order to “make it perfectly clear that there is no precedential effect of this language on any State of than South Carolina.” *Id.* Sen. Hollings objected to this; the text of this proposed alteration is not in the official records but its content may be reflected in the final language post-conference.

⁴⁰ See S. Hrg. 108-440, Pt. 1 & Pt. 7, Department of Defense Authorization For Appropriations For Fiscal Year 2005, Hearings Before The Committee on Armed Services, United States Senate, One Hundred Eighth Congress, Second Session On S. 2400, found online at <https://www.gpo.gov/fdsys/pkg/CHRG-108shrg93571/html/CHRG-108shrg93571.htm>; <https://www.gpo.gov/fdsys/pkg/CHRG-108shrg93577/html/CHRG-108shrg93577.htm>.

⁴¹ 150 Cong. Rec. S 6395, at S 6414, “Finally, this language was debated quite heatedly in our markup at committee. There were a couple of close votes that were cast. In my judgment, the Senate Armed Services Committee is not the place where we either should be amending the Nuclear Waste Policy Act or authorizing the Department of Energy to ignore the Nuclear Waste Policy Act. I, therefore, support the Cantwell amendment and hope that this Senate adopts the amendment.” <https://www.congress.gov/crec/2004/06/03/CREC-2004-06-03-pt1-PgS6395-2.pdf>.

⁴² See the Committee Print, Report No. 108-260, 108th Congress, 2nd Session, Sec. 3119 (at 390), S. 2400 as presented to full Senate, found online at <https://www.congress.gov/108/bills/s2400/BILLS-108s2400pcs.pdf>.

⁴³ See <https://www.congress.gov/amendment/108th-congress/senate-amendment/3170>; and <https://www.congress.gov/congressional-record/2004/05/20/senate-section/article/S5902-2>.

The second amendment was the far more contentious of the two and the one designed to halt this dramatic rewrite of nuclear waste law.⁴⁴ Senator Cantwell of Washington, the sponsor of this amendment, described it thusly:

whether we as a body want to change the Nuclear Waste Policy Act and redefine high-level waste as something other than waste that should be taken out of tanks in Savannah River, out of Washington State Hanford tanks to be stored in a permanent repository, or whether we are going to leave some of that in the tanks in the ground and have ground water continue to be contaminated.⁴⁵

Among Senator Cantwell's concerns were the jurisdictional problems of bypassing authority in the Energy & Natural Resources Committee and bypassing debate and hearings on the proposal within the committee of proper jurisdiction; she cited reporting on the troubling precedent that could be set with the initial language and concern from governors and others in the states about the effect this could have on their nuclear waste. Sen. Hollings, meanwhile, highlighted several potentially critical drafting issues and how they may affect states' rights, and noted attention from the editorial board of the New York Times that day calling the process of inserting this language "unacceptable." *Id.*

Senator Cantwell's amendment received several hours' worth of debate on the floor in total (limited by a procedural agreement) before ultimately failing in a 48-48 tie vote.⁴⁶ Despite this, in the House there remained no language on the issue and the House insisted on a conference regarding the various differences between the House and Senate versions.

The final conference agreement on the bill contained a heavily amended version of sections 3116 (and 3119, changed in number to 3117 in the final conference version). The final changes after weeks of controversy and rancor included covering only South Carolina and Idaho, letting the provision take precedence over only limited laws as opposed to "any other provision of law," and adding additional language to make clear that the amendment would have no effect on other states. The language of the conference report is precisely clear that the final language is limited in scope: "Section 3116 does not establish any precedent for and is not binding on the States of Washington, Oregon or any other state that is not a covered state for the management, storage, treatment, and disposition of radioactive and hazardous material."⁴⁷

⁴⁴ See 150 Cong. Rec. S6396 and number 3261, found online at <https://www.congress.gov/crec/2004/06/03/CREC-2004-06-03.pdf>, SA3261.

⁴⁵ 108 Cong. Rec. S6395-6421, found online at <https://www.congress.gov/congressional-record/2004/06/03/senate-section/article/S6395-2>.

⁴⁶ See 108th Congress, Senate Roll Call Vote 107, https://www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=108&session=2&vote=00107; see also, S. Rept. 108-260, National Defense Authorization Act For Fiscal Year 2005, <https://www.congress.gov/congressional-report/108th-congress/senate-report/260>.

⁴⁷ See H.Rept. 108-767, H. Rept. 108-767, Ronald W. Reagan National Defense Authorization Act For Fiscal Year 2005, <https://www.congress.gov/congressional-report/108th-congress/house-report/767/1?overview=closed>, also online at <https://www.congress.gov/108/crpt/hrpt767/CRPT-108hrpt767.pdf>, at 353 and 883-885.

And thus, the law remains until this proposed reclassification of HLW by the Draft WIR Determination.⁴⁸

E. All Of This Activity Was The Subject Of Enormous Public Scrutiny

Along with sizable press coverage during the course of the litigation and immediately thereafter, the litigation and the legislative battle was also the subject of substantial press coverage, several law review and journal articles, including, but not limited to:

Wald, M, *Energy Department Is Challenged Over Waste Disposal Methods*, N.Y. TIMES, Mar. 4, 2002, available at <https://www.nytimes.com/2002/03/04/us/energy-dept-is-challenged-over-waste-disposal-methods.html>

News Release, Washington State Office of Attorney General, *Washington Seeks to Participate in Nuclear Waste Lawsuit Against D.O.E.*, July 16, 2002, available at <https://www.atg.wa.gov/news/news-releases/washington-seeks-participate-nuclear-waste-lawsuit-against-doe>

Clark, K., *Feds find shortcuts in nuclear cleanup*, High Country News, Nov. 11, 2002, available at <https://www.hcn.org/issues/238/13514>

NRDC, Press Release, *Court Rules Energy Department Reclassification of Nuclear Waste Illegal*, July 03, 2003, available at <https://www.nrdc.org/media/2003/030703>

Wald, M., *Judge Voids Cleanup Plan For Wastes At Bomb Plants*, NY Times, July 4, 2003, available at <https://www.nytimes.com/2003/07/04/us/judge-voids-cleanup-plan-for-wastes-at-bomb-plants.html>

TDN.com, *Corners can't be cut on cleanup at Hanford site*, Jul 9, 2003, available at https://tdn.com/news/opinion/editorial/corners-can-t-be-cut-on-cleanup-at-hanford-site/article_54f93023-86d8-5365-807c-92f0bafae1ad.html

Alvarez, R., *The Legacy of Hanford, Washington continues to evade responsibility for forty-seven years of contamination*, The Nation, July 31, 2003, available at <https://www.thenation.com/article/legacy-hanford/>.

⁴⁸ See e.g., the Transition Document on the NDAA FY 2005, "Additional information on the Section 3116 Waste Determinations: The Ronald Reagan National Defense Authorization Act of 2005 clarified DOE's authority to classify and dispose on-site some portion of tank waste as other than high-level waste. As discussed yesterday, the law is applicable to Savannah River and Idaho, but not Hanford; found online at https://www.energy.gov/sites/prod/files/maprod/documents/Transition_2008_2009_EM_Additional_Material_MA_Copy.pdf.

Alvarez, R., *To Clean or Not to Clean*, The Inlander, Aug. 7, 2003, available at <https://www.inlander.com/spokane/to-clean-or-not-to-clean/Content?oid=2175410>

News Release, Washington State Office of Attorney General, *Gregoire Opposes DOE Proposal to Change Nuclear Waste Laws*, Aug 29 2003, available at <https://www.atg.wa.gov/news/news-releases/gregoire-opposes-doe-proposal-change-nuclear-waste-laws>

Pegg, J.R., *House: Nuclear Waste Should Not Be Classified Less Hazardous*, Environmental News Service, Oct. 3, 2003, available at <http://www.ens-newswire.com/ens/oct2003/2003-10-03-11.asp>

Fryer, A., *Washington Lawmakers Stop Bush From Reclassifying Nuclear Waste*, SEATTLE TIMES, Oct. 3, 2003

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F. There Is No NEPA Coverage for the Draft WIR Determination

It should also go without saying that the National Environmental Policy Act, 42 U.S.C. §4321, et seq., provides no safe harbor for DOE's Draft WIR Determination. The Draft Determination is without a doubt a major federal action affecting the environment and there is no DOE NEPA document that specifically addresses the myriad of environmental harms attendant to this proposed decision to abandon waste in the HLW tanks. Nearly 8 years ago NRDC and HC addressed DOE's Department's Tank Closure and Waste Management Draft Environmental Impact Statement and we incorporate those comments here today.

But further, for DOE to proceed without any NEPA coverage at all of this explicit action (and to avoid segmenting the NEPA review, later and likely WIR Determination as a result of this action), is to avoid the fundamental requirement of NEPA, to search and subject to a "hard look" the *environmental impact comparison of reasonable alternatives* required under NEPA.⁴⁹ CEQ's regulations governing implementation of NEPA direct that Federal agencies "shall to the fullest extent possible...(b)...emphasize *real environmental issues and alternatives*...(e) Use the NEPA process to identify and assess the *reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions* upon the quality of the human environment."⁵⁰ In setting out the fundamental purpose of an EIS, CEQ's regulations also state, "It [the EIS] shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the *reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment*. Agencies shall focus on *significant environmental issues and alternatives*..."⁵¹ Satisfying these requirements is a non-discretionary duty of the NRC's NEPA process and obligations under the law.

⁴⁹ See NEPA, 42 U.S.C. §4321, et seq.; see also 40 C.F.R. §1502.14, 10 C.F.R. 51.85, and § 51.10-125 and App A.

⁵⁰ 40 C.F.R. §1500.2 (emphasis added).

⁵¹ 40 C.F.R. §1502.1 (emphasis added).

G. DOE's New Effort to Re-interpret HLW

More recently, DOE has recently issued a *Request for Public Comment on the U.S. Department of Energy Interpretation of High-Level Radioactive Waste*.⁵² In this notice, DOE requests comment on its interpretation of the definition of HLW, asserting that “[t]his statutory term indicates that not all wastes from the reprocessing of spent nuclear fuel (“reprocessing wastes”) are HLW, and DOE interprets the statutory term such that some reprocessing wastes may be classified as not HLW (non-HLW) and may be disposed of in accordance with their radiological characteristics.”⁵³ DOE explains the clear result of its newly suggested interpretation of the definition of HLW, stating:

Therefore, under DOE's interpretation, *waste resulting from the reprocessing of SNF is non-HLW* if the waste: I. Does not exceed concentration limits for Class C low-level radioactive waste as set out in section 61.55 of title 10, Code of Federal Regulations; or II. Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility *as demonstrated through a performance assessment conducted in accordance with applicable regulatory requirements*. Reprocessing waste meeting either I or II of the above is non-HLW, and may be classified and disposed in accordance with its radiological characteristics in an appropriate facility provided all applicable requirements of the disposal facility are met.⁵⁴

Thus, if DOE were to finalize its new interpretation of HLW, the Department could claim for itself the ability to simply declare HLW is no longer HLW, and therefore dispose of it differently—like in shallow land burial—and not in a deep geologic repository.

NRDC, et al. will respond accordingly and in a timely fashion to this notice, but we briefly note the following things about DOE's newly suggested interpretation of HLW. First, such a new interpretation of statutorily defined term is contrary to law and exceeds the Department's authority for many of the same reasons that this Draft WIR Determination would violate the law if finalized in its current form. We explain much of this below. Second, this notice seems a transparent attempt to garner the authority to reclassify HLW in the Area C tanks, but without necessarily even the public process and meeting the requirement that DOE ensure “the removal of key radionuclides to the maximum extent that is technically and economically practical before DOE can define waste as non-HLW.” *Id.* This self-serving effort to expand what is already DOE's self-regulation with respect to how it manages HLW at its DOE nuclear weapons cleanup sites violates the NWPA and its clear requirement that HLW be defined by its source and origin.

This new interpretation is merely a proposal at this point and therefore can have no meaningful impact on DOE's proposed action with respect to the reclassification of the Area C HLW tanks. Further, even if DOE were to attempt to conflate the two issues, such an effort will be sure to

⁵² 83 Fed. Reg. 50909, October 10, 2018.

⁵³ *Id.*

⁵⁴ *Id.* at 50911 (emphasis added).

draws both congressional and judicial scrutiny when and if the Trump Administration DOE attempts to move forward. Despite the DOE's assertions that "[a]t this time, DOE is not making—and has not made—any decisions on the disposal of any particular waste stream." *Id.*

In the parallel matter of this Draft WIR Determination, that is precisely what is happening. DOE goes on to suggest that it "will continue its current practice of managing all its reprocessing wastes as if they were HLW unless and until a specific waste is determined to be another category of waste based on detailed technical assessments of its characteristics and an evaluation of potential disposal pathways." That's essentially what it's doing in this Draft WIR Determination and for the reasons we articulate below, DOE has, again, run afoul of the law.

IV. DOE's 2018 Draft WIR Determination

DOE proposes leaving 62,900 gallons (about 500,000 Curies) of High-level radioactive waste in the sixteen C-Farm tanks at Hanford. C-Farm is one of eighteen such waste tank farms on the Hanford site. For a more complete description, see Dr. Kaltofen's Decl. at 5, 6.

A. The 16 tanks are HLW and are the result of reprocessing spent nuclear fuel

WMA-C received wastes created by the reprocessing of spent nuclear fuels, including Plutonium-Uranium Extraction Plant reactor fuel wastes and spent nuclear fuel fission wastes including strontium and cesium burned-fuel fission products.⁵⁵ This is most toxic and long-lasting waste in the world.

As was explained to the 9th Circuit in the original round of litigation years ago describing the reprocessing waste, the half-life (the time it takes for one-half of an unstable isotope of the element to be lost through radioactive decay) of some of the isotopes which have leaked are as follows: cesium-137, 30 years; strontium-90, 29 years; plutonium-239, 24,110 years; and uranium-238, about 4.5 billion years. A rule of thumb is that it in 10 times the half-life the amount of the isotope remaining is about 0.1 percent of its original value (i.e., almost entirely decayed away). Thus, it will take about 240,000 years before plutonium-239 has all but decayed away. By way of comparison, the civilization recognized by many historians to be among the oldest – the Mesopotamian – is understood to have begun less than 6,000 years ago. Kennewick Man walked near DOE's Hanford site on the "Columbia Plateau an estimated 8,340 to 9,200 years ago."⁵⁶ The last Lake Missoula flood that scoured eastern Washington and rerouted rivers at the end of the most recent Ice Age was only about 12,000 years ago.⁵⁷

B. The Draft WIR Determination is a technically unsound proposal

⁵⁵ See, e.g., Final Tank Closure & Waste Management Environmental Impact Statement, (DOE/EIS-0391), at Chapter 2; see also, DOE 2018 p. 48 to 51; see also, First and Second Declarations of (b)(6) part of the record before the United States Federal District Court in Idaho in *NRDC v. Abraham*, 271 F.Supp.2d 1260 (D. Id. 2003), Attachments C and D.

⁵⁶ *Bonnichsen v United States*, 357 F.3d 962, 966 (9th Cir. 2004).

⁵⁷ Response Brief of Appellees Natural Resources Defense Council and Snake River Alliance at 8, n.6.

NRDC and Hanford Challenge contracted with Dr. Marco Kaltofen, of Boston Chemical Data Corp. to provide a technical analysis of DOE's Draft WIR Determination. See Attachment A, (hereinafter, "Kaltofen Decl. at ___"). Dr. Kaltofen describes in detail the technical history of the HLW in the tanks and its extraordinary radiotoxicity. Dr. Kaltofen writes:

In 1995, the Oak Ridge National Laboratory for DOE compiled estimates of radioactivity of the high-level wastes in storage at Hanford. The estimates are in units of MCi (Millions of Curies, a.k.a. equivalent to millions of grams of radium-226). These amounts have been reduced, in some cases by 15 to 20 percent due to radioactive decay, and by removals since 1995.

<i>Tank Wastes</i>		<i>Capsule Wastes</i>	
<u>Liquid</u>	<u>Solid</u>	<u>Strontium</u>	<u>Cesium</u>
68.5	123.3	44.9	101.2

[DOE, *Integrated Data Base Report-1995: U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, DOE/RW-0006, Rev. 12, December 1996, p. 52.]

By comparison the annual limits on intake by ingestion for a radiation worker to ensure the workers dose does not exceed 5 rems per year is 0.0004 Ci of strontium-90 or 0.0001 curies ("Ci") of cesium-137. [EPA, *Limiting Values of Radionuclides Intake and Air Concentration and Dose Conversion Factors For Inhalation, Submersion, And Ingestion*, EPA-520/1-88-020, September 1988, pp. 49 and 71] Thus, the wastes at Hanford contain millions of "annual limits on intake" for nuclear workers. In its concentrated form the HLW in the tanks is chemically toxic in addition to being intensely radiotoxic. This is why Congress has required that all high-level radioactive waste be isolated in one or more deep geological repositories.

Kaltofen Decl. at 3.

Dr. Kaltofen also presents an abbreviated but on point history of the leaking HLW tanks and the projected plans for treatment, removal and vitrification of the HLW before disposal in a deep geologic repository. *Id.* at 3-4, 10.

Dr. Kaltofen raises a host of concerns with the Draft WIR Determination, and the declaration, filed this day, speaks for itself. But specific areas of concerns raised by Dr. Kaltofen include but are not limited to the following:

- (1) DOE rejects available (or foreseeable) technologies to remove the residual HLW from the tanks. The data do not even show that the limited tank-washing efforts have exhausted their utility; no further technologies have been explored.

(2) Without providing comparative alternatives risk data, DOE believes that abandoning wastes in the shallow subsurface creates less risk than removal, treatment, and use of a geological repository. The clear and documented uncertainties in DOE's analysis of the magnitude and timing of leaks from the residual abandoned HLW make it impossible to quantify the risk relative to removal of HLW from shallow burial.

(3) The consequences of abandoning waste to both public and environmental health and safety are ignored or minimized (see details in Part II). Comments by WA Ecology and data from US DOE's own analyses show that the residual HLW will exceed applicable legal standards before the expiration of the modeled 10,000 year period, and in fact, exceeds these legally-required quantitative levels already.

(4) Installing grout above the HLW will not isolate the waste for 10,000 years, but will guarantee that HLW eventually reaches the Columbia River. Migration from WMA C to the Columbia River could take as little as 10 years, even assuming that no accidental criticality is ever initiated.

(5) Abandonment and grouting will delay the achievement of legally-required cleanup milestones, rather than cause them to be met in a more timely fashion. It would be much more correct to say that the milestones had been moved rather than "reached."

Id. at 8, 9.

Dr. Kaltofen continues to write about the problematic and ill-advised nature of DOE's Draft WIR Determination, asserting,

Once grout fails in the tanks, any radioisotopes leached from the residual HLW left in tanks can move to the Columbia River in a relatively short time. The draft DOE WIR evaluation notes that, "Travel time of water through the unconfined aquifer from the 200 East Area to the Columbia River has been estimated to be in the range of 10 to 30 years" (US DOE 2018 sec. 2.1.5.3.3). Other estimates in the same reference suggest a maximum travel time of 33 years, based on reduced wastewater recharge in the 200 Areas. This is still only a small fraction of the already short design time of 1000 years before failure.

* * *

Hanford's radioisotope inventories have large uncertainties. The draft WIR evaluation notes that, "A previous assessment of limitations to the HDW model provided in HNF-3273, 'Hanford Defined Waste Model Limitations and Improvements,' showed that tank-specific HDW model estimates and tank sample results can vary by one to two orders of magnitude." These uncertainties apply to the materials discussed including TRU, technetium-99, iodine-129, zirconium-93, carbon-14, cesium-137, strontium-90; as well as isotopes not discussed specifically but present in the WMA C tanks such as isotopes of americium, neptunium, cobalt-60, europium, thorium, gadolinium, tritium, radium and others.

Uncertainty notwithstanding, there are more than 600 Curies of americium-241 and more than 17,000 Curies of cesium-137 estimated to be in WMA-C tanks according to the estimated inventories used in the PA (Some tanks have updated cesium-137 inventories due to retrieval operations. Post-retrieval samples showed that actual cesium-137 inventories were generally higher than the estimated inventories.) Included in these figures are 8.5 Curies of americium-241 and 187 Curies of cesium-137 in WMA C pipelines (2014 PA estimate). Given, however, that the actual supernatant to solids activity ratios of these isotopes is not fully known, the amount of these inventories to be abandoned is uncertain.

* * *

Leaving HLW near the surface of the ground at Hanford creates some unavoidable conflicts with the local environment. Shallow-buried materials lie in the portion of the soil where any groundwater percolates downward over time into the deeper, fully saturated, aquifer. This creates an obvious transport mechanism for any leached isotopes, including transuranic (heavier than uranium) isotopes of plutonium, americium and neptunium, that will eventually reach the Columbia River or potentially some other future groundwater user. (Most Americans rely at least in part on groundwater for drinking or agriculture).

* * *

The use of homogeneous groundwater models instead of multilayer heterogeneous modeling is insufficient to provide a realistic assessment of the time to breakthrough of residual tank wastes into the Columbia River. As noted in the draft WIR evaluation, "Hydraulic conductivity values reported for the aquifer in this area vary considerably, ranging from 0.04 (silt lenses within the sandy gravel) to 6,900 m/day." This is an unusually wide range of hydraulic conductivity values, and it demonstrates the heterogeneous nature of the aquifer. No known homogeneous hydrogeologic model can accommodate such a wide range of hydraulic

conductivities. The high hydraulic conductivity values are consistent with the short transit times for contaminants leaving the WMA C and arriving at the Columbia River. Given that HLW is already in the vadose zone and moving into the Columbia River, a more realistic multilayer heterogeneous groundwater model is required.

* * *

There is no evidence-based method for even estimating the potential failure rate of grouting based on failure to set due to waste chemistry. It is not feasible to pilot test a grouting treatment process facility that realistically simulates disposition of materials formerly classified as HLW. The actual chemistry of this processing is not known.

Id. at 16, 18, 22, 24.

Other technical comments by Dr. Kaltofen include the following:

Grouting Affects Retrieval: The failure to properly define the limits to technology means that HLW would be abandoned in place without employing additional technologies that could retrieve refractory solids in the WMA C tanks. Failure to remove the remaining HLW in the tanks makes it far more difficult to remove the tanks themselves. Tank recovery and removal is likely to be a key initial step to removing leaked HLW in the vadose zone below the tanks. Adding grout of course, only increases the difficulty of retrieval, potentially making HLW remediation from the vadose zone impossible.

* * *

Grout monolith longevity: Grout has never been tested under realistic conditions. DOE suggests that grout within the abandoned waste tanks is required to protect the environment from residual HLW for 1000 years (the “compliance period” vs. the sensitivity/uncertainty period of 10,000 years). The 1000-year time frame is of course, highly abbreviated compared to other analyses of waste migration performed at Hanford. DOE, in an act of self-regulation, created this specific time period in a DOE “order”. This shortened period of 1000 years does not meet the requirements of 40 CFR 191, which specifies a required period of 10,000 years (NRC 1995). The 2012 TC & WM EIS carries the grout leachate model past the year 4000 mark, when Columbia River activity levels for technetium-99 and iodine-129 would be reaching their equilibrium maxima.

Current models developed from empirical laboratory grout simulations cannot provide this kind of assurance for either 1000 years or 10,000 years. A 1995 PNL grout test at Hanford noted that (PNL 1995),

“The semi-infinite solid diffusion model was selected as the most

representative model for describing leaching of grouts. The use of this model with empirically derived leach constants yields conservative predictions of waste release rates, provided no significant changes occur in the grout leach processes over long time periods.”

The use of this model demands that the grout not only last for 1000 years, but that its properties must not change significantly over that entire period to remain protective. Certainly such a requirement is completely untested. The 1995 Hanford grout leaching tests ran on grouts that had set for 46 days, or 0.013 % of the required 1000 year-life of grouted HLW in WMA C tanks (or less than 0.004 % of the 4000 year climb toward the Columbia River equilibrium concentration, or 0.0013 % of the 40 CFR 191-required 10,000 years).

These same 1995 grout test reports noted (page 2.2) that any fracturing in the grout monolith formed in the abandoned tanks would invalidate the presumed groundwater velocity in grout of 0.5 to 5 cm per year. Normally groundwater would be expected to slowly diffuse through the grout monolith through a series of interconnected pores. This is the basis of the expected groundwater velocity of 0.5 to 5 cm per year. For example, the rate of groundwater flow in unfractured volcanic (igneous) rock is on the order of 0.002 cm per day and less. For fractured volcanic rock, groundwater can flow at a rate of 250 cm per day (Duffield citing Domenico & Schwartz 1990). This is a difference of nearly five orders of magnitude.

In effect, fracturing in grout due to temperature change, loading stress, imperfections in grout chemistry, ground subsidence, mechanical strain, or grout composition boundary (where anti-intrusion grouts and mechanical loading grouts meet); can cause an immediate catastrophic failure of the grout monolith in a tank. It is certainly possible that such a fracture could form during the initial pour and set of a grout lift during tank abandonment. This means that the grout would not survive a millennium; rather it would not even survive its first day in place.

Notably, a 1000-year grout life is still double the expected life of the WMA C surface barrier, which is designed to have a functional life of only 500 years. In contrast, the peak dose rate for all isotopes occurs at 1,500 years, and the peak radon flux from WMA C occurs at 10,000 years. That’s still better than the presumed life of institutional controls for Hanford, which is 100 years, or 10% of the expected grout life, or 1 % of the 10,000-year compliance period required by NUREG-1854.

* * *

Tank inventory: The total amounts of plutonium and other long-lived isotopes stored in Hanford’s 177 waste tanks are large. Technetium-99 is one of the most problematic isotopes at Hanford, because it is one of the most mobile radioisotopes once it reached groundwater. Its complex chemical behavior makes it difficult to immobilize in solid forms. It has a half-life of 211,000 years. The total amount of

technetium-99 in tanks is about 26,500 Curies (PNNL 2014). Of the total, 11,400 Curies was originally stored in the single shell tanks. Most of the double shell inventory is in the 200-E Area. If the waste tanks generally were allowed to become permanent repositories for the 4% abandoned HLW residual proposed by DOE for WMA-C, this would be 1,060 Curies of technetium-99 left in shallow burial at Hanford. This is in addition to the 652 Curies of technetium-99 already known to have reached Hanford sediments.

With the exception of the complexed pertechnetate species of technetium, the actual form of the up to 25% fraction of soluble technetium compounds is not known. This means that the mobility in grout monoliths or groundwater of this soluble technetium fraction is also not known. If 25% of the technetium is in the tank supernatant, this implies that any residual abandoned in the tanks will be relatively enriched in technetium, compared to the supernatants that will be treated via vitrification.

* * *

Accidental criticality: Nonradioactive chemicals play an important role in maintaining the safety of residual plutonium in tanks. Plutonium has a significant spontaneous fission rate, and a low critical mass. Critical mass is the minimum mass required to initiate a spontaneous nuclear criticality, which is very highly undesirable. Materials such as iron and cadmium maintain the plutonium in tank solids below the criticality safety limit (CSL) of 2 grams of plutonium per liter of waste solids (Westinghouse 1995). Actual maximum plutonium activity in the 100 and 200 series tanks is 0.35 to 0.70 g/L; up to 35 % of the CSL (Bratzel 1996, CSL also stated as 2.6 g Pu/L). Chemical washout from grout that removes cadmium or other neutron absorbers, or concentrates plutonium, can lead to unanticipated criticalities, which would create a catastrophic failure of containment.

Chemical crystallization at the grout-sediment interface is one example of a potentially plutonium-concentrating mechanism. The DOE WIR evaluation (US DOE 2018, p.55) notes that, "In most instances, adsorption appears to be the controlling geochemical process, but neutralization of acid waste by the alkaline sediment and neutralization of basic tank waste can cause precipitation of some contaminant species within the sediment pores." This means that plutonium leached from grout in the tanks would precipitate in the sediment pores immediately adjacent to the tanks, resulting in preferential deposition of plutonium. The grout solids, which serve to keep plutonium activity below the CSL, would be left behind. The WIR further notes on p. 55 that, "Outside the zone of pH neutralization, adsorption is considered to be the dominant retardation process in the vadose zone." This adsorption zone outside of the neutralization zone where plutonium can recrystallize would reinforce the tendency to concentrate plutonium residues in a small volume; again driving plutonium activity to reach or exceed the CSL, and encouraging the initiation of an accidental criticality.

In total, it is estimated that 500 to 1000 kg plutonium remains in the 100 and 200 series tanks (Ibid). In 1951 Hanford experienced an accidental criticality in a water solution of plutonium nitrate, where the system contained a total of 1.15 kg of plutonium-239 (LANL 1967). The laboratory building involved was never fully remediated, but was eventually abandoned. In comparison, tank C-102 is estimated to contain about 1.02 kg of plutonium-239 (2018 Oregon DOE data).

At Hanford, nonradioactive iron compounds in tank solids provide an important safety buffer against exceeding the CSL. However in some tanks, such as C-101, waste streams were disposed that had iron to plutonium-239 ratios of less than 5:1 (iron:plutonium-239). Differential loss of iron compounds would significantly impact the safety factor below the criticality safety limit for this waste solid in C-101.

On average in Hanford waste tanks, there are higher concentrations (on a molar basis) on plutonium in the solids versus the supernatant liquids in tanks. Tank C-110 has nearly a 100X greater plutonium concentration in solids compared to liquids. It is the solids left behind that will account for much of the abandoned residuals in tank wastes, meaning leaving a 4% residual of solids potentially leaves much more than 4% of a tank's plutonium in shallow burial. Tank liquids will be readily removed; most of these have plutonium concentrations between 10⁻⁶ and 10⁻⁹ molar. Tanks solids are most likely to be in the residual; these are 10⁻⁴ to 10⁻⁶ molar, with more than two orders of magnitude greater plutonium concentration.

Washington Dept. of Ecology commented on the criticality risks associated with DOE proposal, noting that DOE assumed that the single sample retrieved (from HLW tanks) might not be representative of the entire volume of residual waste. DOE stated that the C-200 tanks were presumed to have a similar history and waste types; yet, when sampled, there were considerable differences among some of these tanks. Given that result, WA DOE questioned the uncertainty associated with the use of waste type templates and how is it addressed in DOE's [plutonium] inventory estimates, given that these template values were derived from models (WA Ecology 2017).

* * *

TRU, technetium-99, iodine-129 and neptunium: The 2017 DOE Status Report (US DOE 2018b) states on p. 1-17, "The inventories of technetium-99 [technetium-99, half life of 211,000 years by beta decay] and iodine-129 [iodine-129, half life 15.7 million years by beta decay] as representative mobile constituents were used to evaluate potential impact of the PUREX tunnels." Nevertheless, the WIR neglected to address the large inventory of Tc-99 and other chemicals that reside beneath the tanks (<https://www.nap.edu/read/11618/chapter/8#63>). This also applies to wastes from other areas (such as the B-complex in the northwest corner

of the 200 East Area) where contaminants are now migrating into the WMA C area due to dissipation of the former groundwater mounds underneath effluent discharge points.

Prior US DOE documents (such as the 2012 Final Hanford Tank Closure and Waste Management Environmental Impact Statement, TC & WM EIS) note that the eventual long-term equilibrium activity of iodine-129 and technetium-99 in the Columbia River is a function of the percent removal of HLW from the tank farms (Sec. 3, DOE responses to public comments, TC & WM EIS).

The plans to abandon tank residuals containing these isotopes fails to consider that nuclides such as technetium-99 and iodine-129 exist at other waste sites on the Hanford Plateau. For example naval wastes disposed of at Hanford contain both nuclides, including 2.8 Curies of technetium-99 and a poorly characterized (but smaller) amount of iodine-129 (3/5/2010 letter from T. Mueller, Naval Systems Command to US DOE ORP).

WA Ecology (2017) noted that multiple individual monitoring wells for groundwater observation at Hanford contain these and other isotopes, along with hazardous chemical constituents. Some of these are outside of known major plume areas. These groundwater constituents, both radioactive and hazardous, would persist over and above those released from the abandoned waste tanks. Some monitoring wells, such as well 299-E27-155 at WMA C contain all three isotopes, technetium-99, iodine-129 and plutonium-239.

* * *

Summary:

- The long-term integrity of grout is untested.
- Grouting will not effectively bind residual HLW. Hanford's climatic and soil environments are particularly harsh for grout monoliths.
- Grout performance and the rate of groundwater flow through the grout monolith, is critically dependent on near-perfect, fracture-free, installation.
- The performance assessment does not use a reasonable time frame. Other sources of radioisotopes are not included in models. Models assume no significant decline in performance over time and no nonuniformity over space.
- Grouting of tank wastes is irreversible, preventing future remediation of residuals.
- Reasonably foreseeable future land uses that could affect groundwater hydraulic gradients and exposure scenarios are not addressed.
- Inadvertent criticalities are not addressed.
- Future use scenarios assume institutional controls or unrealistic land uses, such as no anthropogenic disturbance of a scale greater than drilling (e.g.

constructing building foundations). Climactic scenarios exclude dam failures, Columbia River flooding, concentrated rainfall events – especially in cooler weather, glacial flooding/damming.

Kaltofen Decl. at 11, 15-17, 19-20, 25-26.

C. State & Hanford Advisory Board Advice and Comments

The states of Oregon and Washington have identified how Department of Energy failed to meet its own standards for a WIR evaluation. To summarize, U.S. Department of Energy failed to show that it had removed key radionuclides, which the reclassified waste would be managed to meet performance standards, and that waste would be incorporated in a solid physical form. The State of Washington stated in its comments, "Ecology believes that the U.S. Department of Energy (USDOE) is unable to show compliance with the three criteria of the waste incidental to reprocessing evaluation process set forth in Chapter II of the Radioactive Waste Management Manual, DOE M 435.1-1." Oregon similarly identified U.S. DOE's failure to meet its own requirements. Both states object to U.S. DOE's decision to ignore contamination in soils near and below the tanks in Waste Management Area C. Additionally, both states argue that U.S. DOE's Performance Assessment is inadequate for supporting the WIR determination.

In addition to the observations of two states and Dr. Kaltofen about the technical issues related to the Draft WIR, the Hanford Advisory Board (HAB), a 32-member Site-Specific Advisory Board chartered under the Federal Advisory Committee Act, and set up by the DOE to provide advice on the Hanford cleanup to the DOE, has provided observations and official advice to the DOE on the issue of the Draft WIR. Hanford Challenge is a member of the HAB and participated in preparing this advice. We provide key sections of that advice verbatim below, and incorporate its points into our own comments:

"The relevant sections of DOE Order 435.1 permits waste reclassification if three separate requirements for wastes are met:

- **remove key radionuclides** to the maximum extent that is **technically and economically practical**;
- meet safety requirements comparable to the performance objectives set out in 10CFR Part 61, Subpart C. Performance Objectives; and
- manage, pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be **incorporated in a solid physical form** at a concentration that does not exceed the applicable **concentration limits for Class C low-level waste** as set out in 10 CFR 61.55, Waste Classification; or will meet alternative requirements for waste classification and characterization as DOE may authorize (*emphasis added*).

The Draft WIR evaluation asserts that all three DOE Order 435.1 requirements have been met regarding the C-Farm tanks. However, the determination of whether key radionuclides have been removed to, "the maximum extent technically and economically practical" is one which is subject to challenge and seems to conflict with the intent of the Hanford Federal Facility Agreement and Consent Order, (TPA). One primary issue is determining how much waste may remain in tanks and what constitutes removal to the extent practical.

In its formal statement in the Tank Closure and Waste Management EIS (TCWMEIS), Washington State Department of Ecology (Ecology) stated that it interpreted the TPA and state and federal hazardous waste laws as requiring removal of 99% of waste in the tanks, prior to a determination of impracticality for further retrieval. Yet, DOE seeks to proceed with reclassifying waste after retrieving only 96% from the C Farm Tanks (some tanks have >90% residual remaining) and not retrieving any high-level key radionuclides from discharges to the soil.⁵⁸ This draft WIR would allow leaving 4% or approximately 60,000 to 70,000 gallons of High Level Nuclear Waste in the C-Farm tanks and would reclassify this waste form from high-level to low-level waste.⁵⁹ It should be noted that retrieval of bulk waste may not satisfy the criteria for removal of key radionuclides from the mixture of wastes to be disposed.

In the TCWMEIS, Ecology noted that the "preferred alternative" adopted by DOE was 99% retrieval; and, the TCWMEIS model predicted that leaving more waste resulted in levels of contamination that could exceed groundwater protection standards for thousands of years. The Board seeks clarification regarding whether DOE intends to use this WIR process to abrogate the formal Record of Decision under which DOE adopted the preferred alternative of 99% retrieval.

This draft WIR determination addresses only radionuclides remaining in the residual waste in the tanks and their auxiliary structures in WMA C. Because the residual waste is mixed waste (radioactive and hazardous). WMA C must also meet Washington State's dangerous waste requirements for closure.⁶⁰ Pursuant to the Tri-Party Agreement, closure plans must be approved by Ecology and incorporated into the Hanford Site-Wide Dangerous Waste Permit before DOE can proceed with closing the tanks.

Pertaining to the third WIR criterion, because DOE is not processing the residual waste in grout, but instead filling the tank void space with grout, the HAB is

⁵⁸ USDOE estimates that approximately 70,315 gallons of waste remain in the C Farm Tanks Tables 4-7, 4-8, with 5,500 gallons estimated remaining C-105 per USDOE June 18, 2018. There is a wide range of the amounts remaining in tanks with C-102 and C-112 having 20,500 gallons (6.5%) and 10,100 gallons (9.7%) respectively.

⁵⁹ Draft WIR Evaluation, Tables 4-7, 4-8, with 5,500 gallons estimated remaining C-105 per USDOE June 18, 2018.

⁶⁰ Washington Administrative Code (WAC) 173-303, *Dangerous Waste Regulations*.

concerned that the grout and waste will not be incorporated in a solid physical form as required by Order 435.1.

The WIR evaluation for WMA C only seeks to reclassify the tank infrastructure and residual wastes in tanks and pipelines. It does not include the high-level waste that leaked from the tanks or was spilled into the soil. In the process of learning about the draft WIR evaluation for WMA C, it has now emerged that, without any public notice, in 2008 DOE adopted a WIR determination to reclassify high-level nuclear wastes at Hanford which leaked or were spilled from tanks into soil during waste transfers and operations. This prior WIR determination followed the citation process under DOE O 435.1, which involves a less rigorous analysis than the evaluation process being pursued for the WMA C tank residuals. DOE has not yet provided a clear and consistent response regarding whether this previous WIR determination applies to the waste that leaked and spilled from the C Tank Farm, nor whether DOE ever intends to conduct a separate WIR evaluation for the WMA C contaminated soils.

Advice: Policy Basis

The [Hanford Advisory] Board advises that DOE:

- Ensure its WIR evaluation and the tank farm closure process includes the following steps:
 - Work with Ecology to establish a comprehensive process for tank closure that integrates closure standards and cumulative impacts. The Board is concerned that making piecemeal decisions using the WIR processes may never meet closure standards to allow for full consideration of cumulative impacts.
 - Integrate the closure standards in the C-Farm closure plan with the development of the WIR evaluation in order to address closure requirements as defined by Washington State Department of Ecology.
 - Include the soils beneath WMA-C in the current WIR evaluation.
- Initiate a demonstration test prior to grouting that affirms tank residual waste meets the requirements of concentration limits of Class C low-level as set out in 10CFR 61.55 and conforms to the exacting metrics of incorporation of waste into grout.
- Resolve how closure criteria established by the State of Washington are met when 9.7% of waste remains in a SST. DOE should provide clarification of the application of the TPA Appendix H & I⁶¹ in the determination of that waste can remain in the

⁶¹ Hanford Federal Facility Agreement and Consent Order.

tanks.

Performance Assessment

The Board is concerned that the WIR is dependent on a Performance Assessment (PA) containing residual unmanaged uncertainties which may set a precedent for the closure of additional Hanford tank farms in the future.

At this point in time, the basis for the WIR evaluation rests mostly on the conclusions of the C-Farm PA which declares that all future seepage from C Farm residuals would be below drinking water standards for the next 10,000 years at specific monitoring points. The Board is concerned that the PA and the WIR fail to address the large inventory of Tc-99 and other contaminants of concern that moved laterally, in liquid form, through discharges from PUREX during processing years. The volumetric overload (millions of gallons) created a groundwater mound that accessed a stair-stepping gradient which transported Cobalt 60, Tc- 99, Cesium and Nitrate among other contaminants of concern, along silt lenses, sandwiched between other geologically discrete layers. The modeling report (Figure 30), by Stan Sobczyk, 12/1/16 illustrates those thin-layered ancient lake beds under C-Farm. Current modeling efforts for Unplanned Releases (UPRs) and tank leaks analyze only vertical transport through the vadose zone, even though there is firm evidence of lateral flow, of Co- 60, specifically, from C-Farm.

The C-Farm PA modeling has never accounted for liquid moving down slope from PUREX cribs towards C-Farm. Tank leaks and unplanned discharges may continue for many years. Additionally, the interaction of seepage from C-Farm or other nearby facilities with chemicals and radionuclides in the soil beneath C-Farm has not been considered. The tanks and the soil are inseparable as are the soils and groundwater. Groundwater remediation must be evaluated prior to a decision on tanks. DOE must address soil remediation, groundwater remediation and tank closure, in total, together (Composite Analysis).

The public was assured by Executive Assistant Secretary for EM, Ines Triay, that the PA would be vetted publicly, would be available for public comment and that DOE would share its response and decision(s) on the PA. The Board believes that the State of Washington and the public need adequate time to address the questions raised regarding the PA and have DOE resolve these questions prior to using the C-Farm PA to support the draft WIR evaluation.

Advice: Performance Assessment

The [Hanford Advisory] Board advises that DOE:

- Complete and update the Composite Analysis and address questions concerning the C-Farm PA prior to initiating the WTR evaluation and

- C-Farm closure.
- Complete the PA Maintenance Plan before proceeding with a WIR determination. The Maintenance Plan is part of the long-term “decision package” for a WIR decision required by DOE Order 435.1 and should be open for public review and comment. The Board advises DOE to engage the Board and other stakeholders in the development of the PA Maintenance Plan, to ensure that follow-on monitoring and assessments adequately address public uncertainties and concerns about the adequacy of the existing PA model.
- Given that remaining uncertainties persist in the PA model, DOE should not use the model results as a basis to determine that no significant risk reduction would result from additional waste retrieval from the WMA C tanks and pipelines.

Cumulative Impact

In 2008, DOE executed a WIR determination for secondary wastes at Hanford, which included wastes that leak or spill from tanks into soil. This determination was developed and codified without knowledge of or participation by the Washington Department of Ecology, the original parties in the 2003 litigation, or the public. At the June 18, 2018 Public meeting for the WMA C WJR, a DOE Headquarters representative stated that the 2008 WIR was not intended to apply to past leaks, but to future leaks that occur during tank waste retrieval and treatment, however the language of the 2008 determination (last updated in 2017) does not include this specificity. DOE's current charge to the NRC is to review a WIR that excludes evaluation of the soils in Waste Management Area C.

WIR evaluations under 10 CFR 61.55 should include all media, including soils. Currently, with the transfer of HLW liquids out of the sixteen tanks, the highest impact from radionuclides and hazardous chemical in WMA C may now reside in the soil columns under those tanks. Past practices included over-filling of tanks, leaks as material went through the cascading system and out unsealed joints⁶² and because hoses were turned aside, and letting HLW liquid flow into the ground when tank space was at capacity and processing operations were deemed too important to stop.⁶³ Estimates are that 25,000 curies were leaked to the soil. The HAB questions the validity of a WIR process that excludes evaluation of radionuclide risks in the surrounding soil.

The Board is concerned that DOE's segmented approach does not consider the impacts from related decisions, such as DOE's stated intent to leave C-Farm soil contamination in place. A Composite Analysis is needed because the current approach does not evaluate or disclose the full range of impacts. The current

⁶² RPP.ENV 33418 Rev.1, M.E. Johnson, J.G. Field, CH2MHill Hanford Group, March 2008.

⁶³ WHC-MR-0227, April 1991, J.L.Waite.

approach of each singular evaluation may result in a determination of low risk when in fact the total impacts may be significant. The Board questions the adequacy of utilization of the 2012 TWMCEIS to satisfy this requirement as Alternative 5 (the only EIS alternative that assumed less than 99% retrieval) shows that the groundwater maximum contamination limits will be exceeded at the Core Boundary. It seems to be insufficiently protective to meet the Order 435.1 requirements.

The Board is concerned that DOE has no plan to consider the cumulative impact of its related proposed actions/decisions to utilize the WIR process to both reclassify the high-level nuclear waste in C Farm Tanks and the waste discharged and leaked to soils.⁶⁴ National Environmental Policy Act (EPA) and State Environmental Policy Act (SEPA) require the cumulative impact on human health to be considered, not just examining each individually to see if it meets DOE's standards. This applies to the chemical contamination releases as well as radionuclide releases. There is no consideration of those chemical releases and risk in the Draft WIR evaluation. The segmented approach of considering the risks from the related but separate DOE decisions may not meet the intent of NEPA or SEPA regulations. DOE has not laid out a public involvement process that will integrate still needed data for the PA into a comprehensive, site-wide closure vision.

Advice: Cumulative Impact

The [Hanford Advisory] Board advises that DOE:

- Enlarge the scope of the WJR evaluation to include the residual high-level nuclear waste in both C Farm Tanks and the surrounding soils which received historically documented liquid waste discharges.
- Ensure that the ability for future removal of the HLW in the vadose zone, under the tanks and throughout the geologic strata of WMA C is not inhibited by closure of HLW tanks.
- Integrate the Composite Analysis into the WIR decision. The Composite Analysis is a key part of the "decision package" for WMA C and should be available for public review prior to a final WIR determination for WMA C tanks and residuals.
- Provide the public with the ability to review what NEPA analysis has been done and alternatives to waste reclassification as part of meeting NEPA obligations during this comment period."⁶⁵

⁶⁴ USDOE's formally adopted plan guiding this WIR Evaluation for C Area states that USDOE-ORP has already issued a WIR by citation decision to reclassify the "soils contaminated by tank waste have already been classified as LLW by DOE-ORP using the WIR by citation process." RPP-Plan-47325 Rev. O (2010).

⁶⁵ Hanford Advisory Board, Advice Letter #229 (September 20, 2018), available at https://www.hanford.gov/files.cfm/299_WIR_Advice_9.20.18_2.0.pdf, pages 2-6.

V. The Draft WIR Determination is an unlawful proposal

With all the technical infirmities in the Draft WIR Determination that are identified above, there are no material factual issues genuinely in dispute. Rather, the matter DOE should consider before going forward is one of statutory interpretation. To wit, (1) Congress plainly stated that HLW is the highly radioactive material resulting from reprocessing spent nuclear fuel (and the rest of the definition of HLW under 42 U.S.C. § 10101(12)(A) is included for explanatory purposes); (2) Congress clearly intended that HLW be disposed of in a geologic repository pursuant to the NWPA without the need for human monitoring and maintenance; (3) the waste in DOE's HLW tanks, whether it is the 16 under consideration at Area C or any of the other 177, is HLW and thus, subject to the NWPA; (4) the incidental waste exemption, if finalized, would allow DOE to arbitrarily reclassify the HLW in the tanks so that the agency may avoid compliance with the NWPA; and (5) the incidental waste exemption is fundamentally inconsistent with the plain language of the NWPA and its overriding purpose of ensuring that HLW does not "adversely affect the public health and safety and the environment for this or future generations."⁶⁶

Even if Congress had not spoken clearly to the issue—which it did—this proposed agency action under Order 435.1 is not based on a permissible construction of the NWPA and Section 3116 (or no other existing provision of law) bars DOE from taking this action. Thus, this Draft WIR Determination also violates the Administrative Procedures Act (APA) by: (1) defying the clear congressional directive of the NWPA; (2) being based on an administrative record that is devoid of support for DOE's actions⁶⁷; and (3) reversing longstanding agency policy without reasoned explanation.

Under Order 435.1's incidental waste exemption, DOE awards itself the unilateral authority to reclassify the HLW in the tanks as incidental waste and thus abandon that waste in place rather than in a geologic repository. Ostensibly no longer HLW, this waste is not subject to the requirements of the NWPA and may be disposed of under the substantially less strict requirements applicable to low-level waste. Rather than dispose of HLW in a geologic repository, DOE will begin, at Hanford, to abandon thousands of gallons of highly radioactive sediments and sludges in the bottom of the underground tanks, cover the waste in place with concrete, and hope (or not care that) the tanks will not cause an environmental and public health catastrophe immediately or in the future.

Fundamentally, DOE's proposed action creates a new national sacrifice zone for HLW. Disposal of tens of thousands of gallons of HLW in Washington will (1) result in a potentially catastrophic dispersal of radioactivity into the environment and (2) at a minimum, require significant land-use restrictions, maintenance, and monitoring in perpetuity. (Kaltofen Declaration, at 25-26.) Both of these results are contrary to law.

⁶⁶ 42 U.S.C. §10131(a)(7).

⁶⁷ For more on an administrative record that is devoid of support for DOE's actions, see attached declaration of Marco Kaltofen, Attachment A.

For the NRDC, HC and CR, and the public, the impact of abandoning HLW at these sites is profound. For example, the Yakama Tribe, a culture that long pre-dates the United States, has been centered on the health of the Columbia River and its natural resources for thousands of years. The continued survival of that culture depends upon the vitality of the Columbia River and thus, on decisions made in this case. For the Yakamas, it is simply anathema to consider as an appropriate solution the abandonment of HLW that will eventually leak into the river.⁶⁸

A. Statutory Definition of HLW

The NWPA was passed in 1982 when Congress recognized the growing need to identify a safe means of disposing of HLW derived from reprocessing fuel and target materials irradiated in military production reactors, research and test reactors and commercial power reactors.⁶⁹

In passing the NWPA, Congress limited its consideration of long-term disposal of HLW to a deep geologic repository. The reasoning is self-evident in the legislative history of the NWPA:

The Committee strongly recommends that the focus of the Federal waste management program remain, as it is today, on the development of facilities for disposal of high-level nuclear waste *which do not rely on human monitoring and maintenance to keep the waste from entering the biosphere. As has been emphasized and reiterated over the lifetime of the federal nuclear program, high level wastes should not be a burden on future generations.*⁷⁰

With the principle of unmonitored long-term isolation in mind, Congress established elaborate mechanisms for identifying and siting repositories, research and development, environmental review, and extensive and involved public and inter-governmental processes to obtain final agreement on siting a HLW repository.⁷¹

The process of identifying and evaluating a repository site involves oversight and implementation by three federal agencies: the Nuclear Regulatory Commission (“NRC”), DOE, and the Environmental Protection Agency (“EPA”), as well as requirements for the President to nominate (originally) three sites and to receive congressional endorsement of one of the sites, which the affected state or Indian tribe could challenge. These myriad procedures and evaluations were put in place because of the magnitude of the risks involved, because of Congress’s interest in ensuring that repositories are safe, and because of the substantial public concern about HLW. *See* House Report at 26-31.

In setting out the disposal requirements of high-level radioactive waste, Congress defined the term. “High-level radioactive waste” is:

⁶⁸ See the Comments submitted this day by the Confederated Tribes and Bands of the Yakama Nation.

⁶⁹ House Report at 26-30; *see also* *Natural Resources Defense Council, Inc. v. Environmental Protection Agency*, 824 F.2d 1258, 1262 (1st Cir. 1987).

⁷⁰ House Report at 29 (emphasis added).

⁷¹ *See* NWPA, 42 U.S.C. §§ 10101 *et seq.*

- (A) *the highly radioactive material resulting from the reprocessing of spent nuclear fuel*, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and
- (B) other highly radioactive material that the [Nuclear Regulatory] Commission, consistent with existing law, determines by rule requires permanent isolation.⁷²

Thus, the NWPAA defines HLW by its source – “material resulting from reprocessing.” DOE defines reprocessing as a process for extracting uranium, plutonium, and other radionuclides from dissolved spent nuclear fuel and irradiated targets. The fission products that are left behind are HLW.⁷³ Reprocessing waste is categorically treated as HLW because it is necessarily both “intensely radioactive and long-lived.”⁷⁴

Congress has authorized that the HLW defined under the NWPAA be disposed of only at a geologic repository and that Yucca Mountain in Nevada be the site considered.⁷⁵

B. Storage and Management of HLW

NRDC et al and DOE agree that 100 million gallons of HLW generated by DOE’s nuclear fuel reprocessing is stored at DOE sites in more than 200 steel tanks buried just below the surface of the earth.⁷⁶ These tanks range in size from a few hundred thousand gallons to more than 1 million gallons.⁷⁷ This waste is primarily divided among three main production sites: Hanford, which has 177 tanks storing more than 56 million gallons of HLW⁷⁸; SRS, which has 51 tanks storing approximately 40 million gallons of HLW; and INEEL, which has 11 tanks storing about 900,000 gallons of HLW.

Dozens of these storage tanks have leaked HLW.⁷⁹ Radioactive elements that have leaked out include cesium, strontium, tritium, technetium, iodine, plutonium and uranium. Some of these

⁷² 42 U.S.C. 10101(12) (emphasis and text in brackets added). “Fission products” are radioactive isotopes (e.g., strontium-90, cesium-137, technetium-99) that are produced when uranium or other fissionable atoms split (“fission”) in nuclear reactions. (b)(6) Decl. at 5-6; see also Complaint, Attachment E, *Hanford Tank Waste Remediation System, Final Environmental Impact Statement* (“EIS”) (August 1996) where DOE acknowledges that HLW solids in the tanks include slurry, sludges, and salt cake.

⁷³ U.S. Department of Energy Office of Environmental Management, Linking Legacies: Connecting the Cold War Nuclear Weapons Production Processes to Their Environmental Consequences (January 1997), at 221.

⁷⁴ See 52 Fed. Reg. 5994.

⁷⁵ 42 U.S.C. §§ 10107(b)(2) and 10172. The legal and technical adequacy of the Yucca Mountain facility is irrelevant to the subject of this dispute.

⁷⁶ See Attachment E, District Court Complaint at 2, ¶2; DOE Answer at 2, ¶2.

⁷⁷ Complaint, Attachment E, *DOE Final Waste Management Programmatic EIS*, Vol. 1, 9-3 to 9-7 (1997).

⁷⁸ There is more HLW at Hanford than in the tanks. HLW waste was dumped or spilled to the soils throughout Hanford’s operational history, including an estimated 120 million gallons dumped to the B/C Cribs at Hanford, and up to 1.5 million gallons that inadvertently leaked out of existing tanks. As previously cited, Hanford generated 525 million gallons of HLW.

⁷⁹ GAO/RCED-98080, “Nuclear Waste - Understanding of Waste Migration at Hanford is Inadequate for Key Decisions,” at 5, March 1998 (available at <http://www.gao.gov>). The 1998 GAO report notes that these amounts do not include recent estimates using a new approach that found that radioactive leaks could be much higher on some tanks, nor does it include the radioactive wastes lost due to surface spills and leaks in pipelines. *Id.* at n.2.

materials remain radioactive for hundreds of thousands of years. Non-radioactive but hazardous materials that have leaked include nitrates and metals such as chromium.

If the incidental waste exemption of Order 435.1 is implemented at these 16 tanks at Area C, thousands of gallons of HLW will be abandoned.⁸⁰ Indeed, the concentration of radioactivity in the abandoned sludges and sediments can be as high, or even higher, than the concentration of radioactivity in the materials removed from the tank after DOE implements the incidental waste exemption of Order 435.1 and cover the remaining waste and tanks in concrete.⁸¹

For all the reasons described above and in the background and historical section, DOE's Draft WIR Determination would violate current law in several ways:

1. The Draft WIR Determination would, finalized, let DOE exempt from the definition of "high-level radioactive waste" wastes that are now, and always have been, commonly understood to be "high-level radioactive waste."
2. The Draft WIR Determination would give DOE, rather than the Nuclear Regulatory Commission, the power to decide ("subject to the whim of DOE," as the district court said) what constitutes "high-level radioactive waste," and therefore how it will be managed.
3. The Draft WIR Determination replaces the NWPA's "fission products in sufficient concentrations" standard, which is based on risk to the public health and safety, with a "practical" standard, which is based on the Department's judgment on whether it is (in the district court's words) "too expensive or too difficult."
4. The Draft WIR Determination exempts the many thousands of gallons (62,900) and about 500,000 curies of high-level radioactive waste in Hanford's Area C from regulation as HLW by the Nuclear Regulatory Commission, repealing—as applied to these wastes—a statutory requirement that has existed since 1974.
5. The Draft WIR Determination exempts the remaining HLW in these 16 tanks from disposal in a deep geologic repository under the Nuclear Waste Policy Act.

DOE will violate the NWPA and the APA if it finalizes the Draft WIR Determination, which specifically allows it to reclassify HLW and call it "incidental waste" or "waste incidental to reprocessing" ("WIR") and manage it as low-level radioactive waste.⁸² This renaming process would allow DOE to permanently leave HLW—which will eventually disperse into the

⁸⁰ See Kaltofen Decl., at 11.

⁸¹ See Complaint, Attachment E, at 8 (NRC Review of SRS HLW Tank Closure Methodology, June 30, 2000), where the NRC states that key radionuclides cannot be removed preferentially from the bottom of the tanks.

⁸² See "The purpose of this Draft WIR Evaluation is to assess and document whether the residuals, waste tanks, and ancillary structures at closure of WMA C meet DOE M 435.1-1 criteria (which are discussed in Section 3 and addressed in detail in Sections 4, 5, and 6, respectively), and may be determined to be incidental to reprocessing, not HLW, and managed as LLW." Draft WIR Determination at 1-5 (citations omitted).

environment—in shallow land burial in at least 16 storage tanks located at a DOE nuclear weapons site, the Hanford Reservation in Washington near the Columbia River.

As was true in 2003 and 2004 when many of these same entities were before the Federal District Court in Idaho, there are no material factual issues genuinely in dispute. The following things are true and require DOE to withdraw this Draft WIR Determination. First, Congress plainly stated that HLW is the highly radioactive material resulting from reprocessing spent nuclear fuel and the rest of the definition of HLW under 42 U.S.C. § 10101(12)(A) is included for explanatory purposes that in no way excuse or allow for DOE's actions, or DOE would have prevailed on the merits nearly 15 years ago, which they did not. Second, Section 3116 of the 2005 NDAA, which does allow for DOE to reclassify waste at SRS and INEL provides the Department no recourse, which it acknowledges. Third, Congress clearly intended that HLW be disposed of in a geologic repository pursuant to the NWPA without the need for human monitoring and maintenance.⁸³ Fourth, the waste in DOE's tanks – in Area C and the rest of the Hanford tanks, is HLW and thus, subject to the NWPA. Thus, the Draft WIR Determination would allow DOE to arbitrarily reclassify the HLW in the tanks so that the agency may avoid compliance with the NWPA and is, therefore, fundamentally inconsistent with the plain language of the NWPA and its overriding purpose of ensuring that HLW does not “adversely affect the public health and safety and the environment for this or future generations.” 42 U.S.C. §10131(a)(7).

It is also clear that even if Congress had not spoken clearly to the issue – which it did – the Draft WIR Determination is not based on a permissible construction of the NWPA. Last, DOE should be aware that the Draft WIR Determination violates the APA by: (1) defying the clear congressional directive of both the NWPA and Section 3116; (2) is based on an administrative record that is, along with its legal infirmities, chock full of holes in its technical presentation in trying to suggest that HLW in the 16 tanks can be treated as LLW; and (3) reversing longstanding agency policy without reasoned explanation.

Simply, with this Draft WIR Determination, as it tried in 2004 and where it failed in gaining in this authority in Washington, DOE has awarded itself the unilateral authority to reclassify the HLW in the tanks as incidental waste and thus abandon that waste in place rather than in a geologic repository. Ostensibly no longer HLW, this waste is not subject to the requirements of the NWPA and may be disposed of under the substantially less strict requirements applicable to low-level waste. Rather than dispose of HLW in a geologic repository, DOE will abandon literally thousands of gallons of highly radioactive sediments and sludges in the bottom of the underground tanks, cover the waste in place with concrete, and hope the tanks will not cause an environmental and public health catastrophe. The waste remaining in the tanks – not just in C Farms at Hanford but in later WIR Determinations that are sure to follow – will have comparable – and potentially much higher – concentrations of radioactive elements than the HLW removed from the tanks for disposal in a geologic repository. The ripeness concerns that halted the litigation in the 9th Circuit are addressed by this action.

⁸³ 42 U.S.C. § 10101(9) (emphasis added); *see also* the discussion above of the decades of scientific agreement on the need to dispose of reprocessing waste in a geologic repository.

Fundamentally, DOE's proposed action here creates another national sacrifice zone for HLW. Disposal of tens of thousands of gallons of HLW in Washington will (1) result in a potentially catastrophic dispersal of radioactivity into the environment and (2) at a minimum, require significant land-use restrictions, maintenance, and monitoring in perpetuity. Both of these results are contrary to law.

For NRDC, HC, CR, and the rest of the affected public, the impact of abandoning HLW is profound. For example, the Yakama Tribe, a culture that long pre-dates the United States, has been centered on the health of the Columbia River and its natural resources for thousands of years. The continued survival of that culture depends upon the vitality of the Columbia River and thus, on decisions made here. For the Yakamas, it is simply anathema to consider as an appropriate solution the abandonment of HLW that will eventually leak into the river.

Thus, DOE should withdraw the Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site, Washington.

C. The Legal Standards DOE's Draft WIR Determination Ignores

This is, as an initial matter, one of statutory interpretation. It is axiomatic that "[t]he task of resolving [a] dispute over the meaning of [a statute] begins where all such inquiries must begin: with the language of the statute itself." *United States v. Ron Pair Enters, Inc.*, 489 U.S. 235, 241 (1989). Where statutory language inquiry reveals plain language, "the sole function of the courts is to enforce it according to its terms." *Id.* (quoting *Caminetti v. United States*, 242 U.S. 470, 485 (1917)). A "[court] need not defer [to an agency if it] can ascertain congressional intent using the traditional tools of statutory construction." *Ortiz v. Meissner*, 179 F.3d 718, 723 (9th Cir. 1999) (citing *INS v. Cardoza-Fonseca*, 480 U.S. 421, 446 (1987)); see also *California Energy Comm'n v. Bonneville Power Admin.*, 909 F.2d 1298, 1306 (9th Cir. 1990). The factual elements of this matter are technical in nature, but there is no genuine dispute about those elements.

DOE has generated approximately hundreds of millions of gallons of HLW by reprocessing spent nuclear fuel, with some 100 million gallons of extraordinarily dangerous HLW stored in tanks in Idaho, South Carolina, and Washington. This precise set of comments addresses 16 tanks at Area C in Washington. Congress addressed this situation directly.

In response to the massive amounts of HLW at defense facilities (and spent nuclear fuel at commercial facilities), Congress directed that HLW (and commercial spent fuel) be disposed of in a deep, geologic repository, constructed and regulated pursuant to the NWPA. The definition of HLW under the NWPA is plain ("the highly radioactive material resulting from the reprocessing of spent nuclear fuel"), and even contains two illustrations of HLW ("liquid waste produced directly in reprocessing" and "solid material derived from such waste with fission products in sufficient concentration"). In short, the waste in the tanks is defense-generated HLW, *i.e.*, highly radioactive material resulting from the reprocessing of spent nuclear fuel, and is thus subject to the NWPA. The Draft WIR Determination allows DOEs to arbitrarily reclassify the HLW in those 16 tanks so that the agency may avoid compliance with the NWPA and abandon

the waste in place under less protective standards. Under well-established tenets of statutory interpretation such action cannot stand.

Even though a plain reading of the NWPA should end the matter, the Draft WIR Determination violates the APA by: (1) defying the clear congressional directive of the NWPA; (2) being based on an Administrative Record that is without support DOE's actions; and (3) reversing longstanding agency policy without reasoned explanation.

D. The Draft WIR Determination Violates the Plain Language Of The Nuclear Waste Policy Act

The two-step framework articulated in *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842-843 (1984), requires that courts are “the final authority on issues of statutory construction and will reject administrative constructions which are contrary to clear congressional intent.”⁸⁴ “First, always, is the question whether Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter”⁸⁵ Second, if there is some question as to Congress's intent, the agency's interpretation must be “based on a permissible construction of the statute.”⁸⁶

The legality of the Draft WIR Determination is a plain language matter—*Chevron* Step 1. Congress directly spoke to the issue before the Court and that should be the end of the matter.

1. Congress Plainly States That HLW Is The Highly Radioactive Material Resulting From The Reprocessing Of Spent Nuclear Fuel

Congress is clear. HLW is:

(A) *the highly radioactive material resulting from the reprocessing of spent nuclear fuel*, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the Commission [NRC], consistent with existing law, determines by rule requires permanent isolation.⁸⁷

⁸⁴ *American Rivers v. Federal Energy Regulatory Comm'n*, 201 F.3d 1186, 1194 (9th Cir. 2000) (quoting *Natural Resources Defense Council, Inc. v. United States Dep't of Interior*, 113 F.3d 1121, 1124 (9th Cir. 1997) (citing *Chevron*, 467 U.S. at 843 n.9) (internal quotations omitted)).

⁸⁵ *American Rivers*, 201 F.3d at 1194 (quoting *Chevron*, 467 U.S. at 842-3); accord *Rainson Co. v. Federal Energy Regulatory Comm'n*, 106 F.3d 269, 272 (9th Cir. 1997).

⁸⁶ *Chevron*, 467 U.S. at 843.

⁸⁷ 42 U.S.C. 10101(12) (emphasis added). “Fission products” are radioactive elements, see n. 4. It should also be noted that the AEA has specifically adopted the definitions of “high-level radioactive waste” and “spent nuclear fuel” included in the NWPA. 42 U.S.C. § 2014(dd).

Thus, the NWPA defines HLW by its source—“the highly radioactive material resulting from the reprocessing of spent nuclear fuel”—rather than its hazardous characteristics. Reprocessing waste is categorically treated as HLW and defined by its origin because it is necessarily both “intensely radioactive and long-lived.”⁸⁸ Reprocessing is the act of separating the ingredients in irradiated nuclear reactor fuel and target materials into constituent parts or streams.⁸⁹ The extraordinarily radioactive waste that results from this process is HLW.⁹⁰

The language that follows the word “including” in subsection (A) in the HLW definition is there for illustrative purposes. Under traditional rules of statutory construction, the term “including” is not one of all-embracing definition, but connotes simply an illustrative application of the general principle.⁹¹ Congress’s general principle is that HLW is defined by its source. Therefore, Congress is clear that HLW is all highly radioactive material resulting from the reprocessing of spent nuclear fuel.

In subsection (B) of the HLW definition, Congress provides the NRC with the authority to determine via rulemaking that “other” highly radioactive material (*i.e.*, highly radioactive material that *may not be* the result of the reprocessing of spent nuclear fuel) requires permanent isolation (*i.e.*, should be disposed of in a repository pursuant to the NWPA). Subsection (B) of the HLW definition is irrelevant as DOE is not subjecting this Draft HLW Determination to the regulatory authority of the NRC.

2. Congress Plainly States That HLW Is To Be Disposed Of In A Deep, Geologic Repository Pursuant To The NWPA

The intent of Congress with respect to HLW is plain. HLW from the reprocessing of spent nuclear fuel is to be disposed of in a deep, geologic repository constructed and regulated pursuant to the NWPA.⁹²

Congress defined the term “disposal” in plain language: “[T]he emplacement *in a repository* of HLW, spent nuclear fuel, or other highly radioactive material *with no foreseeable intent of*

⁸⁸ See 52 Fed. Reg. 5994. For purposes of explanation, (b)(6) describes both the nature of reprocessing and the resulting HLW. (b)(6) Decl. at 5-7.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Public Citizen, Inc. v. Lew*, 127 F.Supp.2d 1 (D.D.C. 2000) (citing *Fed. Land Bank v. Bismarck Lumber Co.*, 314 U.S. 95, 100 (1941)). See also, *F.T.C. v. MTK Marketing, Inc.*, 149 F.3d 1036, 1040 (9th Cir. 1998), *cert. denied*, *Frontier Pacific Ins. Co. v. F.T.C.*, 119 S.Ct. 1028 (1999) (“In terms of statutory construction, use of the word ‘includes’ does not connote limitation; in definitive provisions of statutes and other writings, ‘include’ is frequently, if not generally, used as a word of extension or enlargement rather than as one of limitation or enumeration.”); and *U.S. v. Gertz*, 249 F.2d 662, 666 (9th Cir. 1957) (“The word ‘includes’ is generally a term of enlargement and not of limitation, and ‘including’ is not one of all embracing definition, but connotes an illustrative application of the general principle.”) (citations omitted).

⁹² 42 U.S.C. § 10107(b)(2); see also August 2002 Decision at 11 (“Unless the President finds otherwise, defense high-level waste must be disposed of in civilian repositories established by the NWPA.”)

*discovery...*⁹³ In case there is any doubt, the NWPAs legislative history displays Congress's intent that HLW should be as isolated as possible from humans and their natural environment pursuant to the NWPAs. Congress wrote:

The Committee strongly recommends that the focus of the Federal waste management program remain, as it is today, on the development of facilities for disposal of high-level nuclear waste *which do not rely on human monitoring and maintenance to keep the waste from entering the biosphere. As has been emphasized and reiterated over the lifetime of the federal nuclear program, high level wastes should not be a burden on future generations.*⁹⁴

3. The Waste In DOE's Area C Tanks Is HLW That Is Subject To The NWPAs

DOE has long acknowledged that they have generated 100 million gallons of HLW and placed that waste in huge, underground storage tanks at SRS, INEEL, and at the Hanford Nuclear Reservation in Washington. *See* Complaint at 2, ¶2; Answer at 2, ¶2.⁹⁵ At no point until this Draft WIR Determination has DOE suggested the waste in Area C is not HLW. Indeed, DOE spent decades analyzing and managing the HLW in the tanks, as evidenced by publications such as the *SRS High-Level Waste Tank Closure Draft Environmental Impact Statement* (November 2000). *See* Complaint Att. 7, title page and excerpt.⁹⁶ The waste planned for abandonment in the 16 Area C tanks is, by plain statutory definition, and by DOE's long admission and acknowledgement, HLW. The clear intent of Congress should be given effect. *Chevron*, 467 U.S. at 842-3; *accord Rainsong Co.*, 106 F.3d at 272. Thus, DOE's HLW must be disposed of in a deep, geologic repository constructed and regulated pursuant to the NWPAs. 42 U.S.C. § 10107(b)(2); *see also* August 2002 Decision at 11 ("Unless the President finds otherwise, defense high-level waste must be disposed of in civilian repositories established by the NWPAs.").

4. Section 3116 Provides No Exception for the Area C HLW Tanks

There is an exception to the rule that HLW must be disposed of in a repository, but is unavailing in this instance. Section 3116, discussed above, spelled out criteria for the Energy Secretary to determine that the HLW can be reclassified as incidental waste (and thus can be disposed of on-

⁹³ 42 U.S.C. § 10101(9) (emphasis added); *see also* the discussion above of the decades of scientific agreement on the need to dispose of reprocessing waste in a geologic repository.

⁹⁴ House Report at 29 (emphasis added).

⁹⁵ In the Order 435.1 litigation that took place nearly 16 years ago, Plaintiffs wrote in the first sentence of paragraph 2 of their Complaint, "[t]he DOE and its predecessors ... generated approximately 100 million gallons of high-level radioactive waste." Complaint at 2, ¶2. DOE's wrote "DOEs admit the allegations in the first sentence of paragraph 2 except to aver that 'ERDA' was the Energy Research and Development Administration." Answer at 2, ¶2. Also, two Hanford tanks were determined not to contain reprocessing waste. 58 Fed. Reg. 13342.

⁹⁶ DOE still refers to the tanks as the "HLW tanks." A Final Environmental Impact Statement was published decades ago and carries the name *High-Level Waste Tank Closure EIS*. (DOE May 2002).

site and in place) via amendments that provided DOE with authority to reclassify HLW as “waste incidental to reprocessing.” Therefore, under this law, DOE can dispose of this reclassified HLW according to requirements other than those specified by NWPA (*ie.*, the HLW will no longer have to be disposed of in a geologic repository and can be disposed of according to standards and performance objectives applicable to low-level radioactive waste (LLW)).

But the law restricted this activity to South Carolina and Idaho. The law states in pertinent part: “COVERED STATES.—For purposes of this section, the following States are covered States: (1) The State of South Carolina. (2) The State of Idaho.”⁹⁷

Under those criteria, in SC and ID only, DOE may reclassify as “incidental” waste that exceeds the performance objectives for the disposal of low-level radioactive waste, 10 C.F.R. §61.40 (*i.e.*, waste that is not actually low-level waste), so long as it has (1) removed highly radioactive radionuclides “to the maximum extent practical” and (2) has obtained a state issued permit, authority for the issuance of which is conferred on the State outside of Section 3116. At SRS, pursuant to this authority, DOE “determined” that certain HLW in the underground tanks is “incidental” waste.⁹⁸ More generally, provision means that the NWPA means that the Energy Secretary has the powers outlined in Section 3116(a) in Idaho and South Carolina, but not in the rest of the country. As a practical matter, this means that DOE cannot reclassify the HLW that currently rests in the tanks at the Hanford site in Washington and West Valley site in New York.

As NRDC has repeatedly noted, this does not mean that DOE cannot remove waste from the tanks, treat it such that it no longer has fission products in sufficient concentration, and dispose of that waste in a manner other than in a geologic repository. What DOE cannot do in Washington or New York is declare the HLW in the tanks, in Area C or anywhere else at Hanford, as “waste incidental to reprocessing” and abandon it under a layer of grout.⁹⁹

5. The Draft WIR Determination Would Allow DOE To Arbitrarily Reclassify HLW So That The Agency May Avoid Compliance With The NWPA

The Draft WIR Determination flies in the face of this plainly stated Congressional language. According to the Draft WIR Determination, the Area C tanks, filled for decades with HLW produced directly from the reprocessing of spent nuclear fuel, are being redefined as low-level radioactive waste if:

In accordance with DOE O 435.1 and DOE M 435.1-1, DOE may determine (in a WIR Determination) that certain waste is incidental to the reprocessing of SNF, is not HLW, and may be managed as LLW if an evaluation shows that the criteria in DOE M 435.1-1 are met. The criteria in DOE M 435.1-1, Section II.B.(2)(a), are that the wastes:

⁹⁷ Section 3116(d)(1)(2).

⁹⁸ 71 Fed. Reg. 3,838 (Jan. 24, 2006).

⁹⁹ See 271 F.Supp.2d at 1265.

(1) Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and (2) Will be managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, Performance Objectives; and (3) Are to be managed, pursuant to DOE's authority under the Atomic Energy Act of 11 1954, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be incorporated in a solid physical form at a concentration that (1) it is treated to reduce its level of radioactivity to the extent technically and economically practicable; (2) it is disposed in conformance with the safety requirements for low-level waste, 10 C.F.R. Part 61, Subpart C; and (3) it is solidified and does not exceed the radioactivity levels for the most radioactive category of low-level waste, referred to as the "Class C standard," set out in 10 C.F.R. § 61.55, or meets alternative requirements DOE may set. does not exceed the applicable concentration limits for Class C low-level waste as set out 1 in 10 CFR 61.55, Waste Classification[.]¹⁰⁰

This proposed action runs flat into the brick wall of the definition of HLW and the clear explication of its terms by the Federal District Court in Idaho, a substantive decision that was far from explicitly reversed by the 9th Circuit Court's ripeness decision. It is worth reminding DOE of that decision at length. First, the Court noted the clear purpose of the WIR process. The Court wrote that "[t]he DOE issued Order 435.1 to govern reclassification of that waste. That Order, according to DOE, sets forth three criteria, "each of which must be met," to reclassify HLW as low-level waste." The same situation is at issue in today's subject, the Area C Draft WIR Determination.

The Court then went to explain one of the deep legal infirmities in DOE's actions precisely relevant to the Area C Draft WIR Determination. The Court held,

This rigorous process, DOE implies, will protect against arbitrary action. However, one of those "three criteria" is not a benchmark that could be "met." It requires that HLW reclassified as low-level waste must meet "safety requirements comparable to the performance objectives set out in 10 C.P.R. 61, Subpart C" In other words, DOE will treat waste that it deems to be low-level waste as low-level waste. This is not a "third criteria" that must be "met" but is simply a statement of intent or fact.¹⁰¹

The same situation is presented today with the Area C WIR Determination. DOE will treat waste that it deems to be low-level waste as low-level waste. And while DOE tries to defensively gird the process with an inadequate Performance Assessment, the weaknesses of which are identified at length in the State of Washington Comments, and in our own technical evaluation (Kaltofen Decl., *passim*) there is no hiding the fact that there is no meaningful criteria in play here. Rather,

¹⁰⁰ Draft WIR Determination at 1-3, 1-4 (citations omitted).

¹⁰¹ 271 F.Supp.2d at 1265.

DOE has simply made a statement of intent that it will treat HLW as LLW and dispose of it in a way that is plainly contrary to law.

More than a decade ago the Idaho Federal District Court left no room for DOE to wiggle out from under the clear directions of Congress, and its same cautions are precisely relevant to the Area C Draft WIR Determination. The Court continued explaining Order 435.1, piece by piece, and further held:

There are really only two criteria that must be met. The first is that key radionuclides are removed to the extent technically and economically practical. This means that if DOE determines that it is too expensive or too difficult to treat HLW, DOE is free to reclassify it as incidental waste. The second is that HLW incorporated into a solid form must either meet the concentration levels for Class C low-level waste or meet such alternative requirements for waste classification and characterization as DOE may authorize. These “alternative requirements, are not defined, and thus are subject to the whim of DOE. While DOE has the authority to “fill any gap left ... by Congress,” *Chevron*, 467 U.S. at 843, it does not have the authority “to adopt a policy that directly conflicts with its governing statute.” *Maislin Indus., Inc. v. Primary Steel, Inc.*, 497 U.S. 116, 134-35 (1990).¹⁰²

Thus, the Court found that “DOE's Order 435.1 directly conflicts with NWPA's definition of HLW. NWPA's definition pays no heed to technical or economic constraints in waste treatment. Moreover, NWPA does not delegate to DOE the authority to establish alternative requirements” for solid waste. Because Congress has spoken clearly on that subject, “that is the end of the matter,” *Chevron*, 467 U.S. at 842, leaving no room for “alternative requirements.” Thus, DOE's Order 435.1 must be declared invalid under *Chevron*.¹⁰³ The Draft WIR Determination, just as the District Court found with the original Order 435.1, runs directly counter to Congress's clear directions that HLW be disposed of in a repository. Moreover, the ripeness concerns that drove the 9th Circuit's procedural reversal are clearly done away with by the explicit terms of the Draft WIR Determination.

6. The Solids and Sludges Abandoned In The Area C Tanks Are HLW And, In Any Event, Contain Fission Materials In Sufficient Concentration

Assuming *arguendo* that the language of the NWPA is unclear—which it is not—the second illustrative clause in the definition of HLW (“any solid material derived from such liquid waste that contains fission products in sufficient concentrations” provides no justification for the incidental waste exemption. An implication of this clause—that there is solid material derived from liquid reprocessing waste that does not contain fission products in sufficient concentrations

¹⁰² *Id.* at 1265, 1266; DOE attempt to blunt some of the force of this disapproving judicial opinion by suggesting that “[t]his provision in DOE M 435.1 also includes the following language: “or will meet alternative requirements for waste classification and characterization as DOE may authorize.” DOE is not using or relying upon this language in this Draft WIR Evaluation to any degree whatsoever.” Draft WIR Determination at 1-4, n.7. As the entirety of the Idaho decision makes clear, such lack of reliance on the “alternative requirements” clause is unavailing.

¹⁰³ 271 F.Supp.2d at 1266.

to be HLW—has no application to the waste DOEs plan to abandon at the bottom of the HLW tanks.

Any attempt to reclassify the HLW sediments and solids to be abandoned in the tanks as being “derived from” liquid reprocessing waste rather than “the highly radioactive material resulting from the reprocessing of spent nuclear fuel” would be incorrect. At Hanford, for example, DOE’s acknowledged the range of HLW—and that range includes solids as well as liquids (and slurry and sludge).¹⁰⁴ In this context, “derived from” necessarily entails additional treatment of the reprocessing waste to reduce its volume or radioactivity or to convert it into a solid form.¹⁰⁵

And even if the waste was derived solid material—which it is not—it contains fission products in sufficient concentration. The HLW abandoned in the tanks is at least as radioactive (and perhaps more so) than the HLW removed from the tanks for disposal in a geologic repository.¹⁰⁶ Nor can DOE assume that there was up to 100-fold “dilution” of the waste by the added grout for the purposes of regulatory compliance.¹⁰⁷ Thus, DOE’s interpretation of the NWPA is entitled to no deference since the incidental waste exemption is neither reasonable nor consistent with the statutory purpose of isolating HLW.¹⁰⁸

DOE is, once again, via the Draft WIR Determination, ignoring the definition of HLW of the NWPA to serve their purposes. First and most important, the incidental waste exemption runs directly counter to clear Congressional direction that HLW be disposed of in a deep, geologic repository. The intent of Congress is clear and that should be the end of the matter. Second, assuming *arguendo*, even if Congress was silent or ambiguous on the subject of HLW disposal, DOE’s action here today runs afoul of the NWPA by ignoring the basic inconsistency of treating as low-level waste the reprocessing waste that is at least as radioactive as waste removed for geologic disposal.

Such actions cannot stand. Exemptions from “. . . humanitarian and remedial legislation [must] . . . be narrowly construed, giving due regard to the plain meaning of statutory language and the intent of Congress. To extend an exemption to other than those *plainly and unmistakably* within its terms and spirit is to abuse the interpretative process.”¹⁰⁹ The NWPA’s authority over the requirements for environmentally sound and publicly acceptable disposal of radioactive waste

¹⁰⁴ See Tank Waste Remediation System, Hanford Site, Final Environmental Impact Statement, Volume Two, Appendix A, at A-12. (August 1996).

¹⁰⁵ See e.g., 52 Fed. Reg. 5993-5998.

¹⁰⁶ See Complaint, Attachment E, at 8 (NRC Review of SRS HLW Tank Closure Methodology, June 30, 2000), where the NRC states that key radionuclides cannot be removed preferentially from the bottom of the tanks.

¹⁰⁷ See (b)(6) Decl. at 9. Even when assuming a 100-fold dilution or averaging of the radioactivity of the abandoned waste with the near zero radioactivity of the grout at the SRS tanks, 37 of the 51 tanks would still be more radioactive than the low-level waste standards of 10 C.F.R. § 61.55. It should also be noted that this mathematical averaging takes place even if there is no significant physical mixing of the grout and HLW (note that if DOEs could mix the solids and grout, they could readily remove the HLW). See Complaint Att. 19, Defense Nuclear Facilities Safety Board (“DNFSB”), SRS Report for Week Ending March 14, 1997 (1997) where the DNFSB expressed doubt about the effective mixing of the residual HLW sludge with the grout.

¹⁰⁸ *Reilly*, 976 F.2d at 40.

¹⁰⁹ *A.H. Phillips, Inc. v. Walling*, 324 U.S. 490, 493 (1945)) (emphasis added).

make it just such a “humanitarian and remedial” statute; thus, exemptions to it must be “narrowly construed.”¹¹⁰

This Area C Draft WIR Determination at Hanford, certainly the first of many, creates a broad, ill-defined loophole under the NWPA that fatally undermines the purpose and intent of Congress to ensure that the highly radioactive material resulting from the reprocessing of spent nuclear fuel is disposed of in a manner protective of the environment and public health.

7. The Incidental Waste Exemption of Order 435.1 Violates the APA

Also relevant and fully explained before we close, this Draft WIR Determination fails under the APA as well. Under the APA, a regulation must be struck down if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”¹¹¹ First, courts must “. . . reject constructions of a statute that are inconsistent with the statutes or that frustrate the policy Congress sought to implement.”¹¹² As discussed above, the incidental waste exemption is clearly inconsistent with the NWPA and would frustrate the intent of Congress. Second, it is well-settled that an agency’s decision must be supported by the administrative record, and Order 435.1’s administrative record is devoid of support for the incidental waste exemption.¹¹³ And finally, an agency may not shift its position without supplying a reasoned explanation for doing so.¹¹⁴ For decades, DOE has managed the reprocessing waste in the tanks at Hanford as HLW, and now grant themselves the authority to frustrate the intent of Congress without support from the administrative record and a rational explanation. For these reasons, Order 435.1’s incidental waste exemption is in violation of the APA.

To the extent that DOE has attempted to remedy its administrative record in contrast to its attempt to reclassify HLW in 2003 and 2004, it has failed. While this time it has put forward some minimal waste tank radiological and chemical inventory analyses following bulk waste removal; and modeling ground water transport of abandoned waste that is fraught with holes and weak assumptions,¹¹⁵ and this time has at least suggested LLW performance objectives for the post-closure tanks; it still provides no technical explanation of how the waste to be abandoned in the tank is no longer HLW. The studies it puts forward of abandoning the equivalent of several tons of spent reactor fuel buried on the banks of the Columbia River are unavailing and the administrative record provides no foundation for a decision that will last for a nearly endless expanse of time. The Draft WIR Determination is not supported by law or fact in the administrative record and is, therefore, arbitrary and capricious and in violation of the APA.¹¹⁶

¹¹⁰ *Id.*

¹¹¹ 5 U.S.C. § 706(2)(A). The Draft WIR Determination is also impermissible and contrary to the APA for these reasons.

¹¹² *Bonneville Power Admin.*, 909 F.2d at 1306.

¹¹³ *Sierra Club v. Dombeck*, 161 F.Supp.2d 1052, 1070 (D.Ariz. 2001), citing *Motor Vehicle Mfgs. Ass’n v. State Farm*, 463 U.S. 29, 43 (*State Farm*).

¹¹⁴ *National Coalition Against the Misuse of Pesticides v. Thomas*, 809 F.2d 875, 883 (D.C. Cir. 1987); see also *State Farm*, 463 U.S. at 57.

¹¹⁵ See Kaltofen Decl., *passim*.

¹¹⁶ *State Farm*, 463 U.S. at 43.

8. The Draft WIR Determination Reverses Nearly A Half Century Of Waste Designation at Hanford

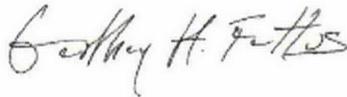
It is a well-settled principle that an agency may not shift its position without supplying a reasoned explanation for doing so.¹¹⁷ Since just after the Manhattan Project, the reprocessing waste disposed of in the tanks in Washington has been understood to be HLW. Indeed, DOE have spent decades analyzing and managing the HLW in the tanks, as evidenced by publications such as the *SRS High-Level Waste Tank Closure Draft Environmental Impact Statement* (November 2000).¹¹⁸ And in the early 2000s, when the first iteration of this contentious dispute was fought, Congress explicitly passed on giving to DOE the power of reclassification of Hanford's HLW.

Literally thousands of documents have been developed and perhaps millions of pages have been written about how to manage and dispose of Hanford HLW tanks. Now, for the sake of expediency and without technical or legal support, DOE has issued this Draft WIR Determination in hopes of defining away their most difficult cleanup problem. No bright line standards, no intelligible criteria whatsoever limit DOE's discretion to reclassify what has been, until now, universally accepted as HLW destined for a geologic repository. The failure to provide any legally adequate explanation for this reversal of position is arbitrary and capricious and in violation of the law.¹¹⁹

VI. Conclusion: The Draft WIR Determination should be Withdrawn

For the reasons articulated above, DOE should withdraw the Draft Determination and commence working with the immediately affected States of Washington and Oregon, the Confederated Yakama Tribes, and interested members of the public on a cleanup trajectory for the high-level radioactive wastes (HLW) in the more than 177 tanks at the Hanford Nuclear Reservation that is both scientifically defensible and publicly accepted.

Sincerely,

	
<hr/> <p>Geoffrey H. Fettus Senior Attorney Natural Resources Defense Council</p>	<hr/> <p>Tom Carpenter Executive Director Hanford Challenge</p>

¹¹⁷ *National Coalition Against the Misuse of Pesticides v. Thomas*, 809 F.2d 875, 883 (D.C. Cir. 1987); see also *State Farm*, 463 U.S. at 57.

¹¹⁸ See *Tank Waste Remediation System, Hanford Site, Final Environmental Impact Statement* (August 1996).

¹¹⁹ *State Farm*, 463 U.S. at 57.

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Attachment A

Comments on Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site

This response is produced on behalf of Hanford Challenge and the Natural Resources Defense Council (NRDC) to provide a technical analysis of the Department of Energy's plans to reclassify certain amounts of high-level radioactive waste (HLW) in steel tanks under a layer of grout, adjacent to the Columbia River in the State of Washington. The author's time is being compensated at a public interest rate. This response closes with the author's credentials.

Part I. Introduction

The U.S. Department of Energy (DOE) has issued a proposal to reclassify High-Level Nuclear Waste (HLW) remaining in the bottom of Hanford's Waste Management Area C Farm tanks (WMA C) to be considered "low-level" waste. This report is a response to the DOE's proposal as described and reviewed in:

US DOE, "Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site" and "Performance Assessment of Waste Management Area C, Hanford Site, Washington RPP-ENV-58782"

WA Ecology (2017) State of Washington Department of Ecology Review and Comments of Appendix 1 Performance Assessment for Waste Management Area C (WMA C) Documents

OR DOE, Oct. 4, 2018 Comments to US DOE Office of River Protection

Yakama Nation Environmental Restoration And Waste Management Program Fact Sheet Draft Waste Incidental To Reprocessing Evaluation

This introduction addresses the regulatory question, "Yes or no, is residual nuclear waste left in Hanford tanks still High-Level Waste?" There is also an engineering question, "Must High-Level Waste be abandoned in shallow burial?" A third question, "Is this a good idea?" is based on the science of nuclear waste disposal and is addressed in Part 2.

This response is not written as a lawyer's critique of the legality of DOE's proposal. The law precludes DOE from reclassifying Waste Incidental to Reprocessing (WIR) as

Attachment A

anything other than HLW. This response is written entirely from an engineer's perspective. This report explains the science behind why HLW is so uniquely dangerous, and why generations of physicists, engineers and administrators have regulated it in the manner they have.

HLW is a dangerous mix of radioisotopes and chemicals left over from Cold War-era atomic bomb construction. At Hanford 525 million gallons of high-level nuclear waste was created between 1943 and 1989. The waste includes at least 56 million gallons of highly-radioactive waste from the processing of spent nuclear reactor core materials currently stored in aging underground steel tanks. In contrast, Low-level waste contains materials such as contaminants removed from laundered work uniforms or disposable protective items like gloves and booties. DOE proposes to reclassify HLW as WIR, in effect, treat HLW as if it were LLW.

It is a universal, long-held scientific judgment that HLW must be disposed of in a deep geologic repository to protect human health and the environment. HLW is produced in the reprocessing of spent nuclear fuel (defined as unprocessed material withdrawn from a nuclear reactor after irradiation). Historically reprocessing activities have occurred in the United States in a number of locations largely for the purposes of nuclear weapons production and reactor fuel management.

The specific radiological characteristics of HLW produce hazards associated with both acute and chronic exposure to ionizing radiation. Currently, large volumes of HLW are found in interim storage at the Department of Energy's ("DOE's") Hanford Reservation, Savannah River Site ("SRS") and the Idaho National Engineering and Environmental Laboratory ("INEEL"), awaiting ultimate geologic disposal at a site that has not been determined. At issue in this DOE proposal is the fraction of HLW currently in interim storage in certain Hanford tanks that the DOE will seek to (contrary to the 1982 Nuclear Waste Policy Act) dispose of outside of a deep geologic repository.

An unstated issue that has even greater implications is how much HLW DOE will eventually propose to reclassify and leave at the Hanford site, whether left over in tanks or residing in soils and groundwater resources from leaks and deliberate dumping of HLW to the soils.

In a 1957 report prepared at the request of the U.S. Atomic Energy Commission, the National Research Council of the U.S. National Academies "endorsed the concept of geological disposal—placing high-level waste (HLW) in a carefully selected deep underground formation, where it would remain isolated from human beings and the

Attachment A

environment long enough for the radioactivity to decay to near natural background levels” (Nat. Res. Coun. 2001).

In 1990 the National Research Council reaffirmed this position when it stated, “There is strong worldwide consensus that the best, safest long-term option for dealing with HLW is geological isolation” (Nat. Res. Coun. 1990). This position was also adopted by the U.S. Congress and embodied in the Nuclear Waste Policy Act of 1982.

In 1995, the Oak Ridge National Laboratory for DOE compiled estimates of radioactivity of the high-level wastes in storage at Hanford. The estimates are in units of MCi (Millions of Curies, a.k.a. equivalent to millions of grams of radium-226). These amounts have been reduced, in some cases by 15 to 20 percent due to radioactive decay, and by removals since 1995.

<i>Tank Wastes</i>		<i>Capsule Wastes</i>	
<u>Liquid</u>	<u>Solid</u>	<u>Strontium</u>	<u>Cesium</u>
68.5	123.3	44.9	101.2

[DOE, *Integrated Data Base Report-1995: U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, DOE/RW-0006, Rev. 12, December 1996, p. 52.]

By comparison the annual limits on intake by ingestion for a radiation worker to ensure the workers dose does not exceed 5 rems per year is 0.0004 Ci of strontium-90 or 0.0001 curies (“Ci”) of cesium-137. [EPA, *Limiting Values of Radionuclides Intake and Air Concentration and Dose Conversion Factors For Inhalation, Submersion, And Ingestion*, EPA-520/1-88-020, September 1988, pp. 49 and 71] Thus, the wastes at Hanford contain millions of “annual limits on intake” for nuclear workers. In its concentrated form the HLW in the tanks is chemically toxic in addition to being intensely radiotoxic. This is why Congress has required that all high-level radioactive waste be isolated in one or more deep geological repositories.

The HLW sits underground in decaying steel tanks, still physically and radioactively hot. Hanford's high-level radioactive waste is contained in 177 underground waste tanks. More than a third have leaked, and nearly all are beyond their design-lives. 28 of the tanks are double-shell tanks and 149 are single-shell tanks. These tanks are grouped in “farms” scattered around the Hanford Nuclear Reservation in eastern Washington.

The tanks hold waste created during the process of extracting plutonium from spent fuel, and contain both radioactive and chemical waste. It has also separated out into sludge, liquid, solids, and vapors. Its complexity, along with the fact that it is highly radioactive,

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caustic, and toxic, makes it particularly difficult and dangerous to treat. The only plan for dealing with Hanford's tank waste is to immobilize the waste in glass through a process called vitrification. The Waste Treatment Plant (WTP) is being built for that purpose.

At least sixty-nine tanks have been known to leak in the past, one (recently emptied) double-shell tank had failed and was leaking waste into the space between the two shells of the tank. The leaked waste is a huge cleanup challenge. The tanks are able to accommodate between 55,000 to 1,200,000 gallons of waste and are buried about 7-8ft. under the soil. The majority of the leaked waste is under the tanks in the vadose zone, the area between the surface of the soil and the groundwater, and some of the waste has reached the groundwater. In addition to the waste *inside* the tanks, waste was also deliberately discharged to the soil. An estimated 120 million gallons of waste from the Hanford tanks were directly ejected into the soil in this manner.

Some of the HLW has already escaped from the tanks, and is in the soil underneath the tanks but above the buried groundwater table (the vadose zone). About 1 to 1.5 million gallons of HLW have leaked into soil or groundwater. Most of Hanford's contaminated groundwater ultimately will empty into the Columbia River. The radioactive contamination in groundwater headed towards the river was first detected in 1993. This contamination includes fast-moving technetium-99, an isotope with a half-life of about 211,000 years. High-level nuclear waste was predicted to first reach the Columbia River by 2017 (reference: Science News, Vol. 152, No. 25/26, Dec. 20-27, 1997, p. 410).

If nothing is done about it, these tanks will eventually all leak, resulting in potentially catastrophic releases of radioisotopes into the environment. Sixty-nine tanks have already leaked. To prevent further releases, the HLW must be removed, stabilized by making it into a glass-like material, and then stored in an inaccessible underground geologic repository. Once in the repository, the HLW will have the best chance to be isolated from human activities for hundreds of thousands of years.

The Draft WIR Determination for Area C Tanks

The proposal by the DOE suggests leaving some of the HLW right where it is, at the bottom of the decaying tanks at Hanford. The proposal is called, "Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site" (also called the draft WIR, see DOE Order 435.1). In the WIR proposal the DOE states, "Following removal of the waste, the tanks, a relatively small amount of remaining waste (residual waste or residuals), and certain ancillary structures (a catch tank, a process vault with smaller tanks, and diversion boxes) will be filled with grout to stabilize them and immobilize the waste. Thereafter, the WMA C tanks, residual waste, and ancillary structures (including integral equipment and buried pipelines)

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will be covered with an engineered surface barrier and closed in place” (US DOE 2018, p. 1-1).

This Draft WIR Evaluation represents DOE’s first step toward a USDOE proposal to permanently leave the estimated 4% (by volume) of waste remaining overall in the 16 single-shell tanks in Hanford’s C Tank Farm, with a cement grout added to the tanks.

DOE proposes leaving 62,900 gallons (about 500,000 Curies) of High-level radioactive waste in the sixteen C-Farm tanks at Hanford. C-Farm is one of eighteen such waste tank farms on the Hanford site. WMA-C received wastes created by the reprocessing of spent nuclear fuels, including Plutonium-Uranium Extraction Plant reactor fuel wastes and spent nuclear fuel fission wastes including strontium and cesium burned-fuel fission products (DOE 2018 p. 48 to 51). According to the US Nuclear Regulatory Commission (NRC, references: <https://www.nrc.gov/waste/low-level-waste.html> and <https://www.nrc.gov/waste/high-level-waste.html>),

“High-level radioactive wastes are the highly radioactive materials produced as a byproduct of the reactions that occur inside nuclear reactors. High-level wastes take one of two forms:

- Spent (*used*) reactor fuel when it is accepted for disposal
- Waste materials remaining after spent fuel is reprocessed”

“Low-level waste includes items that have become contaminated with radioactive material or have become radioactive through exposure to neutron radiation. This waste typically consists of contaminated protective shoe covers and clothing, wiping rags, mops, filters, reactor water treatment residues, equipments and tools, luminous dials, medical tubes, swabs, injection needles, syringes, and laboratory animal carcasses and tissues.”

“Because of their highly radioactive fission products, high-level waste and spent fuel must be handled and stored with care. Since the only way radioactive waste finally becomes harmless is through decay, which for high-level wastes can take hundreds of thousands of years, the wastes must be stored and finally disposed of in a way that provides adequate protection of the public for a very long time.”

Under federal law (the 1982 Nuclear Waste Policy Act), High-Level Nuclear Waste shall be retrieved and permanently disposed in a deep geologic repository, which does not yet

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exist. Low-Level Waste or monitored-retrievable waste, on the other hand, may be disposed (or respectively, stored for 50 – 100 years) near the surface. Notably WIR fails to meet either definition, being neither low-level, nor retrievable (or monitorable) after grouting.

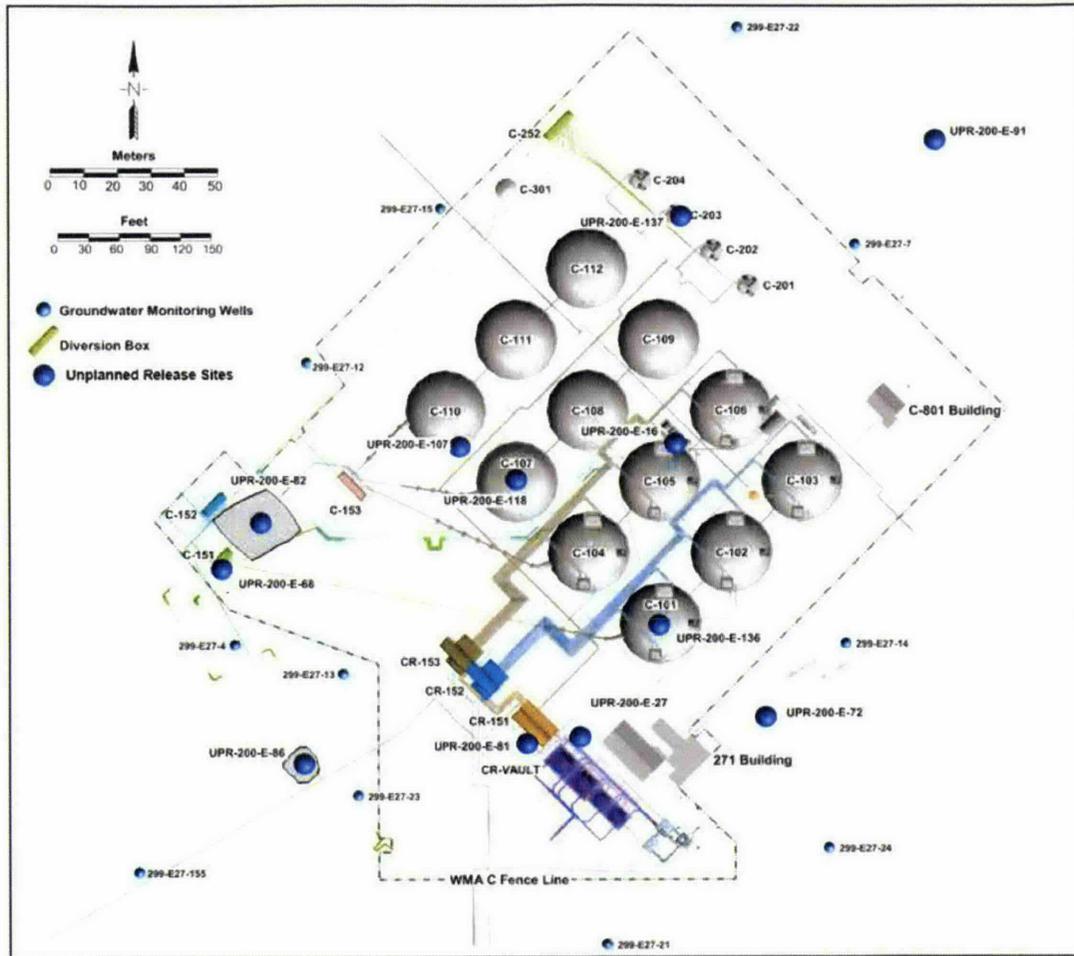


Figure 1: (above) Waste Management Area C, constructed at Hanford from 1943 to 1952 and location of the proposed abandoned high-level waste area.

Abandoned HLW residuals (the product of nuclear processes in reactors and/or nuclear fuel reprocessing waste) in WMA C tanks are of course, not low-level or monitored-retrievable wastes as defined by the US NRC or the 1982 Nuclear Waste Policy Act. In fact the act of grouting-in-place along with tank structures and equipment, actually prevents the future retrieval of abandoned HLW.

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Comments by nonfederal stakeholders

The State of Oregon and the State of Washington have produced official statements regarding the acceptance of abandoning residual HLW. These important stakeholders have supported minimum 99 percent tank waste removal, off site storage of HLW in a deep geological repository, pretreatment of tank or low activity wastes, and avoidance of "supplemental" treatment technologies.

Alternatives that include shallow surface burial of HLW in the tanks do not meet the requirements of the States of Washington and Oregon and the Tri Party Agreement (Reference: Public Comments on the Draft Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, WA, USDOE, 2009).

Other nongovernmental stakeholders such as Hanford Challenge, have commented to the US DOE that all HLW should be removed from the tanks, and adequate characterization be performed to determine whether tanks can be removed and leaked tank waste retrieved and treated from beneath the tanks. This is distinct from categorically treating all soil overburden as HLW. Overburden should be treated according to relevant and applicable environmental laws, legal agreements, and regulations (Reference: Letter from Hanford Challenge to US DOE dated January 5, 2010). The Affiliated Tribes of Northwest Indians Resolution 10-02 on this subject commented that 99.9% removal of single-shell tank wastes was appropriate and required under existing regulations.

In the past DOE was also a proponent of minimum 99% residual waste removal from tanks. The US DOE responses to public comments in the 2012 Tank Closure and Waste Management Environmental Impact Statement (TC & WM EIS) notes that:

“DOE’s preferred retrieval option (i.e., to retrieve at least 99 percent of the tank waste) is consistent with the TPA goal of residual waste not exceeding 10.2 cubic meters (360 cubic feet) for 100-series tanks or 0.85 cubic meters (30 cubic feet) for the smaller 200-series tanks, corresponding to 99 percent retrieval. Decisions made by DOE on the proposed actions will be based on a number of factors, including health and safety, environmental, economic, and technical considerations; agency statutory missions; and national policy considerations.”

This language mimics the original Tri-Party Agreement between the US DOE, US EPA and the Washington Dept. of Ecology. The Washington Dept. of Ecology states that,

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“Milestone M-45-00 of the Tri-Party Agreement (TPA) calls for retrieving as much tank waste as is possible. Tank waste residues shall not exceed 360 cubic feet in each of the large tanks, 30 cubic feet in each of the smaller tanks, or the limit of waste retrieval technology capability, whichever is less. The US Department of Energy (USDOE) is expected to reach the “limits of technology” before completing retrieval. If USDOE cannot meet the 360- or 30-cubic-foot goal, then they must use another technology or request a wavier as described in Appendix H of the TPA. As part of the Proposed Consent Decree, if USDOE cannot meet the 360- or 30-cubic-foot goal, they will be required to use two or more technologies for retrieving tank waste, and each must reach their limits of technology.” (Reference: Appendix D of the Tri-Party Agreement (1989), Hanford Federal Facility Agreement and the 2009 Proposed Consent Decree No. 08-5085-FV and Tri-Party Agreement Modifications for Hanford Tank Waste Treatment.)

According to the State of Washington’s official statements on the use of dual technologies for closure, the use of any given closure technology must allow Hanford to prepare for completing retrievals and tank closure, with a smooth transition to the second or any following technology. The presence of cementitious grout prior to complete tank closure affects future remediation of residual wastes. The grout monolith filling the partially closed tank prevents effective removal of radioactive wastes that have leaked from existing tanks into the soil column beneath the tanks, and adds to the disposal burden of the tank residuals simply by adding the mass of the grout. This added grout must also be handled as HLW (40 CFR 261, 10 CFR 60).

Improper assumptions and assertions by DOE

The US DOE proposes changing the status of residual HLW in WMA C tanks to speed up the closure process. To justify leaving HLW in the tanks, the DOE has made a series of engineering errors.

- (1) DOE rejects available (or foreseeable) technologies to remove the residual HLW from the tanks. The data do not even show that the limited tank-washing efforts have exhausted their utility; no further technologies have been explored.
- (2) Without providing comparative alternatives risk data, DOE believes that abandoning wastes in the shallow subsurface creates less

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risk than removal, treatment, and use of a geological repository. The clear and documented uncertainties in DOE's analysis of the magnitude and timing of leaks from the residual abandoned HLW make it impossible to quantify the risk relative to removal of HLW from shallow burial.

(3) The consequences of abandoning waste to both public and environmental health and safety are ignored or minimized (see details in Part II). Comments by WA Ecology and data from US DOE's own analyses show that the residual HLW will exceed applicable legal standards before the expiration of the modeled 10,000 year period, and in fact, exceeds these legally-required quantitative levels already.

(4) Installing grout above the HLW will not isolate the waste for 10,000 years, but will guarantee that HLW eventually reaches the Columbia River. Migration from WMA C to the Columbia River could take as little as 10 years, even assuming that no accidental criticality is ever initiated.

(5) Abandonment and grouting will delay the achievement of legally-required cleanup milestones, rather than cause them to be met in a more timely fashion. It would be much more correct to say that the milestones had been moved rather than "reached".

The DOE has not proven the correctness of these assumptions in its WIR proposal and accompanying PA. No data at all are provided for assumption 2, that treating HLW as HLW would cause greater exposures. The needed analysis of quantified risks from the proposed and existing alternatives are not provided; only a statement that the PA shows "minimal" risks for the abandonment alternative is given. Normally a focused feasibility study would be done to detail the actual risks of complete removal. Assumption 5, abandonment is more timely, ignores the increased difficulty in removing the HLW already in the vadose zone beneath the tanks. Grouting permanently forecloses this required milestone. Detailed discussions of why assumptions 2, 3 and 4 are provably incorrect are in Part 2 of this document.

The Washington Department of Ecology has made its own comments on the DOE Performance Assessment for WMA C. Many of these comments address inadequacies in the justification for reclassifying HLW to LLW in preparation for abandoning HLW in the C-Farm tanks. Based on the WA Ecology review of the US DOE's Performance assessment (US DOE 2018b), these assumptions are not correct. (Technical aspects of the WA Ecology comments are discussed in Part 2 – technical considerations).

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From the 2017 Status Report p. 1-16 (US DOE 2018b) which addresses the onsite disposal of low level waste (LLW), “Some residual activity will remain in the waste sites after remediation has been finalized, but it is not expected to contribute significantly at that location in the composite analysis, given that cleanup has been based on numerical modeling calculations and meets Washington State regulations”. The statement recognizes that adherence to Washington State regulations are a basis for acceptable LLW disposal at Hanford, but the process of attempting to reclassify HLW as LLW is not lawful under State of Washington regulations.

One important uncertainty is that the grout treatment approach departs from the widely assumed use of vitrification as a waste form. The State of Washington does not accept deviation from what it believes is an agreement to use vitrification for waste, unless the alternative is “as good as glass.” This difference introduces uncertainty into the acceptability and potential timelines for alternatives to HLW removal and vitrification technologies. Although the magnitude of delays due to lack of acceptance are not readily quantifiable, the consequences (delays, waste disposition elsewhere, etc.) of rejection of an alternative to HLW-removal and vitrification technologies are potentially significant.

Departure from the agreed-upon removal, vitrification and/or “good as glass” treatment option entails a significant risk of delays due to litigation between stakeholders. Certainly this type of delay has occurred in the past at Hanford. Stakeholders may look to prior experiences at Hanford to inform their decisions about acceptance of tank waste abandonment and grouting, and other nonvitrification treatment or geologic repository options. These delays are above and beyond the delays involved in petitioning federal bodies (NRC, Congress, EPA) for regulatory waivers. DOE’s decision process flowchart notes that a search for new applicable technologies that could assist in meet the original milestones for tank waste removal *will not even begin*, until the regulatory waiver process is exhausted.

Another area of uncertainty is that there is no “limit of technology” definition for removal of the remaining HLW in the WMA C tanks (US DOE 2018 p. 4-15). For example, retrieval of HLW from tank C-101 began on 12/12/2012. The WIR opines that DOE had reached the limit of high pressure water removal operations in tank C-101, and concludes that, “little or no additional waste could be retrieved by continued deployment, resulting in little or no additional reduction of risk.” The DOE fails to include the key fact that HLW that is insoluble to alkaline water alone may be soluble using a different chemistry. DOE also abandoned granular solids in Tack C-103 that failed to pass the inlet screen, but that could have been retrieved with minor process modifications (US DOE 2018 p. 4-24).

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The failure to properly define the limits to technology means that HLW would be abandoned in place without employing additional technologies that could retrieve refractory solids in the WMA C tanks. Failure to remove the remaining HLW in the tanks makes it far more difficult to remove the tanks themselves. Tank recovery and removal is likely to be a key initial step to removing leaked HLW in the vadose zone below the tanks. Adding grout of course, only increases the difficulty of retrieval, potentially making HLW remediation from the vadose zone impossible.

During the two year campaign to remove HLW from tank C-101 the solids removal rate twice rose from less than 0.1 % solids removed in slurry to 0.5 % removed or greater. (Higher solids percentages mean that HLW is still being retrieved at a significant pace.) This is significant because, had DOE ended the retrieval after the first drop to 0.1% solids removal, then all of the remaining material removed after that point would have been abandoned instead of retrieved. When the solids removal rate dropped below 0.1% for a third time, DOE simply ended the procedure and declared that the technology limit had been reached.

In experimental design, this behavior is called p-value hacking, meaning stopping data collection when one gets the result they were hoping for. (P-value hacking, when detected by reviewers, normally results in rejection of a scientific study.) DOE failed to collect data on whether this third “minimum” solids removal test was truly the rock bottom, or just another drop preceding a return to significant solids removal (a drop and rise that had already occurred twice for this tank).

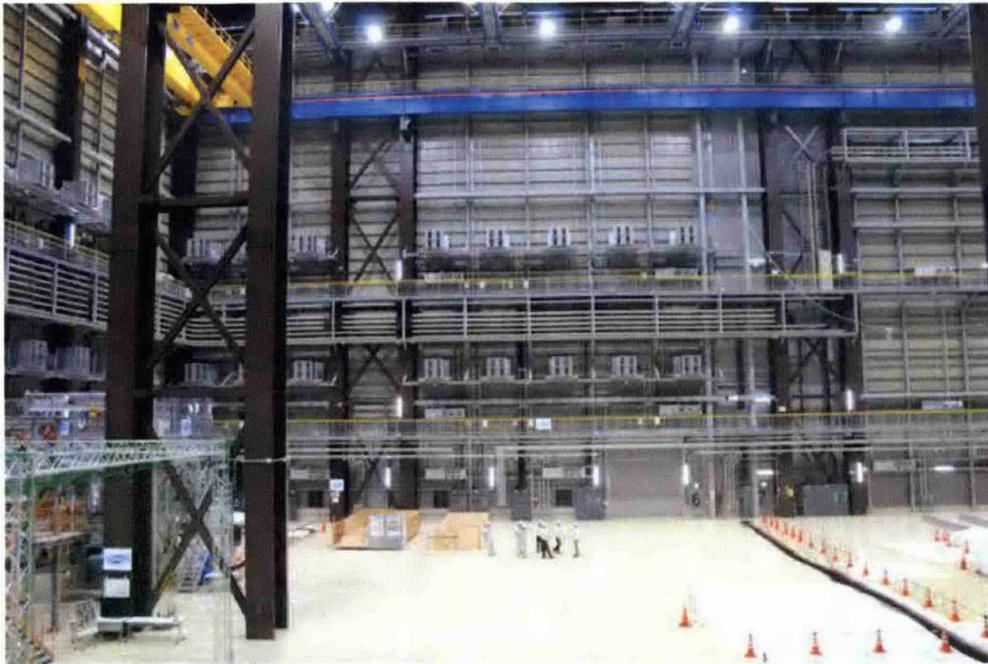
It is reasonable and prudent to want to limit costs and risks in a clean up, but the risk of verbally converting High-Level nuclear waste into Low-Level nuclear wastes are grave. HLW will be vitrified and sent to a geologic repository. LLW will be covered with cement and left in the shallow subsurface, along with any vadose zone nuclear waste made inaccessible by grouting.

It is disingenuous to say that water spraying is the limit of America’s nuclear technology. Japan’s Atomic Energy Agency (JAEA) is developing an entirely new set of nuclear waste retrieval technologies at its Naraha Nuclear Disaster Response Center. At Naraha Japan has constructed full scale mock ups of nuclear facilities where HLW must be recovered and disposed of. Robotic, drone, virtual reality and other technologies expand the limits of what technology can safely accomplish to recover and properly inter HLW. (Photo: below, Naraha Nuclear Disaster Response Center, Japan; author photos 2017)

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Grouting in place when limited data may (or may not) show the limits of water spray technology fails to prevent future radioactivity mobilization. Grouting also prevents future uses of advanced technology for waste retrieval. It creates a physical barrier above abandoned wastes that makes it difficult and likely impossible to use improved techniques for HLW recovery at WMA C.

Whatever Japan (or Los Alamos or Savannah River or WIPP) learn, the abandoned HLW will remain at the bottom of WMA C; waiting to leach and make its way to the Columbia River. Barring removal and treatment, the Columbia River will, with certainty, be the ultimate repository for abandoned High-Level waste.

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This proposed permanent unmonitored nonretrievable storage of HLW in shallow burial creates risks to the environment and risks to future site users. In addition, it would leave transuranic waste associated with nuclear weapons production far more vulnerable to intentional recovery by nonstate actors. This would create substantial national security risks should any part of this material be removed without authority. Directional drilling, meaning drilling that begins beyond any grouted area and then redirects horizontally to intrude into abandoned transuranic waste, is a simple, truck-mounted, and commonly-available technology. DOE proposes to install an anti-intrusion or “capping” grout above the abandoned wastes, but this cap is not meaningful when anyone can rent a truck-mounted directional drilling machine that requires only a single operator and a few uninterrupted hours of drilling.

Is abandoned HLW still HLW?

The answer to the opening question is yes; residual nuclear waste left in Hanford tanks is still High-Level Waste because this is the law of the United States and of the State of Washington. The DOE proposal and accompanying PA do not document that HLW could be controlled as if it were LLW even if the regulatory environment changed (even with some fraction of the key isotopes previously removed from the HLW).

The answer to the second question, “Must High-Level Waste be abandoned in shallow burial?” is no; the DOE has not proven that doing so is safer, faster, or technologically-necessary compared to the mandated full removal and treatment via vitrification. DOE has not proven that its proposed actions meet applicable standards for the 10,000-year compliance period required by NUREG-1854, nor even for the (unapproved) 1000-year period proposed by DOE in DOE M 435.1-1.

Specific technical failures of the proposal to grout HLW in place in shallow burial at WMA C are addressed in Part 2. This second section discusses details of how the proposed grout-in-place remedy fails to meet requirements for environmental and public health standards for nuclear waste in shallow burials. These failures include reliance on manifestly-incorrect or data-free assumptions; and poor analysis or documentation of grout performance, tank inventory, soil and waste chemistry, and groundwater flow conditions.

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Part 2. Technical limits to grouting and abandonment

HLW – what’s at stake
Grout monolith longevity
Tank Inventory
Accidental criticality
Shallow land burial of HLW and vadose zone chemistry
TRU, technicium-99, iodine-129 and neptunium

HLW - what is at stake: WMA C consists of sixteen single shell tanks, and is one of eighteen tank farms at the Hanford site. Most of the HLW in these tanks has been removed, but four percent (about 66,000 gallons) of the original HLW remains in these older tanks. The removed portion was transferred to the AN-Tank Farm, which has double shell tanks. Were DOE to actually reclassify HLW to LLW at the C-Farm, this would set a precedent to do the same at the remaining seventeen tank farms, involving millions of gallons of HLW left in tank residuals and permanently stored at Hanford. With that in mind, this report examines the conclusions of the Draft WIR determination in chapter 5 (the waste will meet the safety requirements comparable to LLW disposal regulations) and the PA and finds them wanting.

Grout monolith longevity: Grout has never been tested under realistic conditions. DOE suggests that grout within the abandoned waste tanks is required to protect the environment from residual HLW for 1000 years (the “compliance period” vs. the sensitivity/uncertainty period of 10,000 years). The 1000-year time frame is of course, highly abbreviated compared to other analyses of waste migration performed at Hanford. DOE, in an act of self-regulation, created this specific time period in a DOE “order”. This shortened period of 1000 years does not meet the requirements of 40 CFR 191, which specifies a required period of 10,000 years (NRC 1995). The 2012 TC & WM EIS carries the grout leachate model past the year 4000 mark, when Columbia River activity levels for technetium-99 and iodine-129 would be reaching their equilibrium maxima. Current models developed from empirical laboratory grout simulations cannot provide this kind of assurance for either 1000 years or 10,000 years. A 1995 PNL grout test at Hanford noted that (PNL 1995),

“The semi-infinite solid diffusion model was selected as the most representative model for describing leaching of grouts. The use of this model with empirically derived leach constants yields conservative predictions of waste release rates, provided no significant changes occur in the grout leach processes over long time periods.”

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The use of this model demands that the grout not only last for 1000 years, but that its properties must not change significantly over that entire period to remain protective. Certainly such a requirement is completely untested. The 1995 Hanford grout leaching tests ran on grouts that had set for 46 days, or 0.013 % of the required 1000 year-life of grouted HLW in WMA C tanks (or less than 0.004 % of the 4000 year climb toward the Columbia River equilibrium concentration, or 0.0013 % of the 40 CFR 191-required 10,000 years).

These same 1995 grout test reports noted (page 2.2) that any fracturing in the grout monolith formed in the abandoned tanks would invalidate the presumed groundwater velocity in grout of 0.5 to 5 cm per year. Normally groundwater would be expected to slowly diffuse through the grout monolith through a series of interconnected pores. This is the basis of the expected groundwater velocity of 0.5 to 5 cm per year. For example, the rate of groundwater flow in unfractured volcanic (igneous) rock is on the order of 0.002 cm per day and less. For fractured volcanic rock, groundwater can flow at a rate of 250 cm per day (Duffield citing Domenico & Schwartz 1990). This is a difference of nearly five orders of magnitude.

In effect, fracturing in grout due to temperature change, loading stress, imperfections in grout chemistry, ground subsidence, mechanical strain, or grout composition boundary (where anti-intrusion grouts and mechanical loading grouts meet); can cause an immediate catastrophic failure of the grout monolith in a tank. It is certainly possible that such a fracture could form during the initial pour and set of a grout lift during tank abandonment. This means that the grout would not survive a millennium; rather it would not even survive its first day in place.

Notably, a 1000-year grout life is still double the expected life of the WMA C surface barrier, which is designed to have a functional life of only 500 years. In contrast, the peak dose rate for all isotopes occurs at 1,500 years, and the peak radon flux from WMA C occurs at 10,000 years. That's still better than the presumed life of institutional controls for Hanford, which is 100 years, or 10% of the expected grout life, or 1 % of the 10,000-year compliance period required by NUREG-1854.

Once grout fails in the tanks, any radioisotopes leached from the residual HLW left in tanks can move to the Columbia River in a relatively short time. The draft DOE WIR evaluation notes that, "Travel time of water through the unconfined aquifer from the 200 East Area to the Columbia River has been estimated to be in the range of 10 to 30 years" (US DOE 2018 sec. 2.1.5.3.3). Other estimates in the same reference suggest a maximum travel time of 33 years, based on reduced wastewater recharge in the 200 Areas. This is still only a small fraction of the already short design time of 1000 years before failure.

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Tank inventory: The total amounts of plutonium and other long-lived isotopes stored in Hanford's 177 waste tanks are large. Technetium-99 is one of the most problematic isotopes at Hanford, because it is one of the most mobile radioisotopes once it reached groundwater. Its complex chemical behavior makes it difficult to immobilize in solid forms. It has a half-life of 211,000 years. The total amount of technetium-99 in tanks is about 26,500 Curies (PNNL 2014). Of the total, 11,400 Curies was originally stored in the single shell tanks. Most of the double shell inventory is in the 200-E Area. If the waste tanks generally were allowed to become permanent repositories for the 4% abandoned HLW residual proposed by DOE for WMA-C, this would be 1,060 Curies of technetium-99 left in shallow burial at Hanford. This is in addition to the 652 Curies of technetium-99 already known to have reached Hanford sediments (Ibid).

With the exception of the complexed pertechnetate species of technetium, the actual form of the up to 25% fraction of soluble technetium compounds is not known. This means that the mobility in grout monoliths or groundwater of this soluble technetium fraction is also not known. If 25% of the technetium is in the tank supernatant, this implies that any residual abandoned in the tanks will be relatively enriched in technetium, compared to the supernatants that will be treated via vitrification.

Note that the actual amounts of long-lived waste isotopes were not originally inventoried or recorded at Hanford at the time of disposal. These amounts are inferred from the 98,892 metric tons of uranium and 629 metric tons of thorium oxide reprocessed in spent fuels at Hanford. From each ton of uranium-238, Hanford produced about a half pound of plutonium (93% of that was as plutonium-239, reference: PNNL 2015). The total estimated plutonium-239 inventory at Hanford is 23,000 kilograms. Plutonium in waste streams sent to the tanks ranged from 0.09 Curies per metric ton to 3.9 Curies per metric ton.

After grouting, plutonium in the waste tanks exists in both soluble (Pu^{5+} and Pu^{6+}) and less soluble (Pu^{3+} and Pu^{4+}) forms. The solubility and groundwater mobility will vary depending on what other nonradioactive chemicals (like iron) are present in the tanks. As with technetium, the final form and properties of plutonium in grout monoliths will be unknown, and likewise their groundwater transport properties would also be unknown (Ibid).

Radiochemical contamination in Hanford tanks dominates planning and modelling work, but the nonradioactive chemicals in tanks wastes are also important. The nonradioactive contaminants can negatively impact soil and HLW chemistry, alter neutron absorption behavior in HLW, and add to health or accidental detonation risks. Some of the chemical

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constituents discovered in tanks wastes are mercury, acetonitrile, benzene, cadmium, hydrazine, nickel, polychlorinated biphenyls (PCBs) and vinyl chloride (Hanford Waste Inventories for Cumulative Impact Analysis, Appendix S, 2012).

Hanford's radioisotope inventories have large uncertainties. The draft WIR evaluation notes that, "A previous assessment of limitations to the HDW model provided in HNF-3273, 'Hanford Defined Waste Model Limitations and Improvements,' showed that tank-specific HDW model estimates and tank sample results can vary by one to two orders of magnitude." These uncertainties apply to the materials discussed including TRU, technetium-99, iodine-129, zirconium-93, carbon-14, cesium-137, strontium-90; as well as isotopes not discussed specifically but present in the WMA C tanks such as isotopes of americium, neptunium, cobalt-60, europium, thorium, gadolinium, tritium, radium and others.

Uncertainty notwithstanding, there are more than 600 Curies of americium-241 and more than 17,000 Curies of cesium-137 estimated to be in WMA-C tanks according to the estimated inventories used in the PA (Some tanks have updated cesium-137 inventories due to retrieval operations. Post-retrieval samples showed that actual cesium-137 inventories were generally higher than the estimated inventories.) Included in these figures are 8.5 Curies of americium-241 and 187 Curies of cesium-137 in WMA C pipelines (2014 PA estimate). Given, however, that the actual supernatant to solids activity ratios of these isotopes is not fully known, the amount of these inventories to be abandoned is uncertain.

The residuals in the WMA C tanks amount to 524,000 Curies, in a residual volume of 67,000 gallons (equal to 1,220 fifty-five-gallon drums or 8,960 cubic feet). Conceptually, the DOE plan is simply one of leaving 1,220 fifty-five-gallon drums of HLW in shallow burial. Granted the tanks' walls are thicker, but the abandoned pipelines are somewhere in between the tank walls and a 55-gallon steel drum's wall in thickness. Both are "single-shell". As with a 55-gallon drum, there'll be no grout underneath the tanks.

According to the DOE, "More than 70,000 containers of this waste (sometimes referred to as suspect TRU waste) were stored under a layer of dirt in the 200 Area Low-Level Burial Grounds of the Hanford site, in the 1970s and 1980s. The intention was to retrieve the waste (which is why sometimes it is also referred to as retrievably-stored waste) at a later date when a national repository was established to accept transuranic waste" (<https://www.hanford.gov/page.cfm/TRU#tru1>). There is a major difference between drums and tanks of course. The abandoned tanks will also contain grout monoliths, making retrieval impossible (US DOE/Hanford photo next page).

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Accidental criticality: Nonradioactive chemicals play an important role in maintaining the safety of residual plutonium in tanks. Plutonium has a significant spontaneous fission rate, and a low critical mass. Critical mass is the minimum mass required to initiate a spontaneous nuclear criticality, which is very highly undesirable. Materials such as iron and cadmium maintain the plutonium in tank solids below the criticality safety limit (CSL) of 2 grams of plutonium per liter of waste solids (Westinghouse 1995). Actual maximum plutonium activity in the 100 and 200 series tanks is 0.35 to 0.70 g/L; up to 35 % of the CSL (Bratzel 1996, CSL also stated as 2.6 g Pu/L). Chemical washout from grout that removes cadmium or other neutron absorbers, or concentrates plutonium, can lead to unanticipated criticalities, which would create a catastrophic failure of containment.

Chemical crystallization at the grout-sediment interface is one example of a potentially plutonium-concentrating mechanism. The DOE WIR evaluation (US DOE 2018, p.55) notes that, “In most instances, adsorption appears to be the controlling geochemical process, but neutralization of acid waste by the alkaline sediment and neutralization of basic tank waste can cause precipitation of some contaminant species within the sediment pores.” This means that plutonium leached from grout in the tanks would precipitate in the sediment pores immediately adjacent to the tanks, resulting in preferential deposition of plutonium. The grout solids, which serve to keep plutonium activity below the CSL, would be left behind. The WIR further notes on p. 55 that, “Outside the zone of pH neutralization, adsorption is considered to be the dominant retardation process in the

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vadose zone.” This adsorption zone outside of the neutralization zone where plutonium can recrystallize would reinforce the tendency to concentrate plutonium residues in a small volume; again driving plutonium activity to reach or exceed the CSL, and encouraging the initiation of an accidental criticality.

In total, it is estimated that 500 to 1000 kg plutonium remains in the 100 and 200 series tanks (Ibid). In 1951 Hanford experienced an accidental criticality in a water solution of plutonium nitrate, where the system contained a total of 1.15 kg of plutonium-239 (LANL 1967). The laboratory building involved was never fully remediated, but was eventually abandoned. In comparison, tank C-102 is estimated to contain about 1.02 kg of plutonium-239 (2018 Oregon DOE data).

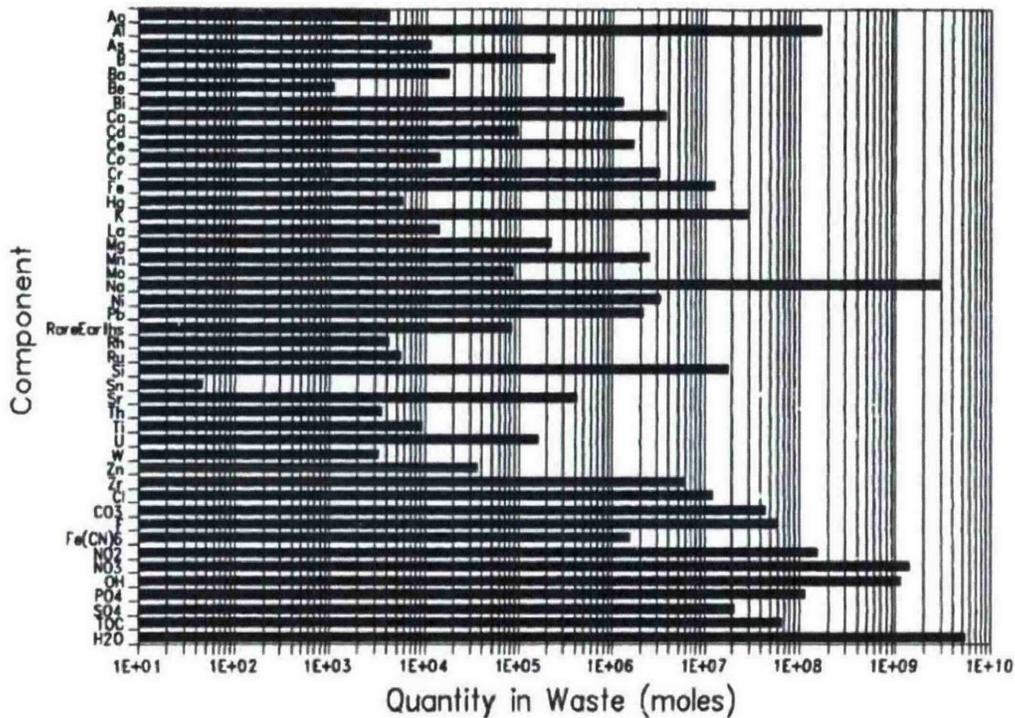
At Hanford, nonradioactive iron compounds in tank solids provide an important safety buffer against exceeding the CSL. However in some tanks, such as C-101, waste streams were disposed that had iron to plutonium-239 ratios of less than 5:1 (iron:plutonium-239). Differential loss of iron compounds would significantly impact the safety factor below the criticality safety limit for this waste solid in C-101.

On average in Hanford waste tanks, there are higher concentrations (on a molar basis) on plutonium in the solids versus the supernatant liquids in tanks. Tank C-110 has nearly a 100X greater plutonium concentration in solids compared to liquids. It is the solids left behind that will account for much of the abandoned residuals in tank wastes, meaning leaving a 4% residual of solids potentially leaves much more than 4% of a tank’s plutonium in shallow burial. Tank liquids will be readily removed; most of these have plutonium concentrations between 10^{-6} and 10^{-9} molar. Tanks solids are most likely to be in the residual; these are 10^{-4} to 10^{-6} molar, with more than two orders of magnitude greater plutonium concentration.

Washington Dept. of Ecology commented on the criticality risks associated with DOE proposal, noting that DOE assumed that the single sample retrieved (from HLW tanks) might not be representative of the entire volume of residual waste. DOE stated that the C-200 tanks were presumed to have a similar history and waste types; yet, when sampled, there were considerable differences among some of these tanks. Given that result, WA DOE questioned the uncertainty associated with the use of waste type templates and how is it addressed in DOE’s [plutonium] inventory estimates, given that these template values were derived from models (WA Ecology 2017).

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A summary of the chemical constituents of tank wastes at Hanford is in Figure 1 (below). This is from PNNL 2015, Fig. 3-1, citing Delegard et al, 1994 and based on Boomer et al. 1993.



In addition to these long-lived isotopes, Hanford has a large inventory of short half-life (heat generating) isotopes such as cesium-137, strontium-90 and cobalt-60. Some of these were removed from tank waste in past waste fractioning programs. These remaining isotopes can generate much higher in-situ heat loads than plutonium and technetium, because they decay in 5 to 30 years, rather than thousands of years. This presents a physical hazard to the integrity of the grout monolith proposed for the tanks.

Shallow land burial of HLW and vadose zone chemistry: There are technical barriers to and potential impacts from leaving HLW in shallow land burial. These wastes, regardless of how they are renamed, are abandoned within the vadose zone for groundwater; meaning the unsaturated zone above the groundwater table. Vadose zone chemistry then contributes to contaminant migration (or in the case of plutonium or uranium-235, reconcentration or preferential segregation above the CSL).

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Leaving HLW near the surface of the ground at Hanford creates some unavoidable conflicts with the local environment. Shallow-buried materials lie in the portion of the soil where any groundwater percolates downward over time into the deeper, fully saturated, aquifer. This creates an obvious transport mechanism for any leached isotopes, including transuranic (heavier than uranium) isotopes of plutonium, americium and neptunium, that will eventually reach the Columbia River or potentially some other future groundwater user. (Most Americans rely at least in part on groundwater for drinking or agriculture).

Hanford's semiarid climate also creates conditions where any isotopes leached from grout will arrive at the sediment interface at their maximum concentration. This means that the initial concentration of leached radioactive TRU in the unsaturated soil will be limited only by its solubility in water. Radioactivity dissolved in groundwater will always begin at the highest theoretical activity, with very little dilution through the unsaturated zone (PNL 1995 p. 2.3). This condition creates a "solubility-controlled" release model, where the source concentration at the tank farm does not decline over time; this is not advantageous.

The chemistry of Hanford's soils also creates conditions where the pH (acidity) and redox potential (ability to oxidize, e.g. rust in the case of iron) change very little. That means that further transport through the unsaturated zone in the upper soils will not be able to chemically "fix" or alter the radioisotopes. In other climates pH and redox-dependent processes can slow the transport of contaminants, but these processes are nearly absent at Hanford (Ibid). This creates a conservative (no chemical losses) diffusion process, where groundwater contaminant concentration is only reduced by dilution as the groundwater encounters fresh uncontaminated sediment, groundwater or Columbia River water.

The use of homogeneous groundwater models instead of multilayer heterogeneous modeling is insufficient to provide a realistic assessment of the time to breakthrough of residual tank wastes into the Columbia River. As noted in the draft WIR evaluation, "Hydraulic conductivity values reported for the aquifer in this area vary considerably, ranging from 0.04 (silt lenses within the sandy gravel) to 6,900 m/day." This is an unusually wide range of hydraulic conductivity values, and it demonstrates the heterogeneous nature of the aquifer. No known homogeneous hydrogeologic model can accommodate such a wide range of hydraulic conductivities. The high hydraulic conductivity values are consistent with the short transit times for contaminants leaving the WMA C and arriving at the Columbia River. Given that HLW is already in the vadose zone and moving into the Columbia River, a more realistic multilayer heterogeneous groundwater model is required.

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The estimated hydraulic gradient, the driving force behind groundwater flow velocity, is a relatively low 1.0×10^{-5} to 2.0×10^{-5} m/min, but this gradient has varied greatly in Hanford's history (US DOE 2018), especially when waste waters were disposed of directly into the vadose zone. Any unexpected rainfall, flood event, wastewater discharge or even dam or flood control structure release would dramatically raise the hydraulic gradient and reduce the elevation difference between abandoned tank waste and the water table. Combined with the high hydraulic conductivities, a disastrous release of contaminants could move into the Columbia River. Notably, even easily foreseeable future land uses like irrigated agriculture would introduce water to the area, increasing the hydraulic gradient, and again potentially causing mounding of groundwater.

Diverse future land uses were addressed in the WA Ecology comment; "Table 2-1 shows only two exposure scenarios for WMA C (tap water and groundwater protection). Considering the numerous source terms at WMA C and possible contaminant transport pathways, other exposure scenarios (in addition to tap water exposure and groundwater ingestion) should be examined and summarized in a similar table (e.g., exposure to soil, surface water, sediment, and air by human and ecological receptors)."

Future events notwithstanding, WA Ecology noted the current existing potential for irregular recharge or spikes in its 2017 comments saying, "In addressing recharge, not only do you focus on natural recharge and ignore artificial recharge, but recharge is applied as a yearly average which does not represent reality. Natural recharge occurs primarily in the winter months (Nov.- Feb.) when there is no evapotranspiration—especially on gravel covered tank farms. Fig. 9-6 clearly shows the sensitivity of recharge to the results."

The radioisotopes of concern at Hanford move in varying velocities and even directions. Data collected from groundwater show that Tc-99, Cs-137, Ru-106, Co-60 and chemical contaminants in the vadose zone underneath WMA-C have not moved in synch (WA Ecology 2017). The nonuniform nature of the aquifers at Hanford obviously contributes to the differences in the rates and directions of contaminant spread. In fact, the directions of migration for radioisotopes around WMA C have been in flux, including the time since wastewater discharges stopped in the 200 Areas in 1995. Changes in water table heights associated with changing water discharge rates will cause contaminants from other disposal areas at Hanford to move toward the WMA C location. Together these nonuniformities create large uncertainties in the ability to predict when radioisotope contamination from abandoned HLW would reach the Columbia River.

WA Ecology (2017) addressed these nonuniformities when it commented that, "The use of an EHM is a modeling convenience that represents an oversimplification of a highly

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heterogeneous system and fails to capture the various facies and characteristics of highly heterogeneous glaciofluvial sediments. This should not be the base case. These are general characteristics of the stratigraphic units within the Hanford formation. What is omitted is the presence of numerous, thin lamina of finer grained material that affect the flux and direction of infiltration and may have played a significant role in the transport of fluids through the vadose zone.”

The pH and redox conditions in the grout itself are a different issue than for soils. The grout monolith must provide near- and long-term high pH and chemically reducing capabilities to maintain the radionuclides and toxic heavy metals, such as technetium and neptunium, in their least mobile chemical forms, i.e., the lower-oxidation state or reduced form (Buice et al., 2005).

Hanford’s HLWs also contain nonradioactive but potentially reactive chemical compounds. These chemical compounds have created important health and safety issues for Hanford Tank Farm workers. (Reference: Hanford Chemical Vapors: Worker Concerns and Exposure Evaluation, CH2M-32068-FP Revision 0, Dec. 2006) It is not clear how these chemical constituents, including liquid organic materials and ammonia, would impact the formation of high-quality cured grouts. This lack of clarity is a result of insufficiency of the evidence base about the conditions under which grouts might fail to set, given the complex chemistry and radiochemistry of tank wastes.

There is no evidence-based method for even estimating the potential failure rate of grouting based on failure to set due to waste chemistry. It is not feasible to pilot test a grouting treatment process facility that realistically simulates disposition of materials formerly classified as HLW. The actual chemistry of this processing is not known. Examples of chemical-induced failure to set include:

“We have used a composition for Type 1 Portland cement to represent the 63 tons of cement that was added to BY-105 in 1972. This cement was added in an attempt to sequester the residual fluids within BY-105 tank, which was a suspected leaker. Evidently, the cement did not set in the high-caustic, high-salt liquid and no further additions of cement were made to this or any other tank. Type 1 Portland cement is 46 wt% [weight percent] Ca, 10 wt% Si, with the balance being oxygen, Al, Fe, Ca, Mg, sulfate, and water. Since the basic constituent of cement is calcium silicate, we are able to adapt it to our composition vectors. We assume that the cement was added with a specific volume of 0.13 kgal/ton, for a total amount of 8 kgal added to BY-105. As far as we know, this is the only addition of cement to any tank at Hanford.”
Reference: Stephen F. Agnew (1996) LANL, Hanford Tank Chemical and Radionuclide Inventories: HDW Model Rev. 4.

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TRU, technetium-99, iodine-129 and neptunium: The 2017 DOE Status Report (US DOE 2018b) states on p. 1-17, “The inventories of technetium-99 [technetium-99, half life of 211,000 years by beta decay] and iodine-129 [iodine-129, half life 15.7 million years by beta decay] as representative mobile constituents were used to evaluate potential impact of the PUREX tunnels.” Nevertheless, the WIR neglected to address the large inventory of Tc-99 and other chemicals that reside beneath the tanks (<https://www.nap.edu/read/11618/chapter/8#63>). This also applies to wastes from other areas (such as the B-complex in the northwest corner of the 200 East Area) where contaminants are now migrating into the WMA C area due to dissipation of the former groundwater mounds underneath effluent discharge points.

Prior US DOE documents (such as the 2012 Final Hanford Tank Closure and Waste Management Environmental Impact Statement, TC & WM EIS) note that the eventual long-term equilibrium activity of iodine-129 and technetium-99 in the Columbia River is a function of the percent removal of HLW from the tank farms (Sec. 3, DOE responses to public comments, TC & WM EIS).

The plans to abandon tank residuals containing these isotopes fails to consider that nuclides such as technetium-99 and iodine-129 exist at other waste sites on the Hanford Plateau. For example naval wastes disposed of at Hanford contain both nuclides, including 2.8 Curies of technetium-99 and a poorly characterized (but smaller) amount of iodine-129 (3/5/2010 letter from T. Mueller, Naval Systems Command to US DOE ORP).

WA Ecology (2017) noted that multiple individual monitoring wells for groundwater observation at Hanford contain these and other isotopes, along with hazardous chemical constituents. Some of these are outside of known major plume areas. These groundwater constituents, both radioactive and hazardous, would persist over and above those released from the abandoned waste tanks. Some monitoring wells, such as well 299-E27-155 at WMA C contain all three isotopes, technetium-99, iodine-129 and plutonium-239.

This same well contains the hazardous chemical constituents cyanide, hexavalent chromium and nitrate. These chemical constituents can dissolve and/or change the chemical form of plutonium to make plutonium-239 more mobile in groundwater. Plutonium nitrate is far more soluble in water than plutonium oxide, for example. The presence of liquid phases in tank waste containing cyanide and nitrate is a concern because these chemical-laden liquids could potentially separate plutonium from the solid sludges, a condition that could reduce the margin of safety against accidental criticalities. The flowing liquids with nitrates and cyanides can cause plutonium to recrystallize at the

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boundary between grout and groundwater, potentially concentrating plutonium that is precipitated (just as a stalactite is precipitated from dripping salty liquids in caves).

Other wells at WMA C contain tritium and uranium. Uranium in residual abandoned tank waste will also contribute to accidental criticality risk, if the uranium is in the form of its fissile isotope, uranium-235. According to WA Ecology's 2017 comments, "Tank waste contaminants in groundwater may be transported to the river and impact receptors in surface water and sediment in the Columbia River. No mention is made of the evaluation of wastes that have been released to the soil and groundwater arising from WMA C."

Summary of Part 2

The long-term integrity of grout is untested.

Grouting will not effectively bind residual HLW. Hanford's climatic and soil environments are particularly harsh for grout monoliths.

Grout performance and the rate of groundwater flow through the grout monolith, is critically dependent on near-perfect, fracture-free, installation.

The performance assessment does not use a reasonable time frame. Other sources of radioisotopes are not included in models. Models assume no significant decline in performance over time and no nonuniformity over space.

Grouting of tank wastes is irreversible, preventing future remediation of residuals.

Reasonably foreseeable future land uses that could affect groundwater hydraulic gradients and exposure scenarios are not addressed.

Inadvertent criticalities are not addressed.

Future use scenarios assume institutional controls or unrealistic land uses, such as no anthropogenic disturbance of a scale greater than drilling (e.g. constructing building foundations). Climactic scenarios exclude dam failures, Columbia River flooding, concentrated rainfall events – especially in cooler weather, glacial flooding/damming.

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References for Part 2

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PNNL (2014) R. J. Serne, B. M. Rapko, *Technetium Inventory, Distribution, and Speciation in Hanford Tanks*, PNNL-23319

PNNL (2015) C. H. Delegard, S. A. Jones, *Chemical Disposition of Plutonium in Hanford Site Waste Tanks*, PNNL-23468, revision 1

WA Ecology (2017) State of Washington Department of Ecology Review and Comments of Appendix 1 Performance Assessment for Waste Management Area C (WMA C) Documents

Westinghouse (1995) C. A. Rogers, *Criticality Safety of High-Level Tank Waste*, WHC-SA-2748-FP

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Part 3. Conclusions: Did US DOE meet its burden of proof?

The first question as was, “Yes or no, is residual nuclear waste left in Hanford tanks still High-Level Waste?” Certainly under Washington and federal law the answer is yes. Abandoned reactor and reprocessing waste is still High-Level Waste.

(1) The DOE has not proven that the best available (or foreseeable) technologies cannot remove the residual tank waste from WMA C tanks. The data provided by DOE don't even prove that the limited efforts employed to date have exhausted their utility; no further technologies have been explored beyond the initial low-tech washing methods.

(2) DOE's assertion that, “*Removing residual waste from tanks would cause greater human radiation exposure and increased leaks to the environment compared to abandoning a fraction of the HLW.*” Is not supported by data. The clear and documented uncertainties in DOE's analysis of the magnitude and timing of leaks from the residual abandoned HLW make it impossible to quantify the relative risks. Some certain differences are that abandonment will create greater risks of accidental criticalities and will leave HLW in the vadose zone where it will ultimately reach the Columbia River. Grouting of residual HLW actually prevents the use of future remedial efforts and foreseeable waste retrieval technologies. A grout/waste/tank structure monolith is irretrievably difficult to recover, compared to the actual HLW itself. Grouting for example, would have made the 1968 and 1969 retrieval campaigns of strontium-90 and cesium-137, completely impossible.

(3) DOE incorrectly describes the abandoned high-level waste as inconsequential to both public and environmental health and safety. “Inconsequential” is not a description supported by quantitative data or the law. Comments by WA Ecology and data from US DOE's own analyses show that the residual HLW will exceed applicable legal standards before the expiration of the required closure period of 10,000 years, and in fact, exceeds these required quantitative levels already.

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(4) DOE asserts that putting cement over this waste will isolate the waste for 10,000 years. However, grouting efforts could potentially fail at the time of installation, with significant consequences for public health and for the environment, particularly for users of the Columbia River and to an even greater degree, First Nation stakeholders. Migration from WMA C to the Columbia River could take as little as 10 years, even assuming that no accidental criticality is ever initiated.

(5) Abandonment will not allow cleanup milestones to be met in a more timely fashion. A more accurate admission would be that abandonment would allow cleanup milestones to be defaulted in a more timely fashion.

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Biography, M. Kaltofen, PhD., PE, (civil, MA)

1. I am a Massachusetts-licensed civil engineer experienced in investigating the environmental fate and transport of petroleum, hazardous and radioactive materials. I received a doctorate in civil engineering in 2015; my research focused on investigation of nuclear releases to the environment.
2. I have tracked radioactive contamination at nuclear facilities since before 2004. This includes field-work and analysis in the United States, Middle East, Russia, India, Japan, Ukraine, the United Kingdom and the European Union.
3. I have published articles on the subject, including but not limited to my dissertation, and including lectures prior to receiving my PhD, was invited to lecture and to investigate in institutions ranging from Chelyabinsk School of Law, Chelyabinsk Oblast, Russia, University of Washington, Loyola University, Tufts University, Dartmouth-Thayer School of Engineering, President's session of the American Public Health Association and Massachusetts Institute of Technology.
4. I currently hold a two-year appointment as an affiliate research engineer at Worcester Polytechnic Institute, advising and over-seeing undergraduate nuclear science and engineering research on environmental radioactivity related to ongoing projects in Fukushima, Japan, Hanford, WA, and Chernobyl, Ukraine.
5. I regularly peer-review scientific articles on environmental radioactivity, and peer-review or judge/evaluate major grant proposals for the MacArthur Foundation. I have also participated, been invited or chaired multiple federal environmental review panels including the Environmental Protection Agency committee on accreditation of environmental laboratories, the DOD advisory panel to the US Army Soldier Systems Command, and nuclear waste treatment evaluation panel at Hanford Nuclear Reservation.
6. I am the owner and operator of Boston Chemical Data Corp. I have been offering expert opinion on matters of contamination and transport of contamination since 1989. My experience and training can be found at: <http://www.bostonchemicaldata.com/cv.html>
7. The bulk of my experience and skill set comes from actually being a boots on the ground engineer, including sampling and assessment in such places as radioactively-contaminated zones of Fukushima Prefecture in Japan, British Nuclear Fuels site in Cumbria, UK; depleted uranium-contaminated areas of the Serb Republic, radium at the Henry Hub Natural Gas distribution facility in Louisiana, nuclear worker exposures to radiation at the Hanford Nuclear Reservation (WA), Los Alamos (NM) National Laboratory and Idaho (ID) National Laboratory; uranium mining wastes at the Spokane Tribe of Indians sites in Wellpinit (WA), and the former Love Canal in Niagara Falls, NY,

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Prepared by:

Marco Kaltofen

Marco Kaltofen, PhD., PE (civil, MA), C. NSE

Oct. 29, 2018

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Attachment B



**A Communication from the Attorneys General of the States of
Idaho, Oregon, South Carolina, and Washington.**

August 28, 2003

By Facsimile

The Honorable Bill Frist
Majority Leader of the U.S. Senate
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Tom Daschle
Minority Leader of the U.S. Senate
U.S. House Representatives
Washington, D.C. 20515

The Honorable J. Dennis Hastert
Speaker of the House
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Nancy Pelosi
Democratic Leader
U.S. House of Representatives
Washington, D.C. 20515

Dear Senators Frist and Daschle and Representatives Hastert and Pelosi:

We were deeply troubled to learn that the Department of Energy recently submitted to Congress proposed legislation to amend federal law governing the management of our nation's high-level radioactive waste. The Department's proposal, submitted via an August 1, 2003 letter from Energy Secretary Spencer Abraham to Speaker Hastert, would amend the Nuclear Waste Policy Act, the West Valley Demonstration Project Act, the Atomic Energy Act, and the Energy Reorganization Act of 1974, to give the Department blanket discretion to exempt such wastes from long-standing management and disposal requirements.

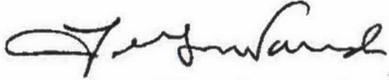
The Department's stated reason for these changes is an Idaho Federal District Court decision that the Department contends would require fundamental changes in its plans for retrieval, treatment, and disposal of defense high-level radioactive waste. Our states participated as *amici curiae* in the case, and we strongly disagree with the Department's characterization of the effect of the court's decision. In our view, amendment of federal law is wholly unnecessary to remedy the defects the court identified in the Department's internal policies. Moreover, enactment of the proposed legislation would merely serve to do what the states objected to in the first instance by giving the Department unbounded discretion to reclassify high-level radioactive waste. The broad grant of discretion to the Department of Energy proposed by the legislation would not ensure protection of human health and the environment.

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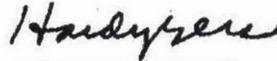
Page 2

Our respective clients jointly wrote to Secretary Abraham to lay out the states' concerns on these issues. We have attached a copy of the states' letter for your information. We add our voices to those of our clients: amendment of the Nuclear Waste Policy Act and other Federal law is unnecessary and unwise.

Very truly yours,



LAWRENCE G. WARDEN
Attorney General of Idaho



HARDY MYERS
Attorney General of Oregon



HENRY McMASTER
Attorney General of South Carolina



CHRISTINE O. GREGOIRE
Attorney General of Washington

Attachment B

August 12, 2003

The Honorable Spencer Abraham
U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

Dear: Secretary Abraham:

The Department of Energy and states affected by DOE facilities face technical, political, and fiscal challenges as we decide how to treat and dispose of high-level waste created by Cold War-era reprocessing. It will take our combined efforts to devise and implement responsible, effective policies that protect human health and the environment as well as respect taxpayer dollars.

We write to express concern with DOE's current strategy for addressing this key issue. DOE's recent proposal to reopen the Nuclear Waste Policy Act runs counter to our mutual interests.

Fortunately for our shared high-level waste challenge, reasonable solutions exist within the current law without undermining public trust in DOE's efforts to properly manage nuclear waste. DOE already has the tools it needs to address this issue by making internal policy changes; it doesn't need a sledgehammer to do the job.

DOE's recent statements to Congress appear to exaggerate the impacts of the recent judicial decision on high-level waste classification. The federal court decision only confirmed long-standing national policy, which requires disposal of high-level waste in a geologic repository while allowing properly treated, less radioactive wastes to be disposed elsewhere.

The court's ruling allows DOE to proceed with retrieval and treatment of liquid waste from tanks at Hanford, Savannah River and INEEL. If the wastes in question are not highly radioactive following treatment, DOE has the ability now to develop a classification strategy to qualify these wastes for management, including disposal, outside a high-level waste repository. What the court rejected was giving DOE free rein to override national policy as expressed in the Nuclear Waste Policy Act.

The States of Idaho, Oregon, South Carolina and Washington participated in the lawsuit, not as parties, but as friends of the court to protect our interests in safe, cost-effective, timely cleanup and responsible use of repository capacity. As you may know, last November the states made a concrete proposal to resolve these issues outside of litigation, outlined the legal and practical risks associated with continuing to litigate this matter, and offered to enter into mediation with the parties. DOE rejected our efforts and chose to litigate instead.

Today we renew our offer to work with DOE to develop a waste classification strategy that ensures protective, cost-effective, and timely disposal of the nation's defense high-level radioactive waste in a manner consistent with the court's opinion.

We urge to you to reconsider your strategy and to work with the states on a reasonable solution within the framework of existing law. By doing so, we can do the job right without jeopardizing progress on repository development, slowing down cleanup or undermining public trust in our efforts.

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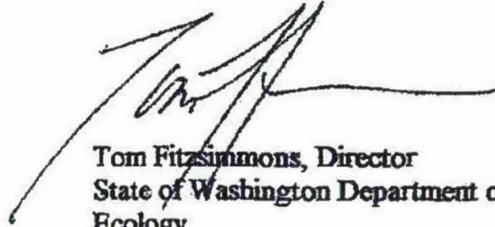
Letter to The Honorable Spencer Abraham

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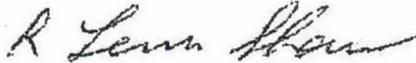
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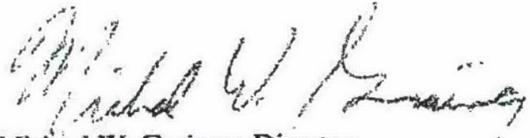
C. Stephen Allred, Director
State of Idaho Department of
Environmental Quality



Tom Fitzsimmons, Director
State of Washington Department of
Ecology



R. Lewis Shaw, Deputy Commissioner
South Carolina Department of Health And
Environmental Control



Michael W. Grainey, Director
State of Oregon Department of Energy

Cc: Governors, Attorneys General and Congressional Delegations of Idaho, Oregon, South
Carolina, Washington

Attachment C

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

Natural Resources Defense Council;
Snake River Alliance; Confederated Tribes
& Bands of the Yakama Nation; Shoshone
Bannock Tribes,

Plaintiffs) Case No. 01-CV-413
v.) (BLW)

Spencer Abraham, Secretary, Department
of Energy; United States of America,

Defendants)

DECLARATION OF (b)(6)

I, (b)(6) do hereby swear that the following is true to the best of my knowledge.

1. I reside at (b)(6) Arlington, Virginia 22207. (b)(6)
(b)(6)
the Natural Resources Defense Council, Inc., where (b)(6) (b)(6) I
have been involved with nuclear energy and non-proliferation issues for over (b)(6)
and have worked extensively on nuclear weapons related issues since (b)(6). As a member
of (b)(6)
(b)(6)
(b)(6) I have participated in the
development and implementation of (b)(6)
programs. I received (b)(6)

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enabling me to obtain (b)(6) In
(b)(6) I received (b)(6)
working at (b)(6)
(b)(6) Under a (b)(6)
(b)(6) I received a (b)(6) (b)(6)
(b)(6) During this period I was also a (b)(6)
(b)(6) studying (b)(6)
(b)(6) From (b)(6) (b)(6) (b)(6)
(b)(6) I am the
(b)(6)
(b)(6) and (b)(6) I am a (b)(6)
(b)(6)
(b)(6)
(b)(6) I received the (b)(6)
(b)(6)

2. The purpose of this declaration is to document and explain pertinent facts regarding high-level radioactive waste (“HLW”). To summarize, it is a universal, long-held scientific judgment that HLW must be disposed of in a deep geologic repository to protect human health and the environment. HLW is produced in the reprocessing of spent nuclear fuel,¹ and historically reprocessing activities have occurred in the United States in

¹ Spent nuclear fuel is fuel that has been permanently withdrawn from a nuclear reactor after irradiation, the constituent elements of which have not been separated by reprocessing.

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a number of locations largely for the purposes of nuclear weapons production and reactor fuel management. The specific radiological characteristics of HLW produce hazards associated with both acute and chronic exposure to the ionizing radiation. Currently, large volumes of HLW are found in interim storage at the Department of Energy's ("DOE's") Hanford Reservation, Savannah River Site ("SRS") and the Idaho National Engineering and Environmental Laboratory ("INEEL"), awaiting ultimate geologic disposal—at the Yucca Mountain geologic repository in the state of Nevada, if it is licensed to operate. At issue in this case is the fraction of HLW currently in interim storage which the DOE will seek to dispose of outside of a deep geologic repository under the unlawful authority of DOE Order 435.1.

Scientific judgments about the necessity of deep geologic burial of HLW

3. Because of the high toxicity of high-level radioactive waste, in its 1957 report, prepared at the request of the U.S. Atomic Energy Commission, the National Research Council of the U.S. National Academies "endorsed the concept of geological disposal—placing high-level waste (HLW) in a carefully selected deep underground formation, where it would remain isolated from human beings and the environment long enough for the radioactivity to decay to near natural background levels." [National Research Council, *Disposition of High-Level Waste and Spent Fuel: The Continuing Societal and Technical Challenges*, Washington, D.C.: National Academy Press, 2001, p. ix.] In 1990 the National Research Council reaffirmed this position when it stated, "There is strong worldwide consensus that the best, safest long-term option for dealing with HLW is geological isolation. . . . Although the scientific community has high confidence

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that the general strategy of geologic isolation is the best one to pursue, the challenges are formidable.” [National Research Council, *Rethinking High-Level Radioactive Waste Disposal*, A Position Statement of the Board on Radioactive Waste Management, Washington, D.C.: National Academy Press, 1990, p. 2.; quoted in National Research Council, *Disposition of High-Level Waste and Spent Fuel: The Continuing Societal and Technical Challenges*, Washington, D.C.: National Academy Press, 2001, p. x.] This position was also adopted by the U.S. Congress and embodied in the Nuclear Waste Policy Act of 1982.

What is “High Level Radioactive Waste”?

4. According to Congress,

“The term “high level radioactive waste” means—

(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the [Nuclear Regulatory] Commission, consistent with existing law, determines by rule requires permanent isolation.” [42 U.S.C. 10101(12)]

5. Thus, HLW is defined in terms of the source of the material rather than the hazardous characteristics.

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What is “Reprocessing”?

6. **“Reprocessing”** is the act, or process, of separating the ingredients in irradiated nuclear reactor fuel and target materials into constituent parts or streams. The constituent part or streams are in the form of product streams and waste streams. Examples of products or product streams are: (1) plutonium and tritium recovered for the manufacture of nuclear weapon components; (2) radioactive isotopes used in military and civil applications; (3) unused highly enriched uranium recovered from naval and research reactor fuel for the purpose of recycling as fresh production reactor fuel; and (4) plutonium and unused uranium recovered from irradiated civil reactor fuel for the purpose of reusing (recycling) into new reactor fuel. In each of these cases there is also by-product production of radioactive waste.

What is “highly radioactive material resulting from the reprocessing of spent nuclear fuel”?

7. In a nuclear reactor it requires the fissioning of roughly one gram of fissionable material to produce one megawatt-day of energy output. Thus, when a large reactor (producing several thousands of megawatts of thermal power) has operated for only a short period of time—in a matter of days—kilogram quantities of fissionable fuel (typically uranium or plutonium) will have fissioned, and as a result, kilogram quantities of highly radioactive fission products will have been produced. Once separated from product materials by reprocessing this by-product waste material is the “highly radioactive material from reprocessing spent nuclear fuel.” It includes not only the radioactive fission products, which are produced in the reactor as the fuel undergoes

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nuclear fission, but also the non-product radioactive isotopes that are produced when neutrons are absorbed in fuel and target materials in the reactor.

The High-Level Wastes in the Tanks are Extremely Toxic.

8. In 1995, the Oak Ridge National Laboratory for DOE compiled estimates of radioactivity of the high-level wastes in storage by site through 1995. The estimates are reproduced in Table 2 below.

Table 2. Radioactivity of HLW in storage by site through 1995

Site	Radioactivity (MCi)			
	Tank Waste		Capsules	
	Liquid	Solid	Sr	Cs
Hanford	68.5	123.3	44.9	101.2
INEEL	2.7	46.6		
SRS	214.6	287.6		
WVDP	24.05			

[DOE, *Integrated Data Base Report-1995: U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, DOE/RW-0006, Rev. 12, December 1996, p. 52.]

9. These amounts have been reduced, in some cases by 15 to 20 percent due to radioactive decay, and by removals since 1995.

10. At SRS the dominant radionuclides in the tank wastes are strontium-90, its radioactive daughter yttrium-90m, cesium-137 and its daughter product barium-137m. As of the end of 1995, in the SRS tanks there were approximately 119 million curies ("MCi") each of strontium-90 and yttrium-90m, 116 MCi of cesium-137 and 110 MCi of barium-137m. [DOE, *Integrated Data Base Report-1995: U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, DOE/RW-0006, Rev.

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12, December 1996, p. 55.] By comparison the annual limits on intake by ingestion for a radiation worker to insure the workers dose does not exceed 5 rems per year is 0.0004 Ci of strontium-90 or 0.0001 curies (“Ci”) of cesium-137. [EPA, *Limiting Values of Radionuclides Intake and Air Concentration and Dose Conversion Factors For Inhalation, Submersion, And Ingestion*, EPA-520/1-88-020, September 1988, pp. 49 and 71] Thus, the waste tanks at SRS contain hundreds of billions of “annual limits on intake” for nuclear workers and tens of trillions of “allowable ingestion limits” for the general population. In its concentrated form the HLW in the tanks is very toxic. This is of course why Congress has required that all high-level radioactive waste be isolated in one or more deep geological repositories.

DOE Plans Permit Substantial Amounts of High Level Radioactive Waste to Be Left in the Tanks.

11. The total radioactivity in the 49 operating HLW tanks at SRS is estimated to be 420 million Curies (“MCi”).² If DOE reduced the amount of HLW in the SRS tanks to one to two percent of the existing waste (their draft waste removal goal for the tanks at SRS) such an amount is equal to 4-8 MCi. By comparison, the radioactivity in one normal fuel load of a typical commercial reactor is about 0.4 MCi.³ Therefore, if even just two percent of the HLW in the SRS tanks is reclassified as incidental waste and left

² Plaintiffs’ Complaint Att. 14, Pacific Northwest National Laboratory, Tank Focus Area.

³ That is, the amount Defendants will abandon is at least 10 times more than a typical commercial spent nuclear fuel load. Plaintiffs’ Complaint Att. 15, “Integrated Data Base Report—1994 (September 1995): U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics” Oak Ridge National Laboratory DOE/RW-0006, Rev. 12 December 1996 at 27 and 219.

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in place, this is equivalent to the shallow land burial of approximately four to nine tons of spent nuclear fuel.⁴

12. The 49 remaining high level waste tanks at SRS contain about 420 MCi in 35 million gallons of HLW. [<http://www.pnl.gov/tfa/sites.stm>] In the Draft SRS EIS, DOE defined the removal of 98 percent to 99 percent of the total radioactivity and over 99 percent of the volume of high-level radioactive waste from these tanks as constituting “the limit of what is economically and technically practicable for waste removal” [DOE, SRS High-Level Waste Tank Closure, Draft EIS, DOE/EIS-0303D, November 2000, p. 2-3.] DOE removed from the Final SRS EIS, the paragraphs that were present in the Draft EIS that defined the amount of high-level radioactive waste DOE believed was “the limit of what was economically and technically practicable for waste removal” from the tanks. [Compare the Draft EIS pp. 2-2 to 2-3 with the Final EIS, pp. 2-2 to 2-3.] The Final EIS retained a paragraph that was present in the Draft EIS passage that begins,

Following bulk removal, DOE would remove a majority of the waste from the tanks and fill the tanks with material to prevent future collapse and bind up residual waste. . .
[Draft SRS EIS, p. 2-3 and Final SRS EIS, p. 2-3.]

13. Thus, DOE may leave substantially more than one or two percent of the high-level waste in the tanks.

⁴ For this calculation, we use the facts that (1) one typical nuclear fuel load for a typical reactor (*i.e.*, boiling water reactor) weighs about 319.9 kilograms (kg), (2) has a volume of 0.0864 m³ and (3) a radioactivity of 1-10 MCi/m³. For pressurized water reactors this value is about twice as high.

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14. In fact, NRC stated that most (37 of 51 tanks) of the reprocessing waste to be left in the SRS tanks will not satisfy Class C low-level waste requirements at 10 C.F.R. § 61.55, and this is only after relying on averaging the radioactivity of the abandoned waste with the near zero radioactivity of the bottom-most layer of grout. Plaintiffs' Complaint Att. 10, NRC Review at 14. NRDC has calculated that in order to meet Class-C guidelines for the abandoned waste in some of the tanks at SRS, upwards of about 100-fold dilution of the residual waste with reducing grout will be required. This calculation relies on NRC's statement that "between 0 and 31 inches of grout" will be required "to meet the Class C limits." NRC Review at 11. The SRS tanks are between 75 and 85 feet in diameter.⁵ In any case, 31 inches of grout will occupy a volume of between 85,000 gallons and 110,000 gallons. Assuming that approximately 1,000 gallons of HLW remains in the tank after closure, this implies up to 100-fold dilution of the HLW by the grout.

The Closed Savannah River Site Tanks

15. To date, two HLW tanks at SRS have been closed: tanks numbered 17 and 20. These tank closures relied on the incidental waste concept to reclassify the waste. The results of the tank closure process illustrate one possible result of implementing Order 435.1. In Tank 20 at SRS, 1,000 gallons of HLW remained after closure out of an initial fill of 22,000 gallons. Therefore 9 percent of the initial tank waste remained in

⁵ See Administrative Record at 33637 or Complaint Att. 18, "Industrial Wastewater Closure Plan for F- and H-Area High-Level Waste Tank Systems" SRS Rev. 1 July 10, 1996 (The administrative record version is missing every even-numbered page. Complaint Att. 18 supplies the relevant page.).

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Tank 20 by volume. The radioactive elements in the tank heel included selenium-79, technetium-99, carbon-14, iodine-129, plutonium (-238, -239, -240, -241 and -242), neptunium (-237), curium (-244 and -245), and tritium (hydrogen -3).

16. Process records indicate that approximately one-half kilogram of plutonium remained in the residual wastes in SRS tanks 17 and 20. *See Attachment 1 (Tank Inventory Breakdown Spreadsheet for Tanks 17-20).* Extrapolating this amount of plutonium per tank residue to all DOE HLW tanks implies that if other HLW tanks in the DOE complex are closed in a similar manner to SRS Tanks 17 and 20, approximately 100 kilograms of plutonium are slated for abandonment under the guidelines of Order 435.1. The actual amount of plutonium and other radioactive elements in or near the water table at SRS, Hanford and INEEL, however, is unknown and may be much higher since the volume permitted to be left under Order 435.1 depends on “the limit of what is economically and technically practicable for waste removal ... or meets alternative requirements DOE may set.”

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Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury, that the foregoing is true and correct to the best of my knowledge and belief.

Signed on the ___ day of January, 2002,

(b)(6)

Natural Resources Defense Council, Inc.

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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

Natural Resources Defense Council;)
Snake River Alliance; Confederated Tribes)
& Bands of the Yakama Nation; Shoshone)
Bannock Tribes,)
)
Plaintiffs) Case No. 01-CV-413
) (BLW)
v.)
)
Spencer Abraham, Secretary, Department)
of Energy; United States of America,)
)
Defendants)

SECOND DECLARATION OF (b)(6)

I, (b)(6), do hereby swear that the following is true to the best of my knowledge.

1. My expertise and vita were presented in "Declaration of (b)(6) (b)(6) submitted to this court on January, 21, 2003 ("First (b)(6) Declaration").

2. The purpose of this second declaration is to explain pertinent facts regarding high-level radioactive waste ("HLW") and to inform the court of certain factual errors contained in the Declaration of (b)(6),

(b)(6)

(b)(6) in support of Defendants' Motion of Points and Authorities in Support of Federal Defendants' Cross-Motion for Summary Judgment and in Opposition to Plaintiff Motion for Summary Judgment, 5 March 2003 ("Defendants' Cross-Motion for Summary Judgment").

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3. The (b)(6) Declaration, in so many words, is a claim that the amount and concentration of radioactive waste that will be left in the HLW tanks is far less than what Plaintiffs assert, and moreover, by adding grout to the tanks, the residual HLW can be diluted to meet Class C limits and thereby qualify as low-level radioactive waste.

(b)(6) implication is that it will be safe to abandon the waste in place. I claim that: (1) the abandoned waste is HLW; (2) DOE has made no commitment to leaving only a small amount of HLW in the tanks; and (3) the HLW would not be thoroughly mixed with the grout under the DOE proposal and will therefore not be comparable to Class C low-level waste. Using DOE documents, I will explain my claims and refute those of (b)(6)

THE DEFINITION OF HIGH-LEVEL NUCLEAR WASTE

4. In The First Declaration of (b)(6) I noted that according to Congress,¹

“The term “high level radioactive waste” means—

(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the [Nuclear Regulatory] Commission, consistent with existing law, determines by rule requires permanent isolation.” [42 U.S.C. 10101(12)]

¹ In Defendants’ Cross-Motion for Summary Judgment at 3, Defendants’ claim “this is his (b)(6) interpretation of the term high-level waste.” In fact, it is not (b)(6) but Congress’ definition. It is also the definition used by the Environmental Protection Agency in establishing environmental protection standards for the management and disposal of high-level radioactive waste. (See 40 CFR 191.02(h), reproduced at 50 FR 38084 September 19, 1985).

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5. The Nuclear Regulatory Commission's implementation of subpart (B) of the HLW definition is undisputed.

6. It is undisputed that under subpart (A) of the definition that HLW is defined at least in part by the source of the material, "the highly radioactive material resulting from reprocessing" *See* Defendants' Cross-Motion for Summary Judgment at 14, line 2 and at 15, line 1.

7. There is a dispute over whether covering the residual tank waste converts it into something other than HLW, or whether a "Waste Incidental to Reprocessing" determination by DOE makes the waste something other than HLW.

EXAMPLES OF HIGH-LEVEL WASTE

8. The definition of HLW at ¶ 4 above includes two example categories of HLW, namely, "liquid waste produced directly in reprocessing" and "any solid material derived from such liquid waste that contains fission products in sufficient concentrations."

9. The highly radioactive liquid wastes from reprocessing, introduced into HLW tanks for interim storage at Savannah River Site (SRS), Hanford Reservation, Idaho National Environmental and Engineering Laboratory (INEEL) and elsewhere, fall under the first example category, namely, "liquid waste produced directly in reprocessing."

10. The vitrified HLW, *i.e.*, the mixture of HLW and borosilicate glass in steel cylinders, produced at Savannah River Site (SRS) in preparation for shipment to the proposed geologic repository at Yucca Mountain, the capsules of cesium-137 and

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strontium-90 produced and stored at Hanford Reservation,² and the calcined waste stored at the Calcine Solids Storage Facilities at Idaho National Environmental and Engineering Laboratory (INEEL)³ are all examples of “solid material derived from such liquid waste that contains fission products in sufficient concentrations.”

11. There are other example categories of “highly radioactive material resulting from the reprocessing of spent nuclear fuel” that do not fall into either of the two example categories given after the word “including” in part (A) of the definition of HLW. These include, but are not limited to: (a) highly radioactive solid particles (e.g., non-soluble fission products) in suspension that accompanied the liquid waste when it is introduced into the tanks, (b) the precipitated highly radioactive solid particles in sludge in the HLW tanks, and (c) highly radioactive liquid wastes “derived from such liquid waste that contains fission products in sufficient concentrations” after the liquid has been removed from the tanks and treated. The categories (a) through (b) are well recognized components of slurry and sludge forms of tank HLW and are discussed further below. At present I am unaware of the existence of any HLW in category (c), but HLW in this category may result from future treatment of HLW removed from the tanks.

² See Attachment 1, DOE, Integrated Data Base Report-1995: U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics, DOE/RW-0006, Rev. 12, December 1996, pp. 52-53 (“Att. 1, DOE IDB-1995”).

³ “The High-Level Waste Tank Farm [at INEEL] includes 11 underground stainless steel storage tanks used to store the radioactive liquid waste generated during the reprocessing of spent fuel and plant decontamination work. Most of the tank farm liquid has been calcined, reducing the volume and converting it to a more stable solid form. . . . Calcining achieved an eight-to-one volume reduction from liquid to solid. . . . Calcination reduced the volume of liquid radioactive waste generated during reprocessing and placed it in a more-stable granular solid form.” <http://www.inel.gov/facilities/intec.shtml>. See (b)(6) Declaration ¶ 6, (b)(6) Declaration ¶ 12 and Att. 1, DOE IDB-1995 at 54)

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EXAMPLES OF INCIDENTAL WASTE

12. There are a variety of materials that have been contaminated as a result of secondary contact with the highly radioactive wastes from reprocessing. These include, for example, laboratory items and contaminated clothing, tools, and equipment. For many years this type of waste has been referred to as “incidental waste.” The categories of incidental waste traditionally have been identified by a process akin to the “citation method” set forth in DOE Order 435.1.

HIGH-LEVEL WASTE SITE LOCATIONS

13. Defendants note that “[t]here are four principal locations in the United States where reprocessing wastes are located. These principal locations are SRS, INEEL, Hanford and the Western New York Nuclear Service Center.” Defendants’ Cross-Motion for Summary Judgment at 9, n. 13.⁴

14. As a result of reprocessing, large quantities of HLW were generated at these four sites, and the HLW has been, and continues to be, stored in HLW tanks at these sites. With respect to SRS, Defendants’ (b)(6) for example, notes:

As a result of its defense nuclear materials production mission, SRS generated large quantities of high-level waste (HLW). This waste resulted from dissolving spent reactor fuel and nuclear targets to recover the valuable isotopes, e.g., Pu-239 for defense purposes.

(b)(6) Declaration ¶ 5.

⁴ There are other locations in the United States where reprocessing has taken place and HLW was generated, including a pilot reprocessing plant at Oak Ridge National Laboratory. Also, limited reprocessing probably has taken place in laboratory-scale facilities, so-called “hot-cells,” at other DOE facilities elsewhere.

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HIGH-LEVEL WASTE QUANTITIES

15. The parties and the States agree that there are approximately 37 million gallons HLW in the 49 tanks at SRS that have not been closed⁵ ((b)(6) Declaration ¶ 6); approximately 53 million gallons of HLW in 177 tanks at Hanford (Affidavit of (b)(6) ¶ 11, submitted with the Joint Amicus Brief of Idaho, Oregon and South Carolina ((b)(6) ¶ __) (“States’ Brief”); and at INEEL approximately 900,000 gallons of HLW in 15 tanks. (b)(6) Affidavit ¶ 15) (b)(6) ¶ 4).

16. In the 49 HLW tanks at SRS there are approximately 34 million gallons (92% of the volume) of supernate (liquid) and saltcake (solids) containing 200 million curies of radioactivity (45% of the curies, or radioactivity), and 3 million gallons of sludge (8% of the volume) containing 226 million curies of radioactivity (55% of the curies, or radioactivity) ((b)(6) Affidavit ¶ 8, 10); and the HLW tanks at INEEL contain approximately 500,000 curies of HLW. (b)(6) Declaration ¶ 26 (2)). At the end of 1995, the inventory of HLW in the 177 tanks at Hanford included 68.5 million curies of liquid HLW and 125.3 million curies of solid HLW.” (DOE IDB-1995 at 52).

FORMS OF HIGH-LEVEL WASTE

17. It is undisputed that the HLW in the tanks at SRS consists primarily of three physical forms: sludge, salt and liquid. (b)(6) Declaration ¶ 7). HLW in the tanks has also been characterized as “solids and supernate (aqueous salt solution, or liquids). The supernate includes free supernate (free-floating liquids) and interstitial supernate that is trapped in the solids (liquids mixed in with the solids).

⁵ One of these tanks, Tank 16, is said to be empty.

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18. Definitions of various components or categories of HLW, including “bulk waste,” “heel,” “high-heat waste,” “insoluble sludge,” low-heat waste,” saltcake,” “sludge,” “slurry,” and “supernate” can be found in Defendants’ own documents.⁶ The (b)(6) Affidavit also describes several of these terms at ¶¶ 13-18.

19. DOE notes in the SRS 1996 *HLW EA*, “The freshly generated HLW is further classified as either High-Heat Waste (HHW) or Low-Heat Waste LHW. HHW is generated during the first solvent extraction of the spent nuclear fuel. LHW is generated from the second and subsequent solvent extractions of the spent fuel and other support. The freshly generated HHW and LHW are segregated to improve processing of residual sludge and salt solutions within the Tank Farms and DWPF Vitrification Facility.” SRS 1996 *HLW EA*, Appendix A, *Waste Receipt and Aging*. The document also notes, “The HHW and LHW waste streams generated by the F- and H-Area Separations Facilities [reprocessing plants] contain insoluble and highly radioactive metal hydroxides (manganese, iron, and aluminum) which settle to the bottom of the waste tanks to form a sludge layer. The HHW and LHW are normally segregated. The combined sludge is managed as HHW sludge.” *Id.*, *Sludge Processing*.

20. Tank farm experience [at SRS] shows that the sludges typically contain high amounts of interstitial liquid (liquids mixed in with the solids) (70-85%).⁷

⁶ DOE, EA-1164; *Environmental Assessment for Closure of High-Level Waste Tanks in F- and H-Areas at the Savannah River Site*, July 1996,” Glossary (“SRS 1996 *HLW EA*”) (found on the web at (<http://www.globalsecurity.org/wmd/library/report/enviro/ea1164.htm>)).

⁷ P.D. d’Entremont and J.L. Thomas, “Characterization of Tank 19 Residual Waste,” Westinghouse Savannah River Company, WSRC-TR-2002-00052, Revision 0, March 15, 2002 (“d’Entremont & Thomas, Tank 19 Report”). Found on the web at <http://www.srs.gov/general/pubs/fulltext/tr2002052/tr2002052.html>).

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21. For the purpose of listing the amounts of HLW at DOE sites, DOE and Oak Ridge National Laboratory have characterized the physical form of HLW as being either “liquid” or “solid” where “[l]iquid tank waste consists of free tank supernate and drainable interstitial liquid.” and “Solid tank waste consists of sludge, salt cake, zeolite, calcine, and precipitate.” (Att. 1, DOE IDB-1995 at 52-53). This means the “liquid HLW” consists of liquids and the “solid HLW” consists of solids and the sludge that has liquid mixed in that cannot readily be drained.

22. At INEEL, the HLW streams from reprocessing are also referred to as “raffinates,” and some of the HLW is termed “sodium-bearing wastes.” (b)(6) Declaration ¶¶ 6 and 7. Also, the HLW left in the bottom of the tanks after they are “emptied” is referred to as “heels.” (b)(6) Declaration ¶ 14. According to (b)(6) (b)(6) “The hard concentrated sludge at the bottom of the tanks that may be extremely difficult to retrieve is called tank “heel.”” (b)(6) Affidavit ¶ 17.

THE PROPOSED ABANDONED WASTE IS HIGH-LEVEL WASTE

23. Based on the foregoing ¶¶ 13-21, the sludge, solid material, and liquid in the tanks at SRS have always been considered HLW, at least prior to a “Waste Incidental to Reprocessing” determination and subsequent pouring of grout into the HLW tanks during the proposed tank closure process. This is confirmed by DOE, which has stated, “Before bulk waste removal, the contents of the tanks is HLW.” SRS HLW Tank Closure *Record of Decision*, 67 FR 53783 (August 19, 2002). Since the “contents of the tanks” include the radioactive sludge, the sludge is characterized as HLW by DOE at least “before bulk waste removal.”

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24. The Declaration of (b)(6) confirms that the residual waste DOE proposes to leave in the tanks is predominantly the sludge. (b)(6) (b)(6) states, “My understanding is that Table C.3.1-1 of the SRS HLW Tank Closure Final EIS lists the total activity of the primary radioactive contributors that will remain in the tanks after bulk waste removal for final treatment and does not take credit for any additional cleaning.” (b)(6) Declaration ¶ 14. The estimated quantities of radionuclides in SRS F-Area and H-Area tanks (reported in Table C.3.1-1 cited by (b)(6)) were derived by multiplying volumes of residual waste assumed to remain in the tanks (given in Table C.3.1-2) by the concentrations of the various radionuclides in the sludge in the tanks. Att. 2, DOE, *Savannah River Site High-Level Waste Tank Closure Final Environmental Impact Statement*, DOE/EIS-0303, May 2002, C-18, Table C.3.1-1, n. (a) (“Att. 2, SRS 2002 *HLW Tank Closure Final EIS*”).⁸

25. In sum, the radioactive waste that DOE proposes to abandon in the HLW tanks at SRS was characterized by DOE as HLW when it went into the tanks; it is characterized as HLW in the computer spreadsheets used to derive Table C.3.1-1; it is part of the “content of the tanks” and therefore is characterized as HLW by DOE “before bulk waste removal;” and it is characterized as HLW in the physical form of “sludge,” at least up to the point that DOE makes a “Waste Incidental to Reprocessing” determination and subsequently pours grout into the HLW tanks during the proposed tank closure process.

⁸ Concentration data for 33 of the 51 HLW tanks are found in Table C.3.1-1 Worksheet Data, cited in Att. 2, Defendants’ SRS 2002 *HLW Tank Closure Final EIS* at C-18, Table C.3.1-1, Reference (a) (Newman and Hester), (dated 2/23/1999) (“Table C.3.1-1 Worksheet Data”). Plaintiffs are happy to submit the computer spreadsheet compilation in its entirety to the Court if the Court so wishes.

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26. The waste that DOE proposes to leave in the tanks is “highly radioactive material.” The States of Idaho, Washington, Oregon and South Carolina agree, noting that, “The tank wastes at the [Savannah River] site directly result from reprocessing of spent fuel and are *extremely radioactive*. (States’ Br. at 16; emphasis supplied) As an example, it is estimated that “the solids in [SRS] Tank 19 are currently 39 times the upper limit for Class C waste.” d’Entremont and Thomas, Tank 19 Report.

27. The residual waste that DOE proposes to abandon in the tanks is “material from reprocessing of spent fuel.” This is also the view of the States. States’ Br. at 16.

DOE IS NOT COMMITTED TO LEAVING ONLY A SMALL AMOUNT OF HLW IN THE TANKS

28. (b)(6) states:

The Plaintiff’s Statement of Material Facts at p. 7 and (b)(6) (b)(6) Declaration at paragraph 11 asserts that if DOE left one or two percent of the existing waste, such an amount represents 4 – 8 MCi of radioactivity, and equates this activity to a quantity of spent nuclear fuel assemblies. My understanding is that Table C.3.1-1 of the SRS HLW Tank Closure Final EIS lists the total activity of the primary radioactivity contributors that will remain in the tanks after bulk removal for final treatment and does not take credit for any additional cleaning. This data, along with recent characterization for closed Tanks 17 and 20, shows that the projected quantity of radioactivity in the tank residues is approximately 176,000 curies and is approximately 20-times less than the lower end (4 MCi) asserted by Plaintiff’s Statement of Material Facts. After approximately 300 years, well within the expected analyzed life of 1000 years for the grout in the stabilized tank (SRS Final EIS), this radioactivity will have decayed away to approximately 0.1% of the original amount.

(b)(6) Declaration ¶ 14.

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There is a glaring omission in this statement and several errors in the underlying data relied upon by (b)(6) for this statement and in the statement itself.

29. The glaring omission is that the EIS states:

Table C.3.1-2 lists the volume and residual material assumed for modeling purposes to remain in closed HLW tanks and *do not represent a commitment or goal for waste removal.*

Att. 2, SRS 2002 *HLW Tank Closure Final EIS* at C-17 (emphasis supplied). The Final EIS makes clear that DOE is not committed to removing the amount waste reflected in the table cited by (b)(6)

30. Contemporaneous with the preparation of the SRS Tank Closure Final EIS, May 2002, the DOE contractor at SRS prepared a report documenting “the basis for the residual waste inventories that will be used in the Tank 19 fate and transport modeling.” d’Entremont and Thomas, Tank 19 Report. According to this report, in 1980-1981, a salt removal program reduced the solids in the tank from over one million gallons to an estimated 33,000 gallons. From September 2000 to June 2001, heel removal was performed on the estimated 33,000 gallons, and in August 2001 the tank walls were washed. At the end of this process it was determined that Tank 19 contained an estimated 15,000 gallons of wet sludge in the bottom of the tank and 1,800 gallons of free supernate. *Id.* The “NRC Class C Calculation” in the report was based on the assumption that the residual tank inventory would include the 15,000 gallons of wet sludge. This

⁹ Also in the Final EIS, DOE states, “Based on experience in removing waste from Tanks 16, 17, and 20, DOE has assumed that the volume of material remaining after only bulk waste removal would be 10,000 gallons per tank. *Id.* C-17. There are approximately 37 million gallons of HLW liquids and solids in the 49 HLW tanks that have not been closed. See (b)(6) Declaration ¶ 6. Therefore, bulk waste removal of the remaining 49 tanks would leave 490,000 gallons or 1.3 percent of the present inventory. This conclusion confirms the (at least) one to two percent of HLW abandonment assumed in my initial declaration.

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volume of residual waste is 15 times greater than the 1,000 gallons assumed for Tank 19 in the SRS Tank Closure Final EIS. See Att. 2, SRS 2002 HLW Tank Closure Final EIS at C-18, Table C.3.1-2.

31. While both the SRS 2002 *HLW Tank Closure Final EIS* (Att. 2) and the contractor report (b)(6) Tank 19 Report) contain disclaimers, there is no commitment by DOE to further reduce the Tank 19 residual waste from 15,000 to 1,000 gallons. (b)(6) claims, “My understanding is that Table C.3.1-1 of the SRS HLW Tank Closure Final EIS lists the total activity of the primary radioactivity contributors *that will remain in the tanks after bulk waste removal* for final treatment and does not take credit for any additional cleaning.” (b)(6) Declaration ¶ 14 (emphasis added). Tables C.3.1-1 and C.3.1-2 of the SRS 2002 *HLW Tank Closure Final EIS* to which (b)(6) refers are for modeling purposes only and inaccurate for Defendants’ purposes here.

(b)(6) UNDERSTATES THE RADIOACTIVITY LEFT IN THE TANKS

32. There are other errors in (b)(6) Declaration ¶ 14 that merit correction. First, Table C.3.1-1 does not list all the “primary radioactivity contributors that will remain in the tanks after bulk waste removal . . .” Table C.3.1-1 excludes yttrium-90m (Y-90m), a radioactive daughter product resulting from the decay of strontium-90 (Sr-90), and barium-137m (Ba-137m), a radioactive daughter due to the decay of cesium-137 (Cs-137). The curie amount of Y-90m is equal to that of Sr-90, and the curie amount of Ba-137 equals about 95 percent of the curie amount of Cs-137. Since Sr-90 and Cs-137 represent about 98 percent of the radioactivity listed in Table C.3.1-1, including these two

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radioisotopes, Y-90m and Ba-137m, would increase the total curies of radioactivity by about 97 percent—almost doubling the 176,000 curies reported by (b)(6) (and the total curies in Table C.3.1-1).¹⁰

THE CONCENTRATION OF RADIOACTIVITY IN THE ABANDONED HLW CAN BE AS GREAT, OR GREATER, THAN THAT OF THE HLW REMOVED

33. “Concentration” is defined as, “The amount of a substance in weight, moles, or equivalents contained in unit volume.” CRC, *Handbook of Chemistry and Physics*, 68th Edition, at F-75. “Volume, unit of” is defined as “The cubic centimeter, the volume of a cube whose edges are one centimeter in length. Other units of volume are derived in a similar manner. Dimension. [L³].” *Id.*, at F-108.

34. Plaintiffs asserted that “the concentration of radioactivity in the abandoned sludges and sediments can be as high, or even higher, than the concentration of radioactivity in the materials removed from the tanks . . .” Plaintiff’s Statement of Material Facts at 4. (b)(6) erroneously claims that this is not correct. (b)(6) Declaration ¶ 9. (b)(6) is in error; she uses mathematical averaging to give the appearance that radioactivity concentrations are smaller than they are in reality. This can be seen from the concentrations of radioactivity in sludge, salts and supernate (liquid) in 33 HLW tanks at SRS.¹¹ In a majority of the HLW tanks at SRS where data is available—in more than a dozen HLW tanks—the

¹⁰ The 176,000 curies reported by (b)(6) is greater than 171,000, the sum of the curies of the isotopes given in Table C.3.1-1. If (b)(6) is including other isotopes, not identified in Table C.3.1-1, she should so indicate. Including all isotopes that are in the referenced wetables and using values for 2/23/99, would increase the total radioactivity in all 48 non-emptied tanks (i.e., excluding Tanks 16, 17, and 18) to 561,000 curies.

¹¹ Table C.3.1-1 Worksheet Data and ¶ 37 below.

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concentration of radioactivity in sludge *exceeds* the concentration of radioactivity in salt and in supernate (liquid).¹² Since the residual radioactivity DOE proposes to abandon in tanks is predominately sludge, and the waste DOE proposes to remove from the tanks is predominately supernate (liquid) and salts, the concentration of radioactivity in the abandoned sludges and sediments can be as high, or even higher, than the concentration of radioactivity in the materials removed from the tanks.

35. The States note this fact as well: “[t]here are 3 million gallons of this sludge (8% of the volume) containing 226 million curies of radioactivity (55% of the curies.)” (b)(6) Affidavit ¶ 8 referring to SRS; *see also Id.* ¶¶ 6-11 (“There are approximately 34 million gallons (92% of the volume) of supernate and salt cake containing 200 million curies of radioactivity (45% of the curies).” *Id.* ¶ 11. On average, the concentration of radioactivity in sludge is greater than that in liquids and solids. Thus, for most of the tank waste at SRS, the concentration of radioactivity in what DOE proposes to abandon is greater than the concentration of radioactivity in what DOE proposes to remove from the tanks.

(b)(6) **SELECTIVELY CHOOSES DATA**

36. There are two additional problems with (b)(6) claim reproduced at ¶ 28 above. First, (b)(6) chooses as evidence the results from cleaning out Tanks 17 and 20, which prior to closure were among the cleanest tanks at SRS.

¹² In 1996 DOE stated, “At the present time the approximately 129 million liters (34 million gallons) of High-Level Waste (HLW) are being treated to separate the high-activity fraction (a sludge) from the low activity fraction (a liquid).” SRS 1996 *HLW EA*, Section 1.1.1.

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37. In support of her claim, (b)(6) begins by noting that the average concentration of radioactivity in operating HLW tanks is 3,245 Ci/m³.

(b)(6) ¶ 9. This is equal to 12.3 curies per gallon (“Ci/gal”).¹³ (b)(6)

(b)(6) also cites the concentration of radioactivity in HLW canisters (final disposal form)—5,575 Ci/m³ (21.1 Ci/gal). *Id.* These average concentration figures are undisputed. The radioactivity concentration in the SRS HLW tanks and in the sludge in these tanks, however, varies widely. I have summarized the Table C.3.1-1 Worksheet Data here:

Table 1. Radioactivity Concentrations in SRS HLW tanks (values for 2/23/99).¹⁴

Tank	Surrogate Tank	Area	Residual Waste (DOE) (gal)	Radioactivity Concentration in Sludge (Ci/gal)	Radioactivity Concentration in Salt (Ci/gal)	Radioactivity Concentration in Supernate (Ci/gal)
1		F	100	201.80	1.75	38.58
2		F	100	44.31	2.75	14.31
3		F	100	40.19	3.75	14.31
4		F	100	73.92	4.75	20.62
5		F	100	236.32		
6		F	100	308.54		2.45
7		F	100	40.82		6.21
8		F	100	59.88		1.43
9		H	100	47.76	9.75	14.03
10		H	100	5.10	10.75	2.45

¹³ Since there are 264.1721 gallons (U.S.) in a cubic meter.

¹⁴ In Table 1, concentration data are given for 33 of the 51 HLW tanks (values for 2/23/1999). The Table C.3.1-1 Worksheet Data do not include data for Tanks 16, 17, and 20 because these tanks are either empty (Tank 16) or closed (Tanks 17 and 20). It should be noted that inventory data for 15 tanks were not available in the DOE/SRS database. In preparation of the SRS 2002 *HLW Tank Closure Final EIS*, DOE (and its contractor) used surrogate tank data where tank data were unavailable or where tank inventories were expected to change. SRS apparently does not know the concentrations of radioisotopes in the sludge in several tanks, so values for other tanks were used as “surrogates.” The volume of sludge that DOE assumes will be left in the tanks is in dispute.

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11		H	100	91.71		2.42
12		H	100	171.95		
13		H	100	80.40		26.45
14		H	100	16.95	14.75	32.51
15		H	100	81.68		
16	emptied	H	100			
17	closed	F	2200			
18		F	1000	0.50		3.58E-04
19		F	1000	0.22	19.75	5.12E-02
20	closed	F	1000			
21		H	100	9.10		3.50E-02
22		H	100	12.76		2.98E-03
23		H	1000	0.02		3.58E-04
24	43	H	100			0.08
25	26	F	1000		25.75	8.36
26		F	1000	2.17		11.57
27	26	F	1000		27.75	4.82
28	26	F	1000		28.75	10.26
29	13	H	100		29.75	19.33
30	13	H	100	224.20	30.75	26.20
31	13	H	100		31.75	24.87
32		H	100	136.82		13.19
33		F	100	398.81	33.75	0.29
34		F	100	901.04	34.75	6.88
35		H	100	359.19		18.14
36	13	H	100	165.30	36.75	40.69
37	13	H	100		37.75	29.92
38	43	H	100		38.75	1.48
39		H	100	260.10		4.81
40		H	100	2.96		2.08
41	43	H	100			4.95
42	13	H	100	10.26		3.58E-04
43		H	100	43.28		1.32
44	26	F	1000			10.33
45	26	F	1000			13.17
46	26	F	1000			15.97
47		F	1000	1.57		5.20
48	13	H	100			3.58E-04
49	13	H	100			3.58E-04
50	13	H	1000			3.58E-04
51	13	H	100	5.50		0.12
TOTAL		51	18,900			
F		22	14,200			
H		29	4,700			

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38. As seen from Table 1 at ¶ 37, the concentrations of radioactivity in sludge vary by more than a factor of 4,000, and are as low as 0.22 Ci/gal (Tank 19) and as high as 901 Ci/gal (Tank 34).¹⁵ One cannot credibly or logically refute Plaintiff's claim that the residual concentrations "can be as high, or higher" than materials removed from the tanks by choosing as one's evidence two of the cleanest tanks and without at least some reference to the concentration of the waste removed from the tank. Moreover, as seen from Table C.3.1-1 Worksheet Data, the concentrations of radioactivity in sludge in many tanks is higher than 12.3 Ci/gal, the average concentration of radioactivity in the tanks, and higher than 21.1 Ci/gal, the average concentration of radioactivity in the HLW canisters (final disposal form).

THE HLW WOULD NOT BE THOROUGHLY MIXED WITH GROUT

39. The second problem with (b)(6) claim reproduced at ¶ 28 above, is that she takes credit for mixing of radioactivity with grout, which physically does not occur in to any appreciable degree. (b)(6) (b)(6) claims that the average concentration of radioactivity in Tanks 17 and 20 after closure are 1.1 Ci/m³ [= 0.0042 Ci/gal] and 0.9 Ci/m³ [= 0.0034 Ci/gal], respectively, where these are the concentrations of radioactivity averaged over the sludge remaining in the tank and the "grout credited for binding up the wastes." (b)(6) ¶ 9. This mathematical averaging does not actually change the concentration of the abandoned HLW to any appreciable degree. This can be seen by examining the closure of Tank 17. The projected Tank 17 residual inventory of radionuclides after waste removal and spray

¹⁵ Sr-90 is the most abundant isotope in sludge. The concentration of Sr-90 in Tank 34 sludge was estimated to be 355 Ci/gal, more than 4,000 times greater than the 0.0751 Ci/gal in Tank 19.

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washing are found in DOE's document, "Industrial Wastewater Closure Module for the High-Level Waste Tank 17 System," Revision 1, Savannah River Site, April 2, 1997, p. A-18, Table A-4 (originally included in Plaintiffs' Complaint, Att. 17).

40. Adding the residual values in Table A-4 of the Tank 17 data, the total amount of radioactivity in sludge (before the addition of grout) was approximately 129 curies. This radioactivity was in approximately 2,200 gallons of sludge (Att. 2, Table C.3.1-1 Worksheet Data), so the estimated concentration of radioactivity in the residual sludge was approximately 0.059 Ci/gal (15.5 Ci/m³).¹⁶ Since interstitial liquid (liquid mixed in with solids) typically accounts for 70-85% of the volume of sludge, once the sludge dries following tank closure, the residual solids, or heels, represent only about 15-30% of the original sludge volume. Therefore, the estimated concentration of the dry heel at the bottom of Tank 17 is about 0.2-0.4 Ci/gal (about 50 to 100 Ci/m³).

41. To give the impression that the concentration of residual radioactivity has been diluted from 15.5 Ci/m³ to 1.1 Ci/m³, (b)(6) "takes credit" for approximately 28,780 gallons of grout ($129 \text{ Ci} / 1.1 \text{ Ci/m}^3 = 117 \text{ m}^3 = 30,980 \text{ gallons} - 2,200 \text{ gallons sludge} = 28,780 \text{ gal}$), out of the approximately, 1,300,000 gallons of grout that were added to Tank 17. Att. 2, Table C.3.1-1 Worksheet Data. Thus, the approximately 28,780 gallons of grout that (b)(6) "credits" as binding with the waste is 13 times the 2,200 gallons of sludge left in the bottom of the

¹⁶ Here, it noted that the estimated concentration of radioactivity in the Tank 17 sludge was less than the estimated concentration of radioactivity in sludge in nearly all, if not all, other HLW tanks at SRS where data is available. Tank 23 is the only tank in the Table C.3.1-1 Worksheet Data, where the concentration is less than that of Tank 17. It is unclear whether Tank 23 has a lower concentration, or this single case reflect a lack of inventory data for specific radionuclides in Tank 23. This simply confirms that Defendants have chosen the cleanest tank to suggest that the concentration of radioactivity to be left in the tanks is small.

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tank. Since the “fill factor” for Tank 17 is approximately 3,540 gallons per inch, the 2,200 gallons of sludge has a height of about 0.6 inches and (b)(6) is “taking credit” for 8 inches of grout. It is obvious the approximately 28,780 gallons (8 inches) of grout is not thoroughly mixed with the 2,200 gallons (0.6 inches) of sludge. Rather, it is poured on top of the sludge.

42. For Tank 19, it has been proposed to “take credit” for 20.2 inches of grout poured over 15,000 gallons (4.2 inches) of sludge. (b)(6) Tank 19 Report. Here again, it is not credible to assume that the sludge is actually diluted by the grout. DOE does not even make this claim.

43. One would expect some binding at the interface of the sludge and the grout poured on top of it. (b)(6) claims, “The initial grout addition added to the tanks, both stabilizes the waste and is formulated to promote some chemical binding of the waste constituents.” (b)(6) Declaration ¶ 12. “Promoting binding” is not synonymous with “uniformly mixing.” Substantial mixing is not even contemplated. DOE is proposing to take credit for mixing whether significant mixing takes place or not, by an amount of “grout credit” that would be sufficient to reduce the “average concentration” to below Class C levels. Note that DOE’s Mr. (b)(6) claims only that the residual waste would “be *in average* concentrations suitable for near surface disposal.” (b)(6) (b)(6) Declaration ¶ 29(emphasis added). Mr. (b)(6) includes the words “in average” to avoid the false statement that the actual concentrations of the abandoned waste would be as low.

44. “Average concentration,” as DOE uses the term, is not the same as and should not be confused with “actual concentration.” Mathematical “averaging,” as

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performed by DOE, does not imply dilution through mixing, and therefore does not imply a reduction in the concentration.

45. (b)(6) states:

The residual wastes in the tanks will be or have been stabilized in solid form, and depending upon waste incidental to reprocessing determinations pursuant to DOE O 435.1 and DOE Manual 435.1-1, and managed as low level waste as part of the tank closure programs. Through this process, the stabilized tank residual wastes, *on average*, meet the standards for Class C low-level waste, as specified in 10 CFR 61.55, and low-level waste performance objectives comparable to 10 CFR 61 C.

(b)(6) Declaration ¶ 9 (emphasis added).

Setting aside the legal opinion offered by (b)(6) under the DOE proposal the residual sludge at the bottom of the tank will contain radioisotopes in concentrations that exceed the Class C limits. The fact that DOE is engaging in a mathematical averaging of radioactivity in the sludge over the volume (or mass) of the grout, with no significant mixing of the radioactivity with the grout, can be seen in DOE's own report. (b)(6) Tank 19 Report. The Class C calculation methodology is found in the section titled, "NRC Class C Calculation" and the calculations are shown in Table 6 of this DOE report. There is no discussion of mixing and nothing in the methodology requires it.

46. The mathematical averaging, "taking grout credit," process renders meaningless the objective of establishing concentration limits for Class C and other waste categories in 10 CFR 61.55. DOE could just as well average the residual radioactivity in the tanks with arbitrary volumes (or mass) of earth under the tanks or the groundwater adjacent to the tanks. I cannot make myself younger by averaging my age with the ages

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of my daughters. Neither can DOE reduce the actual concentration of residual waste by averaging the radioactivity over arbitrary volumes (or masses) of materials with which the wastes are not thoroughly mixed.

MINOR CORRECTIONS AND SECONDARY ISSUES

47. (b)(6) states, “Spent nuclear fuel reprocessing was conducted by the Department to separate fissile elements (U-235, Pu-239, U-233, and Pu-241) and/or transuranium elements (*e.g.*, Np, Pu, Am, Cm, Bk) from other materials (*e.g.*, fission products, activated metals, cladding) contained in spent nuclear fuel; for the purposes of recovering desired materials, . . .” (b)(6) Declaration ¶ 4. This statement is improperly worded in that it confuses “elements” and “isotopes.” U-235, U-235, Pu-239, etc. are isotopes of elements, not elements. Also, the recovered uranium and plutonium contain non-fissile isotopes of these elements, *e.g.*, U-238 and Pu-240.¹⁷

48. (b)(6) states, “During reprocessing operations, the desired materials (uranium and plutonium) were removed via a chemical process and the waste streams, which contained the bulk of the fission products, were routed to tanks for storage and subsequent treatment.” (b)(6) Declaration ¶ 5. This is true for the principal DOE reprocessing operations, which relied on aqueous reprocessing (*e.g.*, PUREX). There is at least one non-chemical reprocessing technique that has been developed and utilized by DOE, albeit on an R&D scale, namely pyroprocessing. Pyroprocessing is a reprocessing technique that utilizes an electrorefining technique,

¹⁷ The Implementation Guide for use with DOE M 435.1-1 (II-5), AR 22234 (quoted in Defendants Brief at p.8. footnote 12) is similarly improperly worded where it states, “However, reprocessing is considered by the Department to be those actions necessary to separate fissile elements (U-235, Pu-239, U-233, and Pu-241) and/or transuranium elements (*e.g.*, Np, Pu, Am, Cm, Bk) from other materials (*e.g.*, fission products, activated metals, cladding) contained in spent nuclear fuel; for the purposes of recovering desired materials.”

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rather than chemical processes, for separating product and waste streams. This reprocessing concept was developed by DOE's Argonne National Laboratory and a pilot-scale pyroprocessing plant has been in operation at INEEL. I do not know how DOE has managed the HLW from this plant.

49. In (b)(6) Declaration ¶ 8, (b)(6) confirms that DOE proposes to dispose of HLW in the bottom of the tanks, and the bottoms of the tanks at SRS are 31 feet to 38 feet below the surface. The HLW emplacement area where DOE proposes to bury HLW at the proposed Yucca Mountain repository will be 200 to 425 meters (660 to 1,400 feet) below the surface. More importantly, the residual waste that DOE proposes to leave in the SRS tank bottoms will be in or very near the water table, whereas the Yucca Mountain HLW emplacement area is 175 to 365 meters (574 to 1,200 feet) above the water table. Thus, DOE intends to dispose of the HLW in shallow-land burial, as opposed to deep geological burial.

50. Contrary to (b)(6) claim (at ¶ 14), and contrary to the table caption (Att. 2, SRS 2002 *HLW Tank Closure Final EIS*, p. C-18), Table C.3.1-1 does not report the "total activity of the primary radioactivity contributors that will remain in the tanks after bulk removal for final treatment." Rather these concentrations are estimated concentrations after subsequent waste removal steps, such as spray water washing and oxalic acid wash and rinse. This can be seen by comparing the data in Table 2-1 (Att. 2, SRS 2002 *HLW Tank Closure Final EIS*, p. 2-3), with the data in Tables C.3.1-1 and C.3.1-2. From Table 2-1, it is seen that starting with 2.83 million curies in Tank 16, it is estimated that "Bulk Waste Removal" removed 97% of the radioactivity, leaving 84,900 curies; "Bulk Waste Removal" followed by "Spray Water Removal" was

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estimated to remove 97.98% of the radioactivity, leaving 2.02% or 57,200 curies. “The amount of waste left after spray washing was estimated at about 18,927 liters (3,500 gallons) in Tank 16.” Att. 2, SRS 2002 *HLW Tank Closure Final EIS*, Section 2.1.1. This is 35 times the volume of waste listed in Table C.3.1-2.

ERRORS IN THE FIRST DECLARATION OF (b)(6)

51. (b)(6) is correct in noting an error in Plaintiff’s Statement of Material Facts at p. 7 and in the First Declaration of (b)(6) at paragraph 15. Using 22,000 gallons as the reference standpoint, leaving 1,000 gallons in the tank is about 4.5% of the initial 22,000 gallons. It is undisputed that Tank 20 may have held almost 1 million gallons of high-level waste sometime during the past 40 years.

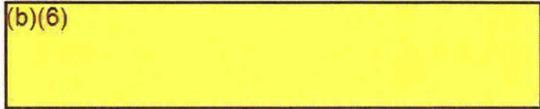
52. (b)(6) is correct in noting a typographical error in Plaintiff’s Statement of Material Facts, at p. 7; *see also*, (b)(6) Declaration ¶ 26 (2). The estimate of the amount of radioactivity in high-level radioactive waste tanks at INEEL is 0.5 MCi, not 5 MCi. A more complete description of the HLW management activities, including inventories of HLW, at INEEL can be found in the (b)(6) Affidavit ¶¶ 3-16 and (b)(6) Declaration ¶¶ 4-15.

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Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury, that the foregoing is true and correct to the best of my knowledge and belief.

Signed on the ___ day of April, 2003,

(b)(6)



Natural Resources Defense Council, Inc.

Attachment E

See signature page for complete list of parties represented.

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

Natural Resources Defense Council, Inc.;
Confederated Tribes & Bands of the Yakama
Nation; Snake River Alliance

Plaintiffs

v.

Spencer Abraham, Secretary, Department
of Energy; United States of America,

Defendants

Case No. 01-CV-413 (BLW)

COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF

Nature of the Action

1. This action seeks to compel defendants, United States Department of Energy ("DOE") and its Secretary, Spencer Abraham, to comply with the Nuclear Waste Policy Act, 42 U.S.C. §§ 10101 et seq. ("NWPA") and the Administrative Procedures Act ("APA"), 5 U.S.C. § 701 et seq. Defendants violated the NWPA by promulgating DOE Order 435.1, which has in it a specific provision that allows DOE to reclassify high-level radioactive waste and call it "incidental waste." This renaming process would allow DOE to permanently leave high-level radioactive waste—which will gradually disperse into the environment—in shallow burial in more than 200 nuclear waste storage tanks located at three DOE nuclear weapons sites: the Hanford Reservation in Washington near the Columbia River, the Idaho National Engineering and Environmental Laboratory ("INEEL") above the Snake River Aquifer, and the Savannah River Site ("SRS") in South Carolina where several tanks literally sit in the water table.

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2. The DOE and its predecessors, the Atomic Energy Commission ("AEC") and the Energy Research and Development Agency ("ERDA"), in the course of the production of nuclear weapons, generated approximately 100 million gallons of high-level radioactive waste. The DOE, ERDA and the AEC managed this high-level radioactive waste, one of the most dangerous substances known to humankind, by placing the waste in huge, underground storage tanks at INEEL, Hanford and Savannah River.¹ Over the last few decades, hundreds of thousands of gallons of this waste have leaked into the environment and continues to do so.

3. The management of these tanks and their high-level radioactive waste has been an expensive and technically complex problem for DOE. Various plans for tank waste management have been forwarded, including transferring pumpable liquids from single shelled tanks to double shelled tanks (at Hanford), heating the waste to convert it to a powdery form (called calcining and was done at INEEL), and vitrifying the waste (a process that stabilizes radioactive waste by mixing it with molten glass) for disposal at a geologic repository pursuant to the NWPA.

4. DOE manages high-level waste according to applicable federal law, such as the NWPA, the Atomic Energy Act ("AEA"), 42. U.S.C. § 2201, 10 C.F.R. Part 60, and DOE Order 435.1, which governs the Department's management of radioactive waste. As DOE itself notes, "[T]he intense radioactivity primarily determines how high-level waste is managed ... [U]nder federal law, DOE high-level waste will eventually be disposed of in geologic repositories after it has been treated to produce solid waste forms acceptable for disposal, and repository facilities become available." U.S. DOE Report Linking Legacies, at 32-33, and 38. DOE/EM-0319 (January 1997).

¹ In addition, there are similar wastes in storage tanks at West Valley, New York.

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5. Under its recently promulgated radioactive waste management authority, Order 435.1, DOE has awarded itself the authority to reclassify the high-level waste that remains in the tanks after some part of the liquid waste has been pumped out as "incidental waste" or "waste incidental to reprocessing."² Instead of following federal law and disposing of high-level radioactive waste in a geologic repository, DOE intends to leave literally thousands of gallons of the highly radioactive sediments and sludges in the bottom of the underground tanks, cover the waste in place with concrete, and hope for the best. The waste remaining in the tanks will also have comparable—and potentially much higher—concentrations of radioactive elements than the high-level waste removed from the tanks for disposal in a geologic repository. DOE has already implemented this process with three tanks at Savannah River and has grouted them in place for "permanent disposal."

6. Fundamentally, DOE's action creates three national sacrifice zones for high-level waste. Via Order 435.1, DOE arbitrarily and unilaterally reclassifies high-level waste as "incidental waste," thereby exempting it from the NWPA and allows this dangerous waste to be subject to an entirely different, and substantially less stringent set of disposal criteria. Disposal of tens of thousands of gallons of high-level waste in the INEEL, Hanford, and Savannah River waste tanks will (1) result in a potentially catastrophic dispersal of radioactivity into the environment and (2) at a minimum, will require significant land-use restrictions, maintenance, and monitoring in perpetuity. Such an action is fundamentally inconsistent with the plain language of the NWPA and its overriding purpose of ensuring that high-level radioactive waste does not "adversely affect the public health and safety and the environment for this or future generations." 42 U.S.C. §10131(a)(7).

² "Waste incidental to reprocessing" and "incidental waste" are interchangeable terms.

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7. With this lawsuit, which is brought under the NWPAA and the APA, plaintiffs Natural Resources Defense Council, Inc. ("NRDC"), the Snake River Alliance, and the Confederated Tribes and Bands of the Yakama Nation ("Yakama Nation") seek a court order setting aside as arbitrary, capricious and contrary to law the provisions of Order 435.1 that relate to incidental waste. Further, plaintiffs seek a court order enjoining defendants from (1) taking any action with respect to waste in the tanks that would be inconsistent with the requirements for high-level waste radioactive disposal under the NWPAA; and (2) taking any actions that include but are not limited to, grouting with concrete for "permanent disposal" any additional high-level waste tanks.

Jurisdiction and Venue

8. Jurisdiction over this action is based on 28 U.S.C. § 1331 (federal question jurisdiction) and 5 U.S.C. § 701 et seq. ("APA"). The relief sought is authorized by 28 U.S.C. § 2201 (Declaratory Judgment) and 28 U.S.C. § 2202 (Injunctive Relief).

9. Venue is properly in this Court under 28 U.S.C. § 1391(e), because this is an action against a United States agency which has a facility and conducts actions on matters that are the subject of this Complaint within the State of Idaho.

10. There is an actual, present and justiciable controversy between the parties to this action. As plaintiffs have exhausted their administrative remedies and have no adequate remedy at law, plaintiffs are entitled to have a declaration of their rights and of defendants' obligations, and further relief, because of the facts and circumstances hereinafter set out.

Parties

11. Plaintiff Natural Resources Defense Council, Inc. ("NRDC") is a national non-profit membership environmental organization incorporated under the laws of New York, with offices

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in Washington, D.C., New York City, San Francisco and Los Angeles. NRDC's nationwide membership of over 390,000 individuals includes over 20,000 members in Idaho, Washington, and South Carolina where DOE has nuclear weapons facilities and storage tanks of high-level radioactive waste. NRDC has a long history of advocacy, including prior litigation, on issues related to DOE's nuclear waste disposal and environmental remediation programs. For more than 25 years, NRDC has played a major role in setting vital legal precedents in the application of environmental laws to U.S. nuclear weapons programs.³

12. NRDC's objectives include maintaining and enhancing environmental quality and monitoring federal agency actions to ensure that federal statutes enacted to protect human health and the environment are fully and properly implemented. Since its inception in 1970, NRDC has sought to improve the environmental and safety conditions at nuclear weapons facilities owned and operated by agencies of the United States Government. To achieve this objective, NRDC and its members engage in legislative activities, litigation, administrative actions, and public education efforts to inform others about the environmental impacts of Defendants' activities.

13. The Confederated Tribes and Bands of the Yakama Nation is a federally recognized Indian tribe under the Treaty of June 9, 1855 (12 Stat. 951) with the United States. The Yakama people have resided in the Columbia River Basin in the Pacific Northwest since time immemorial. The Yakama Reservation, established by Article II of the Treaty, is twenty-five miles directly west of the Hanford Nuclear Reservation in south-central Washington and has approximately 1.3 millions acres of land within its boundaries. In 1855 the tribe ceded millions of acres of its aboriginal lands to the federal government, comprising approximately one quarter of the State of Washington and including what is now the Hanford Site.

³ See, e.g., Legal Envtl. Assistance Found. v. Hodel, 586 F.Supp. 1163 (E.D. Tenn. 1984) (finding that DOE is subject to federal environmental laws); NRDC v. NRC, 606 F.2d 1261 (D.C. Cir. 1979).

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14. Under Article III of the Treaty, the Yakama people reserved rights to fish at all usual and accustomed places within the Columbia River Basin. See U.S. v. Winans, 198 U.S. 371 (1905); Seufert Bros. Co. v. U.S., 249 U.S. 194 (1919); Tulee v. State of Washington, 315 U.S. 681 (1942); Sohappy v. Smith, 302 F.Supp. 899 (D.Or. 1969) (also known as U.S. v. Oregon). Fishing sites range throughout the Columbia and its sub-basins, including the Yakima River only a few miles from Hanford. The government of the Yakama Nation has regulatory authority over the off-reservation fishing rights of its members, and sets annual seasons for both subsistence and commercial fishing in the Columbia Basin. See Settler v. Lameer, 507 F.2d 231 (9th Cir. 1974).

15. Fishing has been a central part of Yakama culture since time immemorial, and the annual salmon runs of the Columbia River continue to hold a deep religious significance to tribal members. Although spring chinook salmon is the most prized species, tribal fishermen also catch fall chinook, coho, sockeye, steelhead, sturgeon and lamprey. Spawning areas for fall chinook salmon include the stretch of the Columbia that flows through the Hanford Site (the "Hanford Reach").

16. The Snake River Alliance is an Idaho-based non-profit membership environmental organization incorporated under the laws of Idaho, with offices in Boise, Ketchum and Pocatello. The Snake River Alliance was founded in 1979 by people who had just learned that INEEL routinely injected hazardous and radioactive waste into the Snake River Aquifer via an injection well at the Idaho Nuclear Technology and Engineering Center ("INTEC"). After a multi-year public education effort by the Snake River Alliance, the INTEC injection well was taken out of routine service in 1984 and capped by the Governor of Idaho in 1989. The Snake River Alliance has over 1,000 dues-paying members, most of whom live in southern Idaho. Many Alliance

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members rely on the Snake River Aquifer as a sole-source aquifer for drinking and irrigation. Also, many members recreate on the Snake River, downstream from the aquifer's outlet near Thousand Springs. One of the Snake River Alliance's central missions is to work for responsible solutions to nuclear waste disposal and effective environmental remediation of the numerous highly contaminated sites at INEEL. The Snake River Alliance is identified as a "key stakeholder" in the Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement, which was published by the Department of Energy in December 1999.

17. Defendant United States Department of Energy is an executive department and "agency" of the United States Government, within the definition of Section 701 of the Administrative Procedures Act, 5 U.S.C. § 701 et seq., subject to the laws, regulations, and executive orders of the United States. The Department is charged with responsibilities in connection with the management, storage, and ultimate disposal of high-level radioactive waste resulting from the production of nuclear weapons and other activities. One of DOE's largest nuclear weapons facilities is the Idaho National Engineering and Environmental Laboratory, located in Idaho Falls, Idaho 83415. The Atomic Energy Commission (a predecessor to DOE) established the Idaho facility in 1949. Once the site of the world's largest concentration of nuclear reactors, INEEL was designated a Superfund site in 1989 and is the continuing recipient of millions of cubic feet of nuclear waste from throughout the nuclear weapons complex. INEEL covers an 892 square mile reservation approximately 32 miles west of the city of Idaho Falls, Idaho.

18. Defendant Spencer Abraham is the Secretary of Energy and is sued in his official capacity. Secretary Abraham has direct responsibilities for the management and disposal of DOE's high-level radioactive waste.

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Background and Factual Allegations

19. After almost 9 years of development and pursuant to APA notice and comment procedures, DOE issued notice of its final Order 435.1 in the Federal Register on July 14, 1999. 64 Fed. Reg. 29393. See also, *Notice of Availability, Draft DOE Order 435.1*, 63 Fed. Reg. 42,012, 42,013 (August 6, 1998).⁴

20. DOE Order 435.1 states that “[a]ll radioactive waste shall be managed in accordance with the requirements in DOE M 435.1-1, *Radioactive Waste Management Manual*.” Att. 1 at 3. Indeed, except for a few minor exclusions, all “DOE elements” are required to comply with DOE Order 435.1 and compliance by DOE contractors is imposed through provisions built into their contracts with DOE. *Id.* at 1-2.

21. DOE Order 435.1 and its accompanying manual (“Att. 2, 435.1-1 Manual”) and guidance (“Att. 3, 435.1-1 Guidance”) delineate radioactive waste standards, management protocols, and testing requirements for every kind of radioactive waste DOE manages within the nuclear weapons complex. The 435.1-1 Manual, which sets out the incidental waste exemption process, prescribes numerous requirements and policies that

apply to all new and existing DOE radioactive waste management facilities, operations, and activities. Implementation of the requirements shall begin at the earliest possible date, and all DOE entities shall be in compliance with this directive within one year of its issuance . . . Failure to implement the requirements of this directive shall, through the appropriate lines of management, result in corrective actions including, if necessary, shutdown of radioactive waste management facilities, operations, or activities until the appropriate requirements are implemented.

Att. 2, DOE M 435.1-1 at i. Thus, according to its own express terms, DOE Order 435.1 establishes mandatory legal requirements for the management and disposal of radioactive wastes at all DOE facilities.

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22. NRDC and the Snake River Alliance filed suit in the United States Court of Appeals for the Ninth Circuit challenging the provisions of DOE Order 435.1 that relate to incidental waste on January 3, 2000.

23. After briefing, the Ninth Circuit transferred the case to this Court via an opinion dated March 28, 2001. The Ninth Circuit found that "Because DOE Order 435.1 is not a decision under Part A of Subchapter I or of any other section of the NWPAs, we lack original or exclusive jurisdiction over this action." 244 F.3d 742, 747 (9th Cir. 2001). Notably, the Ninth Circuit stated "We leave issues of standing, ripeness, and of course the merits to the district court." *Id.*

A. Statutory Definition of High Level Waste

24. The NWPAs were passed in 1982 when Congress recognized the growing need to identify a safe means of disposing of high-level radioactive waste derived from nuclear weapons production and commercial nuclear reactors. H.R. Rep. No 97-491, 97th Cong., 2nd Sess. at 26-30 (1982) (hereinafter "House Report"); see also Natural Resources Defense Council, Inc. v. Environmental Protection Agency, 824 F.2d 1258, 1262 (1st Cir. 1987).

25. In passing the NWPAs, Congress limited its consideration of long-term disposal of high-level radioactive waste to a deep geologic repository. The reasoning behind this appears in the legislative history of the NWPAs:

The Committee strongly recommends that the focus of the Federal waste management program remain, as it is today, on the development of facilities for disposal of high-level nuclear waste which do not rely on human monitoring and maintenance to keep the waste from entering the biosphere.

House Report at 29 (emphasis added).

⁴ DOE Order 435.1 is attached to this document as Attachment 1. Attachments will hereinafter be referred to as "Att. ___."

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26. With these principles in mind, Congress established elaborate mechanisms for identifying and siting repositories, research and development, environmental review, and extensive and involved public and inter-governmental processes to obtain final agreement on siting a repository. See NWPA, 42 U.S.C. §§ 10101 et seq.

27. The process of identifying and evaluating a site involves oversight and implementation by three federal agencies, the Nuclear Regulatory Commission ("NRC"), DOE, and Environmental Protection Agency ("EPA"), as well as requirements for the President to nominate (originally) three sites and to receive congressional endorsement of one of the sites, which the affected state or Indian tribe could challenge. These myriad procedures and evaluations were put in place because of the magnitude of the risks involved, because of Congress' interest in ensuring that repositories are safe, and because of the substantial public concern about high-level radioactive waste. See House Report at 26-31.

28. This case concerns DOE's interpretation of the definition of high-level radioactive waste under the NWPA, which defines high-level radioactive waste as:

(A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and

(B) other highly radioactive material that the [NRC], consistent with existing law, determines by rule requires permanent isolation.

42 U.S.C. 10101(12) (emphasis added).⁵

29. Thus, the NWPA defines high-level waste by its source—"material resulting from reprocessing." DOE defines reprocessing as a process for extracting uranium, plutonium, and other radionuclides from dissolved spent nuclear fuel and irradiated targets. The fission products

⁵ "Fission products" are radioactive elements (*e.g.*, strontium-90, cesium-137, technetium-99) that are generated when uranium atoms split ("fission") in a nuclear reaction.

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that are left behind are high-level waste. U.S. DOE Report Linking Legacies, at 221. DOE/EM-0319 (January 1997). Reprocessing waste is categorically treated as high-level waste because it is necessarily both "intensely radioactive and long-lived." See 52 Fed. Reg. 5994.

30. After the introduction of high-level radioactive waste into the tanks, the high-level waste settles, separating into a sludge layer at the bottom of the tanks and upper layer of salts dissolved in water. Thus, the NWPA definition of high-level radioactive waste includes within it reference to "solid material derived" from the liquid effluents from reprocessing. This reflects Congress's intent to include within the definition of high-level radioactive waste all of the solid material derived from reprocessing, including that which is left in the bottom of the high-level radioactive waste storage tanks.⁶

31. Congress has authorized that the high-level radioactive waste defined under the NWPA be disposed of only at a geologic repository and that Yucca Mountain in Nevada be the site considered. 42 U.S.C. § 10172.⁷

B. Storage and Management of High-Level Radioactive Waste

32. Over the past fifty years nuclear weapons production in the United States has generated about 100 million gallons of high-level radioactive waste, which is stored at DOE sites in more than 200 tanks which range in size from a few hundred thousand gallons to more than 1 million gallons.⁸ This waste is divided between three main production sites: the Hanford

⁶ Att. 4. At Hanford, DOE acknowledges that the high-level radioactive waste solids in the tanks include slurry, sludge and saltcake. See Tank Waste Remediation System, Hanford Site, Final Environmental Impact Statement, Volume Two, Appendix A, at A-12. (August 1996).

⁷ DOE recently recommended that Yucca Mountain be considered a suitable site for the disposal of spent nuclear fuel and high level waste and the President has forwarded that recommendation to Congress. The legal and technical adequacy of that facility are irrelevant to the subject of this Complaint.

⁸ Att. 5. DOE Final Waste Management Programmatic Environmental Impact Statement, Vol. 1, 9-3 to 9-7 (1997).

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Reservation, which has 177 tanks storing more than 56 million gallons of high-level waste; the Savannah River Site, which has 51 tanks storing more than 40 million gallons of high-level waste; and INEEL, which has 11 tanks storing about 900,000 gallons of high-level waste.

33. Many of these storage tanks have leaked high-level radioactive waste. For example, at the Hanford Reservation a conservative estimate from the General Accounting Office ("GAO") states that approximately 600,000 to 900,000 gallons have leaked into the local environment directly adjacent to Columbia River from 67 tanks.⁹ Radioactive materials that have leaked include cesium, strontium, tritium, technetium, iodine, plutonium and uranium. Some of these materials remain radioactive for hundreds of thousands of years. Nonradioactive but hazardous materials that have leaked include nitrates and metals such as chromium. Id.

34. At INEEL, the DOE has acknowledged that despite limited investigations because of safety concerns, the soil surrounding the high-level waste tanks is contaminated from spills and pipeline leaks of radioactive liquids.¹⁰ Further, DOE notes that the principle threats posed by the contaminated soils are external exposure to radiation and leaching and transport of contaminants to the groundwater or to future users of the Snake River Plain Aquifer. Id.

35. At Savannah River, there are four types of high-level waste tanks.¹¹ The twelve Type I tanks were built between 1952 and 1953. Five of these tanks have leak sites in which waste leaked from the primary containment to the secondary containment (i.e., 5-foot high

⁹ GAO/RCED-98080, "Nuclear Waste - Understanding of Waste Migration at Hanford is Inadequate for Key Decisions," p. 5, March 1998 (available at <http://www.gao.gov>). The 1998 GAO report notes that these amounts do not include recent estimates using a new approach that found that radioactive leaks could be much higher on some tanks, nor does it include the radioactive wastes lost due to surface spills and leaks in pipelines. Id. at n.2.

¹⁰ Att. 6. Final Record of Decision, Idaho Nuclear Technology and Engineering Center (October 1999), at 4-1, 4-2.

¹¹ Att. 7. "High-Level Waste Tank Closure Draft EIS" DOE Savannah River Operations Office, Aiken, South Carolina, DOE/EIS-0303D, November 2000, at 1-7.

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secondary annulus “pans”). In one case the secondary containment of the tank was observed to be “degraded,” such that external water frequently leaks into the annulus.¹² Four of the leaking Type I tanks, including the tank with degraded secondary containment, sit in the water table. The four Type II tanks were built in 1956. All Type II tanks have leak sites in which waste leaked from the primary containment to the secondary containment. In one case the waste overflowed the secondary containment and leaked into the surrounding soil.

36. The eight Type IV tanks at Savannah River were built between 1958 and 1962. Two of these tanks have known leak sites and small amounts of groundwater have leaked into the tanks. Four of the Type IV tanks are in a perched water table caused by the original construction of the tank area.

37. The remaining 27 Type III tanks at the Savannah River Site are of the newest design, built between 1969 and 1986 with full-height secondary containment tanks. While none of these Type III tanks have currently known leak sites, the underground process support equipment for several tanks were found to have elevated hydrogen concentrations upwards of 45 percent of the Lower Flammability Limit, and the source of the hydrogen has not been determined.¹³

38. While liquid waste seeps from tanks and their associated pipes in Idaho, Washington and South Carolina to the surrounding environment, the concentration of radioactivity in the solids can be as high, or even higher, than the concentration of radioactivity in the materials removed from the tank after DOE implements Order 435.1 and covers the remaining waste and tanks in concrete.¹⁴

¹² Att. 8. Defense Nuclear Facility and Safety Board (“DNFSB”) 2 April 1999, SRS Report for Week Ending April 2, 1999.

¹³ Att. 9. DNFSB, 28 December 2001, SRS Report for Week Ending December 28, 2001.

¹⁴ Since the percentage of radioactivity left in the storage tanks may be more than twice the percentage of the volume of waste left in the storage tanks, the concentration of radionuclides in the remaining high-level radioactive

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C. DOE Order 435.1, the "Incidental Waste Provision" and Implementation Plans.

39. In July 1999, after a public notice and comment period, DOE promulgated Department of Energy Order 435.1 and codified its "incidental waste" provision. 64 Fed. Reg. 29393 (July 14, 1999).

40. DOE Order 435.1 and its accompanying manual (Att.2) and guidance (Att. 3) delineate radioactive waste standards, management protocols, and testing requirements for every kind of radioactive waste DOE manages within the nuclear weapons complex. The manual and guidance, in particular, contain detailed requirements for the handling of the high-level radioactive waste stored in the tanks in Washington, Idaho and South Carolina, including a process by which high-level waste may be determined to be "incidental waste" and treated as low-level waste, which exempts it from the extensive requirements of the NWPA that govern disposal of high-level radioactive waste. See Att. 2 at II-1, II-2, and Att. 3 at II-10, II-13 through II-33. It is via the incidental waste provision that DOE plans to leave the high-level waste that will remain in the tanks permanently in the ground on the respective sites.

41. According to the 435.1 Guidance, the objective of this exemption process is to dispose of "reprocessing waste streams that do not warrant geologic repository disposal because of their lack of long-term threats to the environment and man." Att. 3 at II-18 (emphasis added).

42. The Manual defines "waste incidental to reprocessing" in the following manner:

Waste resulting from reprocessing spent nuclear fuel that is determined to be incidental to reprocessing is not high-level waste, and shall be managed under DOE's regulatory authority in accordance with the requirements for transuranic waste or low-level waste, as appropriate.

waste which DOE seeks to reclassify as "incidental" may contain on average greater than twice the level of radioactivity than the high-level radioactive waste removed from the tanks. See Att. 10, NRC Review of the DOE at Savannah River High-Level Waste Tank Closure Methodology, at 8 (June 2000). The actual ratios will vary from tank to tank.

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Att. 2 at II-1.¹⁵

43. Order 435.1 creates an exemption that excludes waste explicitly covered by the NWPA definition of high-level waste (“material resulting from reprocessing”), reclassifies it as low-level (or transuranic) waste, and allows DOE unilaterally to determine whether to regulate this reprocessing waste—rather than EPA and NRC.

44. The incidental waste exemption process establishes two standards, the “citation” and “evaluation” standards, but this complaint only concerns the latter.¹⁶

45. Under the "evaluation" standard, high-level waste may be redefined as low-level waste if it meets the following criteria: (1) it is treated to reduce its level of radioactivity to the extent technically and economically practicable; (2) it is disposed in conformance with the safety requirements for low-level waste, 10 C.F.R. Part 61, Subpart C; and (3) it is solidified and does not exceed the radioactivity levels for the most radioactive category of low-level waste, referred to as the "Class C standard," set out in 10 C.F.R. § 61.55, or meets alternative requirements DOE may set. Att. 3 at II-1 (emphasis added).

46. By making compliance with the Class C standard optional — indeed completely within DOE’s own discretion — Order 435.1 creates an open-ended process for exempting high-level waste from the stringent technical and procedural requirements of the NWPA. See Att. 3 at II-27-28.

¹⁵ Transuranic waste is a category of long-lived radioactive waste that is not as intensely radioactive as high-level waste. See 42 U.S.C. § 4214ee.

¹⁶ The “citation” standard exempts certain categories of waste, including contaminated “. . . laboratory items such as clothing, tools, and equipment.” Att. 2 at II-1. The NRC proposed a similar rule in 1969, upon which the citation standard is based, but never implemented it. 34 Fed. Reg. 8712; 35 Fed. Reg. 17530. It considered such a standard again in 1987, but also withdrew it because of concerns that a numerical definition of high-level waste was “. . . an invitation to dilute or fractionate wastes solely to alter their classification.” 53 Fed. Reg. 17709 (emphasis added); see also 54 Fed. Reg. 22578; Att. 3 at II-4-5. Indeed, the dubiousness of justifying the citation part of the incidental waste standard on a rule that was not ever adopted resulted in serious criticism within DOE. See Att. 11, U.S. DOE, Response to DOE-EH Comments on High-Level Waste Issue Paper, at 1-2, 8/6/97 (comment not dated).

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47. DOE plans to use the incidental waste evaluation process to exempt materials such as reactor fuel cladding, contaminated equipment, and high-level radioactive waste it intends to abandon in the waste storage tanks at Hanford, INEEL, and Savannah River — indeed, DOE's closure plans for these facilities are premised on utilizing this exemption process. Att. 3, II-20-33.¹⁷

48. Current plans for the high-level waste tanks at the Savannah River Site illustrate how DOE applies the incidental waste exemption process. Here DOE has explicitly defined removal of 98 percent to 99 percent of the total radioactivity and over 99 percent of the volume of high level waste from the tanks as constituting "the limit of what is economically and technically practicable for waste removal," thus under their own definition potentially satisfying the first criteria under Order 435.1 for reclassification of the residual tank waste as "incidental."¹⁸ The total radioactivity in the 49 operating high-level radioactive waste tanks at the Savannah River Site is currently estimated to be 420 million Curies ("MCi").¹⁹ One to two percent of this amount, DOE's goal for high-level radioactive waste tank closure at SRS, is equal to 4-8 MCi. By comparison the radioactivity in one assembly of spent nuclear fuel irradiated in a commercial boiling water reactor is about 0.4 MCi.²⁰ In addition, the 177 high-level waste tanks at Hanford contain approximately 190 MCi of radioactivity and the 11 high-level waste tanks at INEEL

¹⁷ See, Att. 3, II-29-30, Example 2. See also, Att. 12, DOE Issue Paper, Definition of High-Level Waste and Incidental Waste Determinations at 3 (Nov. 19, 1997).

¹⁸ Att. 13. High-Level Waste Tank Closure Draft EIS, DOE Savannah River Operations Office, Aiken, South Carolina, DOE/EIS-0303D, November 2000, at 2-3.

¹⁹ Att. 14. Pacific Northwest National Laboratory website, Tank Focus Area.

²⁰ Att. 15. "Integrated Data Base Report—1994 (September 1995): U.S. Spent Nuclear Fuel and Radioactive Waste Inventories, Projections, and Characteristics" Oak Ridge National Laboratory DOE/RW-0006, Rev. 12 December 1996 at 27 and 219.

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contain approximately 5 MCi.²¹ Therefore, if one percent to two percent of the total radioactivity of the DOE high-level waste tanks is renamed "incidental waste" and left in place, this federal action is equivalent to the shallow land burial of approximately four to nine tons of spent nuclear fuel.²²

49. To date, three high-level radioactive waste tanks at the Savannah River Site have undergone closure: tank numbers 16, 17 and 20. These tank closures explicitly relied on Order 435.1, with reclassification of the residual tank waste as "incidental." These three tanks were selected for initial Department closure action in part because they were relatively clean to begin with and in two cases had been nearly empty for over a decade. The results of the tank closure process illustrate DOE's intended implementation of Order 435.1. In Tank 20 at Savannah River Site, 1,000 gallons of high-level radioactive waste remained after closure out of an initial fill of 22,000 gallons.²³ Therefore 9 percent of the initial tank waste remained in Tank 20 by volume, in contrast to DOE's goal of removing more than 99 percent of the tank waste. Similarly the residual high-level radioactive waste in Tank 17 amounted to 2,000-4,000 gallons out of an initial fill of 280,000 gallons²⁴, or 0.7 percent to 1.4 percent of the original tank volume by

²¹ Att. 14. Pacific Northwest National Laboratory website, Tank Focus Area.

²² For this calculation we use the facts that (1) one assembly of boiling water reactor spent fuel weighs about 319.9 kilograms (kg), (2) has a volume per assembly of 0.0864 m³ and (3) an activity per assembly of 1-10 MCi/m³. For pressurized water reactors these values are 657.9 kg, 0.186 m³ and 2-20 MCi/m³, respectively. See Att. 15.

²³ Much of the high-level waste was removed from Tank 20 in the mid 1980's. In 1988, the interior, including the dome and sides, was spray water washed. After spray water washing, photographs of the tank showed approximately 12,000 gallons (3.5 inches) of wash water and no observable solids. In 1990, additional water was added as ballast, brining the total liquid volume up to approximately 22,000 gallons. In 1997, prior to closure, the amount of solids remaining in the tank was approximately 1,000 gallons. Att. 16. "Industrial Wastewater Closure Module for the High-Level Waste Tank 20 System," Savannah River Site, Rev. 1, January 8, 1997 at 2-1. The ballast water had a level of radioactive of 0.1 Ci/gal. [Att. 16, Closure Module at 4-1]. The solids in Tank 20 included a wide range of radioactive hazards. See Att. 16, Closure Module at A-18.

²⁴ High level waste was also removed from Savannah River's Tank 17 in the mid 1980s. In 1986, the interior, including the dome and sides, was spray water washed. After spray water washing, photographs of the tank showed approximately 12,000 gallons (3 inches) of wash water with small amounts of solids protruding above the liquid surface. In January and February 1992, approximately 90,000 gallons of water containing tritium was placed in the

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contents. The radioactive elements in the tank heels included Selenium-79, Technetium-99, Carbon-14, Iodine-129, Plutonium (-238, -239, -240, -241 and -242), Neptunium (-237), Curium (-244 and -245) and Tritium. Att. 16 at A-18. It was estimated from process records that the approximately one-half kilogram of plutonium remained in the residual wastes in Savannah River Site tanks 17 and 20. Extrapolating this amount of plutonium per tank residue to all DOE high-level waste tanks implies that over 100 kilograms of plutonium is slated for shallow land burial under the guidelines of Order 435.1. The actual plutonium content in or near the water table at the Savannah River Site, Hanford and INEEL may be much higher, however, since the residual volume permitted under Order 435.1 depends on "the limit of what is economically and technically practicable for waste removal ... or meets alternative requirements DOE may set." See Att. 3 at II-1.

50. Regarding the third criteria for renaming residual high-level radioactive waste as "incidental" under Order 435.1 (for criteria see ¶. 45 *infra*), NRC staff notes that it will difficult for the reprocessing solids left in the high-level radioactive waste tanks at the Savannah River Site to satisfy the Class C requirements. See Att. 10 at 14-15. Here DOE plans to circumvent this impediment by claiming it is "diluting" the waste using varied kinds of grout (forms of cement) that it will pour over the remaining tank waste to stabilize and isolate it. Id., at 9-11. For the first tank closed at Savannah River, DOE assumed that there was up to 100-fold "dilution" of the waste by the added grout for the purposes of regulatory compliance.²⁵

tank for temporary storage. Other water additions were made to control corrosion which brought the total inventory to approximately 280,000 gallons. In May 1997, the contents were pumped into another tank, leaving approximately a 1-inch heel in Tank 17, which is equivalent to at least 3,400 gallons, of which at least 2,000 gallons are solids. See Att. 17, "Industrial Wastewater Closure Module for the High-Level Waste Tank 17 System" Savannah River Site, Rev. 1, April 2, 1997 at 2-1. Elsewhere, SRS has estimated the residual Tank 17 contents as 4,000 gallons. See Att. 13, HLW Tank Closure Draft EIS at 2-1.

²⁵ NRDC has calculated that in order to meet Class-C guidelines for the residual nuclear waste in some of the tanks at the Savannah River Site, upwards of about 100-fold dilution of the residual waste with reducing grout will

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51. DOE uses the term "dilution" when in reality the agency is simply averaging the concentration of radioactivity in the high-level radioactive waste solids left in the tank with the near zero concentration of radioactivity in grout. This mathematical averaging can take place under the DOE calculus even if there is no significant physical mixing of the grout and the radioactive solids (note that if DOE could mix the solids and the grout, they could readily remove those high-level radioactive solids from the tank). In essence, DOE uses the term "to dilute" when it really means "to average." However, even giving DOE the benefit of the doubt that this is a legitimate approach, there is clear evidence that mixing between the grout and remaining waste is nominal at best; thus, the premise that there is uniform mixing, and therefore "dilution," between the waste and grout is false.²⁶

52. Using this purported "dilution" or averaging method, DOE calculated that 14 of the Savannah River tanks would meet the Class C standard after bulk waste removal and water washing. Att. 10 at 11. The obvious corollary to this is that the remaining 37 tanks would require further cleaning even if the remaining reprocessing waste is assumed to be "diluted" by the added grout. Id. at 14. Despite not being able to meet the Class C standard in 37 of the tanks, DOE has requested that the NRC exempt it from having to undertake this additional cleaning. Id.

53. Thus, under DOE's most recent preferred plan for the Savannah River tanks, after closure of all of the tanks, reprocessing waste left in 14 of the tanks may meet the Class C

be required. This calculation relies on NRC's statement that for these tanks "between 0 and 31 inches of grout" will be required "to meet the Class C limits." See Att. 10 at 11. The tanks at Savannah River are between 75 and 85 feet in diameter. See Att. 18, "Industrial Wastewater Closure Plan for F- and H-Area High-Level Waste Tank Systems" Savannah River Site Rev. 1 July 10, 1996. Therefore 31 inches of grout will occupy a volume of between 85,000 gallons and 110,000 gallons. Assuming that approximately 1,000 gallons of high-level waste remains in the tank after closure, this implies up to 100-fold dilution of the waste by the grout.

²⁶ See also Att. 19, DNFSB, Savannah River Report for Week Ending March 14, 1997 (1997) and DNFSB, Savannah River Report for Week Ending Aug. 15, 1997 (1997).

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standard after DOE performs its averaging process. Thirty seven of the tanks will not meet the Class C standard even if it is assumed to be "diluted" more than a 100-fold. DOE also plans to monitor and maintain the tanks and to impose land-use restrictions around them in perpetuity. Att. 10, NRC Review at 28.

54. The plans for grouting and then covering the waste in concrete is similar for INEEL and the Hanford Reservation. The volume of waste that DOE plans to abandon in the high-level waste tanks at all three sites is significant, and may even be growing substantially as a result of the newly announced DOE policies. In a November 2001 memo signed by the Assistant Secretary for Environmental Management (Att. 20 at 3), DOE suggests that it will eliminate the need to vitrify at least 75 percent of the waste in the high-level radioactive waste tanks. Whether DOE drains 95 percent of the liquid waste from the tanks for vitrification or 25 percent of the waste, the radioactivity that will remain in each tank is (1) high-level radioactive waste derived from reprocessing that, pursuant to the NWPA, must be disposed of in a geologic repository; and (2) equivalent to leaving several tons of power-reactor spent nuclear fuel in shallow land burial directly adjacent to vital human and environmental resources.

CLAIMS FOR RELIEF

First Claim for Relief

55. Plaintiffs incorporate by reference paragraphs 1 through 54.

56. The incidental waste exemption created under DOE Order 435.1, which reclassifies high-level radioactive waste as low-level radioactive waste according to criteria solely with DOE's discretion, circumvents the extensive congressionally mandated processes for the disposal of high-level radioactive waste mandated by the NWPA. 42 U.S.C. §§ 10101 et seq.

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57. Under Order 435.1, DOE attempts to avoid the requirements of the NWPA by claiming that certain high-level reprocessing waste is excluded from the statutory definition of high-level radioactive waste. DOE Order 435.1 violates the plain language of NWPA by allowing thousands of cubic meters of intensely radioactive reprocessing sediments to be excluded from the NWPA definition of high-level waste, and thus, from disposal in a geologic repository. 42 U.S.C. 10101(12).

58. DOE's interpretation of the NWPA is fundamentally flawed. First, the reprocessing solids (i.e., slurry, sludge, and saltcake) in the storage tanks are, by definition, "radioactive material resulting from the reprocessing of spent nuclear fuel . . . and any solid material derived from such liquid waste that contains fission products in sufficient concentrations" under the NWPA and therefore cannot be treated as low-level waste. The waste DOE plans to abandon in the tanks undeniably resulted from reprocessing and therefore, under the statutory definition of high-level radioactive waste, is indistinguishable from the rest of the high-level radioactive waste in the tanks. Id.

59. Second, DOE's application of its incidental waste exemption is fundamentally inconsistent with the fact that, because the radioactive elements in the high-level tank radioactive waste concentrate in the solids (i.e., slurry, sludge, and saltcake), the reprocessing waste that will be abandoned in the storage tanks contains equal to or greater concentrations of radioactive elements than the waste removed for disposal in a geologic repository. It is utterly illogical and technically unjustifiable to treat such intensely radioactive waste as not being subject to the NWPA.

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60. Third, even if the remaining high-level radioactive waste could be construed as "solid material derived from" the other reprocessing waste, the concentration of fission products is more than sufficient to satisfy the definition of high-level radioactive waste under the NWPA.

61. DOE's incidental waste rule is contrary to the express intent of Congress that radioactive waste "resulting from reprocessing" be permanently isolated from the environment, that its disposal comply with the extensive testing and procedural requirements of the NWPA, and that it be externally regulated by the NRC and EPA. It also overrides an express categorical requirement that all waste resulting from reprocessing be subject to the NWPA and replaces it with an arbitrary and unlawful determination process that is exclusively within DOE's discretion to apply. This exemption process is particularly significant because both the volume of waste and its level of radioactivity belie any DOE claims that the reprocessing waste it will exempt under this rule is de minimis.

62. Defendants' promulgation and implementation of DOE Order 435.1 is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law in violation of the APA, 5 U.S.C. § 706.

PRAYER FOR RELIEF

Plaintiffs and their members have no adequate remedy at law. In the absence of injunctive relief, members of NRDC and the Snake River Alliance and citizens of the Yakama Nation will be forever exposed to the permanent emplacement of highly radioactive waste alongside the Columbia River, above the Snake River Aquifer, and in the water table adjacent to the Savannah River.

WHEREFORE Plaintiffs pray this Court afford the following relief:

Attachment E

63. A declaratory judgment declaring that DOE has violated the NWPA, 42 U.S.C. §§ 10101 et seq., by promulgating DOE Order 435.1 as it relates to incidental waste;

64. A declaratory judgment declaring that DOE Order 435.1 constitutes agency action not in accordance with the law, and agency action in excess of statutory jurisdiction, authority, or limitations, or short of statutory right, which is unlawful and shall be set aside under the APA, 5 U.S.C. §701 et seq.

65. A permanent injunction preventing DOE taking any action with respect to waste in the tanks that would be inconsistent with the requirements for high-level radioactive waste disposal under the NWPA;

66. A permanent injunction preventing DOE from taking any actions that include, but are not limited to, grouting with concrete for "permanent disposal" any additional high-level radioactive waste tanks in Washington, Idaho, and South Carolina;

67. An order providing that this Court shall retain jurisdiction over this matter pending compliance with its order;

68. Reasonable attorney's fees and costs; and

69. Such other relief as this Court deems just and proper.

Respectfully submitted,

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Attachment E

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Dated: February 28, 2002

Attachment E

CERTIFICATE OF SERVICE

I hereby certify that I caused a true and correct copy of this document to be served via Messenger Service to the following counsel this day of February 28, 2002.

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Attachment F

 Warning
As of: November 7, 2018 8:28 PM Z

NRDC v. Abraham

United States District Court for the District of Idaho

August 9, 2002, Decided; August 9, 2002, Filed

Case No. CV-01-413-S-BLW

Reporter

2002 U.S. Dist. LEXIS 28418 *

NATURAL RESOURCES DEFENSE COUNCIL, INC.; CONFEDERATED TRIBES & BANDS OF THE YAKAMA NATION; SNAKE RIVER ALLIANCE; and SHOSHONE-BANNOCK TRIBES, Plaintiffs, v. SPENCER ABRAHAM, Secretary, Department of Energy; and UNITED STATES OF AMERICA, Defendants.

Subsequent History: Summary judgment granted by, Judgment entered by, Motion to strike denied by, As moot, Motion granted by, Dismissed by [Natural Res. v. Abraham, 271 F. Supp. 2d 1260, 2003 U.S. Dist. LEXIS 17154 \(D. Idaho, 2003\)](#)

Prior History: [Natural Res. Def. Council v. Abraham, 244 F.3d 742, 2001 U.S. App. LEXIS 4945 \(9th Cir., 2001\)](#)

Core Terms

high-level, radioactive waste, disposal, judicial review, requirements, site, agency's action, ripe, issues, law of the case doctrine, contractors, facilities, repository, purposes, tanks, incidental, Tribe, promulgation, compliance, directive, merits

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Judges: B. LYNN WINMILL, United States District

Court Chief Judge.

Opinion by: B. LYNN WINMILL

Opinion

MEMORANDUM DECISION AND ORDER

INTRODUCTION

The Court has before it a Motion to Dismiss filed by Defendants Spencer Abraham, Secretary of the Department of Energy, and the United States [*3] of America, pursuant to [Federal Rule of Civil Procedure 12\(b\)\(6\)](#). The Court has heard the oral argument of counsel, reviewed and considered all of the parties' filings, and given serious consideration to the difficult issue presented. For the following reasons the Court will deny Defendants' Motion to Dismiss.

BACKGROUND

This case was transferred to this Court by the Ninth Circuit. See [NRDC v. Abraham, 244 F.3d 742 \(9th Cir. 2001\)](#). In its opinion, the Circuit found that it lacked original or exclusive jurisdiction under [42 U.S.C. § 10139](#) to entertain Plaintiffs' claims because the decision by the DOE in promulgating Order 435.1 was not made pursuant to the Nuclear Waste Policy Act, [42 U.S.C. §§ 10101 et seq.](#) See [id. at 747](#). However, the Ninth Circuit expressly noted that issues relating to standing, ripeness, and the merits of the Plaintiff's claims must be decided by this Court. See [id.](#)

Plaintiffs' Complaint alleges that DOE Order 435.1 violates the NWPA and the Administrative Procedures Act, [5 U.S.C. §§ 701 et seq.](#), because it allows DOE radioactive waste facilities, as well as DOE contractor facilities, to reclassify high-level radioactive waste as "incidental waste" or "waste incidental [*4] to reprocessing," ("WIR"). Plaintiffs argue that the motive for this reclassification is to exempt high-level waste from the application of the more stringent disposal provisions found in the NWPA.¹

¹ Plaintiffs allege that "incidental waste," as it is defined by Order 435.1, is high-level waste and that, absent a presidential directive to the contrary, the NWPA mandates that all high-level radioactive waste must be disposed of in geologic

Plaintiffs' Complaint alleges that the incidental waste provision of Order 435.1 establishes two standards: the "citation" standard and the "evaluation" standard.²

Under the "evaluation" standard, high-level waste may be re-categorized as low-level or transuranic waste if: (1) it is treated to reduce its level of radioactivity to the extent technically and economically practicable; (2) it is disposed of according to the requirements for the disposal of low-level waste; and (3) it is solidified and is no more radioactive than the highest category of radioactivity for low-level waste, or it meets other criteria established by the DOE. DOE Manual 435.1-1 [*5] at II-2 (emphasis added).

Plaintiffs urge that such a standard makes DOE compliance with the NWPA optional. They claim that they will suffer direct and immediate harm if the Defendants are allowed to follow Order 435.1 because it will allow the DOE to permanently store high-level radioactive waste, i.e., high-level waste that has been reclassified as "incidental waste," in concrete storage tanks³

rather than removing the waste and shipping it to geologic repositories as required by the NWPA. See [42 U.S.C. § 10107](#). They assert that leaching, i.e., spilling, of high-level waste has occurred at the three DOE sites—Hanford, Savannah River, and INEEL— and that it will inevitably continue into the future. See Plaintiffs' Complaint, P's 33-38.

The Plaintiffs have moved for declaratory and injunctive relief pursuant to [5 U.S.C. § 706](#) of the APA. They seek a ruling by the Court invalidating Order 435.1 as arbitrary, capricious, and contrary [*6] to law. Plaintiffs argue that a permanent injunction should issue that would prohibit the DOE from taking any action with respect to radioactive waste in the tanks at the three DOE sites that is inconsistent with the requirements of the NWPA governing the disposal of high-level waste. Specifically, the Plaintiffs request that the Court issue a permanent injunction preventing the Defendants from "grouting" with concrete for permanent disposal any additional high-level radioactive waste tanks at the three

repositories established by the Act. See Plaintiff's Complaint, P 5; see also [42 U.S.C. 10107\(b\)\(2\)](#).

² Plaintiffs do not challenge the validity of the "citation" standard in their complaint.

³ Storage is done by a process known as "grouting" in which the residue high-level waste is mixed with cement and the tank is then essentially filled with cement and sealed.

sites in Washington, South Carolina, and Idaho. In addition, the Plaintiffs request that the Court retain jurisdiction over this proceeding to ensure future compliance by the Defendants with the Court's orders. See Plaintiffs' Complaint, P's 63-69.

DISCUSSION

The Defendants Motion to Dismiss advances several arguments for dismissing the Plaintiffs' Complaint. First, the Defendant argues that Order 435.1 should not be considered "final agency action" for purposes of judicial review. Second, they contend that the case is not "ripe" for judicial review until the DOE or one of its contractors actually applies the Order on a case specific basis. Third, they suggest that the Law of the Case [*7] Doctrine prevents the Court from assuming jurisdiction over the Plaintiff's claims. Finally, they contend that the Plaintiffs' Complaint fails to state a claim upon which relief may be granted. The Court will address each of these arguments in turn.

1. DOE Order 435.1 Constitutes "Final Agency Action" for Purposes of Judicial Review.

"Final agency action" is characterized by two criteria: (1) "the action must mark the consummation of the agency's decisionmaking process," e.g., not merely of a "tentative or interlocutory nature;" and (2) "the action must be one by which rights or obligations have been determined, or from which legal consequences flow." Bennett v. Spear, 520 U.S. 154, 177-78, 117 S. Ct. 1154, 137 L. Ed. 2d 281 (1997). Defendants argue that Order 435.1 does not constitute "final agency action" because the Order, along with its accompanying Guidance and Manual, are merely tools used by the DOE facilities to manage radioactive waste. In the Defendants' view, the Plaintiffs can not show any immediate or direct impact from the Order. According to the Defendants, the Order isn't self-executing and doesn't determine which waste is "waste incidental to reprocessing;" rather, such decisions will be made on a "case-by-case" [*8] or "waste stream by waste stream basis." Defendants allege that the Order has yet to be applied by the DOE and therefore represents only the DOE's policy concerning its waste-management authority.

Courts have generally interpreted the "finality" element in a flexible and pragmatic way. See Abbott Labs. v. Gardner, 387 U.S. 136, 149, 87 S. Ct. 1507, 18 L. Ed.

2d 681 (1967). While Order 435.1 may or may not be final agency action in the "highly technical sense" because it has yet to be applied by the DOE or one of its constituents, common sense dictates that the Order itself represents the DOE's final interpretation of its statutory mandate. See Comm. for Idaho's High Desert v. Collinge, 148 F.Supp 2d 1097, 1100 (D. Idaho 2001) (Holding that the implementation of a predator control program was a "contingent future event" in a "highly technical sense" but in common terms it was inevitable.) The relevant agency action involved in this case is the promulgation of the Order 435.1 itself and not the subsequent actions to be made pursuant to that Order.

Order 435.1 is not merely an intermediate step as Defendants' claim. See Abbott Labs., 387 U.S. at 148-49. In fact, following a lengthy development period of more than eight years, [*9] Order 435.1 was published in the Federal Register. See 64 Fed. Reg. 29393; see also Whitman v. Am. Trucking Ass'ns, 531 U.S. 457, 477-78, 121 S. Ct. 903, 149 L. Ed. 2d 1 (2001) (Finding that publication in the Federal Register of an EPA implementation policy was an indicator that the agency's action was final.) The deliberate nature of the DOE's decision in promulgating the Order is informative because it suggests that the DOE was well aware that "rights or obligations" would ultimately be determined by the Order.

The language utilized in the DOE Order, Guidance, and Manual is specific and mandatory in nature. DOE Manual 435.1-1 states that "implementation of the requirements shall begin at the earliest possible date, and all DOE entities shall be in compliance with this directive within one year of its issuance" DOE Manual 435.1-1 at i (emphasis added). This express language contradicts Defendants' argument that DOE officials and contractors are vested with the unfettered discretion to apply Order 435.1 as they see fit. In fact, DOE waste facilities and contractors are subject to "corrective actions whenever necessary" to ensure that the "requirements of DOE O[rder] 435.1 . . ." are met. DOE Manual 435.1-1 [*10] at III-3, IV-2.

The Court finds that DOE Order 435.1 is a final expression of the agency's interpretation of its congressional mandate to manage and dispose of radioactive waste. The Court also finds that the Order is non-discretionary in that the various DOE officials and contractors are not free to act in contravention of the Order without risking possible "corrective actions" being levied upon them by the DOE. Consequently, the Court finds that DOE Order 435.1 constitutes final agency

action for purposes of judicial review.

2. The Issues Raised are Ripe for Judicial Review.

When undertaking a ripeness analysis, the Court must "evaluate both the fitness of the issues for judicial decision and the hardship to the parties of withholding court consideration." Whitman v. Am. Trucking Ass'ns, 531 U.S. 457, 479, 121 S. Ct. 903, 149 L. Ed. 2d 1 (2001). In making this analysis, the Court must avoid letting judicial review interfere with subsequent agency action. See *id.*; see also Ohio Forestry Ass'n v. Sierra Club, 523 U.S. 726, 737, 118 S. Ct. 1665, 140 L. Ed. 2d 921 (1998).

The Defendants mirror their previous argument and insist that Order 435.1 is not ripe for judicial review because no component of the DOE has applied the WIR process defined in the Order. [*11] In making this argument, they rely largely upon the Supreme Court's opinion in Ohio Forestry Ass'n v. Sierra Club, 523 U.S. 726, 737, 118 S. Ct. 1665, 140 L. Ed. 2d 921 (1998), which outlined three primary ripeness considerations: (1) the hardship to plaintiffs if review is delayed; (2) whether judicial review would interfere with subsequent agency action; and (3) whether it would benefit the court to allow further factual development of the issues involved.

Under this standard, Defendants contend that the Plaintiff's claims are not ripe for judicial review, but are based upon sheer speculation about what the DOE might do; that until the DOE actually applies the Order, the "plans" at the Savannah River Site, Hanford, and INEEL cause no immediate harm. In other words, there is no immediate harm until the DOE or one of its elements makes a decision at a particular site. Further, Defendants contend that the Plaintiffs can't define any future harm that would occur from postponing review until future administrative decisions have taken place and the facts have been developed.

However, the Defendants' position seems to be at odds with the undisputed facts and the Plaintiff's allegations. Order 435.1 appears to be a definitive [*12] position by the Defendants as to the reclassification of high-level waste, which was created following almost nine years of development, including a notice and comment period. The WIR process has already been applied twice in South Carolina at the Savannah River Site prior to the promulgation of Order 435.1 and the Plaintiffs allege that DOE's future tank cleanup program is largely

premised upon Order 435.1 and its accompanying Guidance and Manual.⁴

Moreover, delaying review of Order 435.1 until the DOE makes a site specific decision in conformance with the Order may cause substantial harm. Tank closures, once undertaken, aren't readily altered and future judicial review may therefore be foreclosed until it is too late.⁵

The Court need not wait until a threatened injury comes to fruition before undertaking judicial review. This is particularly true where the DOE Order has the force of law and requires immediate compliance by DOE facilities as well [*13] as DOE contractors. In such a case, a justiciable controversy exists that is ripe for review, because the Court can "firmly predict" the result that would occur through the application of Order 435.1. See Freedom to Travel Campaign v. Newcomb, 82 F.3d 1431, 1436 (9th Cir. 1997) (citing Reno v. Catholic Social Services, 509 U.S. 43, 69, 113 S. Ct. 2485, 125 L. Ed. 2d 38 (1993) (O'Connor, J., concurring); see also Thomas v. Union Carbide Agricultural Products Co., 473 U.S. 568, 581-82, 105 S. Ct. 3325, 87 L. Ed. 2d 409 ("One does not have to await the consummation of threatened injury to obtain preventive relief. If the injury is certainly impending, that is enough.").

In short, the Court concludes that there is a clear indication of the hardship that plaintiffs and the intervenors will suffer if review is delayed, there is no indication that undertaking judicial review at this juncture would interfere with subsequent agency action, and the Court perceives no benefit which would be obtained by allowing further [*14] factual development of the issues involved. Under such circumstances, the Court concludes that Order 435.1, and its mandate that all DOE contractors and entities comply with its provisions, are ripe for judicial review. Ohio Forestry Ass'n, 523 U.S. at 737.

3. The Law of the Case Doctrine Does Not Prevent the Court from Considering the Plaintiff's Claims.

⁴ Plaintiffs have acknowledged that the Defendants have yet to apply the "WIR" process found in Order 435.1 and reclassify high-level waste at the three facilities as low-level waste for purposes of disposal. See Plaintiffs' Complaint, P 40

⁵ The Court notes that counsel for Plaintiffs suggested during oral argument that the closure of two tanks at Savannah River occurred under circumstances in which they were unable to bring a timely action to obtain judicial review of that decision.

The law of the case doctrine requires that a district court respect prior rulings issued by circuit courts on issues of law. See [United States v. Hatter, 532 U.S. 557, 565-66, 121 S. Ct. 1782, 149 L. Ed. 2d 820 \(2001\)](#) (emphasis added). Defendants' contend that the doctrine precludes this Court from assuming jurisdiction over this matter because the Ninth Circuit has already ruled that DOE Order 435.1 is not a decision under any part of the NWPA. See [NRDC, 244 F.3d at 747](#).

However, this is a misapplication of the law of the case doctrine. First, the doctrine simply does not apply where an appellate court or the Supreme Court has not issued a ruling on the merits. "The law of the case doctrine presumes a hearing on the merits." [Hatter, 532 U.S. at 566](#). Prior to remanding this case to the District Court of Idaho, the Ninth Circuit specifically left open the issues of standing, [*15] ripeness, and the merits for a decision by this Court. See [NRDC, 244 F3d at 747](#).

The inapplicability of the law of the case doctrine is also indicated by the nature of the Ninth Circuit's decision to remand this case to the District Court rather than dismissing the action altogether. The Ninth Circuit remanded this case because the NWPA's provision vesting original and exclusive jurisdiction in the Circuit Court is limited to cases arising *under* the NWPA, not because the Plaintiffs' Complaint did not in any way implicate the NWPA as the Defendants have suggested in their pleadings. See *id*; see also [42 U.S.C. § 10139\(a\)\(1\)\(A\)](#). Therefore, the Court finds that the law of the case doctrine is not applicable.

4. The Plaintiffs' Have Made Cognizable Claims Upon which Relief May be Granted.

In deciding whether a plaintiff has stated a claim upon which relief may be granted, the Court must accept all of the plaintiff's factual allegations as true and construe them in the light most favorable to the Plaintiff. See [Epstein v. Washington Energy Co., 83 F.3d 1136, 1140 \(9th Cir. 1999\)](#) (citation omitted). There are very few factual disputes in this case. The problems that are to be resolved by the [*16] Court are legal in nature and, more succinctly, pertain to statutory interpretation. Currently, both the Atomic Energy Act and the NWPA have provisions that either directly address or allude to the characterization of radioactive waste.

It is the Defendants' contention that the Plaintiff's Complaint cannot possibly state a claim upon which relief can be granted because the actions they object to

do not pertain to the statute cited in their Complaint. The DOE asserts that its waste management activities are governed solely by the AEA and the Energy Reorganization Act. However, the Court has heretofore been unable to find a substantive provision of the AEA specifically delegating waste characterization or classification authority to the agency. Defendants have cited [42 U.S.C. 2201\(i\)\(3\)](#) which delegates authority to the DOE to issue Orders and Directives that "govern any activity authorized pursuant to this Act [AEA], including standards and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property." (Emphasis added).

The statutory language of the NWPA, which was passed [*17] by Congress almost thirty years subsequent to the passage of the AEA, contradicts the Defendants' argument that the AEA exclusively governs the disposal of high-level waste. The NWPA defines the term "disposal" in plain language: ". . . [T]he emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of discovery . . ." [42 U.S.C. § 10101\(9\)](#). Moreover, the AEA has specifically adopted the definitions of "high-level radioactive waste" and "spent nuclear fuel" included in the NWPA. See [42 U.S.C. § 2014\(dd\)](#).

The Court cannot find, as a matter of law, that DOE Order 435.1 classifies waste as WIR exclusively for management purposes and without regard for the statutory and regulatory requirements for disposal of high-level radioactive waste. Likewise, the Court cannot rule out the possibility that Order 435.1 will be used, as the Plaintiffs fear, as a tool to circumvent the more stringent disposal requirements of the NWPA. In short, Order 435.1, and its accompanying Manual and Guide, necessarily implicates the disposal provisions found in the NWPA by reclassifying high-level waste as low level waste.

Furthermore, [*18] the DOE doesn't have unconstrained authority to dispose of high-level waste as the Defendants claim.⁶

Unless the President finds otherwise, defense high-

⁶The Court notes that the Defendants have acknowledged in their memorandum that a presidential directive could provide that the DOE dispose of defense high-level waste at a civilian repository constructed pursuant to the NWPA. See Defendants' Memo at 20, n. 13 (Docket No. 20).

level waste must be disposed of in civilian repositories established by the NWSA. [42 U.S.C. § 10107\(b\)\(2\)](#); see also [NRDC, 244 F.3d at 744](#). A Presidential Directive issued by President Reagan on April 30, 1985 determined that there was no basis for establishing a repository for Department of Defense high-level waste. Therefore, DOD high-level waste cannot be disposed of in any other place other than a repository established under the NWSA unless the President makes a finding to the contrary at some time in the future.

The language, purpose, and history of the NWSA make clear that Congress didn't intend that DOE's compliance with the NWSA to be voluntary. Additionally, any finding that the WIR evaluation process operates solely under the authority of the AEA would [*19] render the NWSA meaningless. The legislative history reveals that the NWSA was enacted in direct response to "the need to address problems besetting *nuclear waste management* . . ." H.R. Rep. No 97-491, 97th Cong., 2nd Sess. at 26 (1982) (emphasis added). In light of this background, it is inconceivable that Congress intended to allow the DOE unfettered discretion in the management of radioactive waste as the Defendants have alleged.

The Court recognizes that a high degree of deference should be given to the DOE's interpretation of statutes such as the AEA and the NWSA. See [Forest Guardians v. Dombeck, 131 F.3d 1309, 1311 \(9th Cir. 1997\)](#). The Court should not substitute its own construction unless the statute is silent or ambiguous on the matter and the agency's interpretation is not a "permissible construction." See [Chevron v. NRDC, 467 U.S. 837, 842-43, 104 S. Ct. 2778, 81 L. Ed. 2d 694 \(1984\)](#). However, agency constructions that are "contrary to congressional intent" must be rejected by the Court. See *id.* (citations omitted).

The NWSA is neither silent, nor ambiguous on the classification of radioactive waste. The definitions section of the NWSA necessarily involves the manner in which the DOE should classify radioactive [*20] waste. See [42 U.S.C. § 10101\(12\)](#). If Congress had intended to allow the DOE complete discretion as to the classification of radioactive waste for management purposes it is highly unlikely that it would have included the meaning of high-level waste in the NWSA's definitions section. See *id.* By defining a specific class of radioactive waste, i.e., high-level radioactive waste, Congress has issued a de facto limitation upon the DOE's authority to classify radioactive waste for management purposes. Therefore, the Court finds that the Plaintiffs' Complaint includes cognizable claims

upon which relief may be granted.

5. The Plaintiffs Meet the Requirements for Standing.

Upon referral, the Ninth Circuit left issues of standing to be decided by this Court. See [NRDC, 244 F.3d at 747](#). The parties have not raised the issue of standing in their various pleadings to the Court. Nevertheless, the Court is required to address the issue of standing *sua sponte* and will therefore discuss it briefly herein. See [Bernhardt v. County of L.A., 279 F.3d 862, 868 \(9th Cir. 2002\)](#) (citation omitted).

In order to meet the requirements for standing, a Plaintiff must show: (a) "an invasion of a legally protected interest [*21] which is concrete and particularized"; (b) that such an interest is "actual or imminent, not conjectural or hypothetical"; and c) "it must be likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision." [Lujan v. Defenders of Wildlife, 504 U.S. 555, 560, 112 S. Ct. 2130, 119 L. Ed. 2d 351 \(1992\)](#) (citations and internal quotation marks omitted). The Plaintiffs bear the burden of establishing these elements. See *id.* at 561.

"An association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right," the interests at stake relate to the organization's purpose, and "neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." [Friends of the Earth, Inc. v. Laidlaw Envtl. Servs. \(TOC\), Inc., 528 U.S. 167, 181, 120 S. Ct. 693, 145 L. Ed. 2d 610 \(2000\)](#) (citation omitted).

The named Plaintiffs in this case included two environmental groups, Natural Resources Defense Council (NRDC) and Snake River Alliance, and two Indian tribes, Confederated Tribes & Bands of the Yakama Nation and the Shoshone-Bannock Tribe. Plaintiffs' asserted interests include, but are not limited to, the protection of water resources, [*22] the maintenance of healthy fisheries, and general concerns for human safety and welfare.

NRDC has a nationwide membership of more than 390,000 individuals, including over 20,000 members in the states of Idaho, South Carolina, and Washington. They have a long history of environmental advocacy and monitoring federal agency actions concerning the environment.

Snake River Alliance is an Idaho-based environmental group with over 1,000 members, mostly southern Idahoans. Many of its members are directly affected by the INEEL site because the site is located on top of the Snake River aquifer. The aquifer supplies much of the drinking water and irrigation for the state of Idaho. (Docket No. 10).

The Yakama Nation is a federally recognized Indian tribe. The Yakama hold treaty rights to fish in the Columbia River Basin. A portion of the Hanford site ("Hanford Reach") includes spawning areas for chinook salmon. Fishing has long played a substantial role in the Yakama culture. (Docket No. 10).

The Shoshone-Bannock Tribe is a federally recognized Indian tribe located in the state of Idaho. The Shoshone-Bannock assert a legal right, secured by treaty, to fish for rainbow trout and sturgeon below Shoshone [*23] Falls on the Snake River in Idaho. The Shoshone-Bannock express concern over the threat of high-level hazardous waste from the INEEL site contaminating the groundwater which feeds the Snake River. They are also concerned about the impact that DOE Order 435.1 may have upon health of Tribal members "in and about the Snake River." See Memo. in Support of Motion to Intervene at 2-3 (Docket No. 14).

The improper disposal of high-level radioactive waste poses a serious threat to the Plaintiffs collective interests. It is abundantly clear that the Plaintiffs can demonstrate an imminent threat to a legally protected interest and that threat can be positively traced to the promulgation of Order 435.1. Additionally, a favorable ruling will more likely than not accomplish the remedy sought by the Plaintiffs, e.g., prevent the disposal of high-level radioactive waste on-site at Hanford, Savannah River, and INEEL. See *Clinton v. City of New York*, 524 U.S. 417, 430, 118 S. Ct. 2091, 141 L. Ed. 2d 393 (1998) (citation omitted). The Court therefore finds that the Plaintiffs' have standing to pursue this action.

CONCLUSION

Therefore, pursuant to its review authority under 5 U.S.C. §§ 704 & 706, the Court will Deny the Defendants' Motion [*24] to Dismiss. However, in denying the Defendants' motion the Court makes no ruling as to the merits of the Plaintiffs' claims.

ORDER

NOW THEREFORE IT IS HEREBY ORDERED, that Defendants' Motion to Dismiss (Docket No. 16) is hereby DENIED.

Dated this 9th day of August, 2002.

/s/ B. Lynn Winmill

B. LYNN WINMILL

Chief Judge, United States District Court

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

U.S. COURTS
2003 JUL -3 A 7 41

FILED
CAMERON S. BURKE
CLERK, IDAHO

NATIONAL RESOURCES)
DEFENSE COUNCIL, et al,)
)
Plaintiffs,)
)
v.)
)
)
SPENCER ABRAHAM, Secretary,)
Dept. Of Energy; UNITED STATES)
OF AMERICA)
)
Defendants.)
_____)

Civ. No. 01-0413-S-BLW

MEMORANDUM DECISION

INTRODUCTION

The Court has before it cross-motions for summary judgment raising the issue whether Order 435.1 issued by the Department of Energy is valid. The Court finds that it is invalid, and hence will grant the plaintiffs' motion, and deny the Government's motion, for the reasons expressed below.

BACKGROUND FACTS

In the 1950s, the National Academy of Sciences determined that high-level nuclear waste could be disposed of safely in a repository deep underground. During the same time period, Congress, in the Atomic Energy Act (AEA), granted

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to the DOE's predecessor agency the authority to manage nuclear waste, and allowed private companies the right to own and operate nuclear reactors.

Over the next 30 years, scientists studied different types of underground sites, ranging from salt deposits to basalt, to dispose of the waste from these reactors. In 1982, Congress passed the Nuclear Waste Policy Act (NWPA), officially adopting the underground repository concept as the nation's long-term strategy for disposing of the most hazardous nuclear waste. The Act authorized the Department of Energy (DOE) to find, build, and operate such a repository. DOE selected nine potential sites, and in 2002, Congress approved the site in Yucca Mountain, Nevada.

While the repository was being studied and selected, nuclear reactors around the country were producing nuclear waste. The fuel that runs nuclear power plants is made up of small uranium and plutonium pellets placed in long metal fuel rods. The rods are bombarded with neutrons, causing the uranium and plutonium atoms to gain a neutron, become unstable, break apart, and release heat, among other things. The heat is used to boil water into steam, which drives turbines to create electricity.

After frequent bombardments, the fission reaction becomes inefficient and the rods are removed. Even so, the uranium and plutonium pellets are not entirely

spent, and contain a large amount of energy potential. To extract the still-usable isotopes, the pellets are dissolved in an acid bath. This reprocessing procedure leaves highly radioactive particles suspended in an acid chemical solution as a liquid waste. The acid is neutralized and the liquid is placed in storage tanks. Over time, the particles sink to the bottom of the tanks forming a sludge while the liquid remains on top.

The reprocessing waste from nuclear weapons production is stored mainly at three sites: (1) the INEEL facility in Idaho; (2) the Hanford site in Washington; and (3) the Savannah River site in South Carolina. Hanford stores over 53 million gallons of waste in 177 underground tanks. Savannah River has over 34 million gallons, and the INEEL has over 900,000 gallons.

In NWPA, Congress defined the term "high-level radioactive waste" (HLW) to mean

- (A) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and
- (B) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.

NWPA goes on to state that the President shall determine if HLW resulting from defense activities will be placed in its own separate repository or in a repository

also used to store commercially-produced waste. *See* 42 U.S.C. § 10107. If the President determined that no separate repository was needed for the defense waste, “the Secretary shall proceed promptly with arrangement for the use of one or more of the repositories to be developed . . . for the disposal of such waste.” That provision goes on to state that “[s]uch arrangements shall include the allocation of costs of developing, constructing, and operating this repository or repositories.” *See* 42 U.S.C. § 10107(b)(2).

In 1999, DOE issued Order 435.1, and an interpretative Manual, to govern the disposal of HLW at Hanford, INEEL, and Savannah River. One part of that Order defines a process by which HLW may be determined to be incidental waste and exempted from the NWPA requirements governing HLW. Incidental wastes, DOE explains, “do not warrant geologic repository disposal because of their lack of long-term threats to the environment and man.” *See Order 435.1 Guidance* at II-18.

To implement this policy, the Order redefines HLW as incidental waste if it meets the following criteria: (1) key radionuclides must be removed to the extent technically and economically practical; (2) the waste must meet safety requirements comparable to the performance objectives set out in 10 C.F.R. part 61, Subpart C; and (3) the waste must be managed in accordance with DOE’s

requirements for low-level waste as set forth in Chapter IV of the Manual, provided the waste is incorporated into a solid physical form that does not exceed concentration limits for Class C low-level waste set out in 10 C.F.R. § 61.55, or must meet such alternative requirements for waste classification and characterization as DOE may authorize.

NRDC challenged this Order by filing suit in this Court. DOE responded with a motion to dismiss raising standing and ripeness challenges, among others. The Court rejected those challenges, finding that the case was ripe for review and that the plaintiffs had standing.

The parties have now filed cross-motions for summary judgment. NRDC claims that DOE has exceeded its authority by attempting through Order 435.1 to revise the definition Congress set for HLW in NWPA. DOE counters that NWPA does not apply to defense reprocessing waste, the type of waste stored at Hanford, INEEL, and Savannah River. Even if defense wastes are governed by NWPA, DOE contends, Order 435.1 complies with NWPA. NRDC responds that defense wastes are covered by NWPA, and that Order 435.1 conflicts with that Act.

ANALYSIS

1. Ripeness

DOE has again raised the argument that this case is not ripe for review.

DOE cites in support the recently decided case of *National Park Hospitality Assn. v. Dept. of Interior*, 123 S.Ct. 2026 (2003). This case did not change the law of ripeness, and its analysis does not persuade the Court to change its opinion. The Court issued a detailed ruling on the ripeness issue in its earlier decision, and reaffirms that decision here.

2. NWPA's Applicability to Defense Waste

DOE argues that "Congress did not intend that NWPA would apply to atomic energy defense facilities," and urges the Court to reconsider its earlier rejection of this argument in a decision filed August 3, 2002. *See DOE Brief* at p. 21. In that decision, the Court held that DOE was required by NWPA to dispose of defense HLW in a repository established under NWPA. In seeking a reconsideration of that decision, DOE contends that President Reagan's determination that no separate repository for defense waste was needed did not trigger a DOE duty to dispose of defense waste in a NWPA repository but only "require[d] that [DOE] allocate to the Government the costs associated with any disposal of defense HLW in a commercial repository that in fact occurs." *See DOE Reply Brief* at p. 2. In essence, DOE contends that it can choose whether to

dispose of its defense waste in Yucca Mountain or elsewhere.¹

This interpretation is inconsistent with NWPA. In § 10107(b)(2), quoted above, NWPA states that the Secretary “shall proceed promptly with arrangement for the use of one or more of the repositories” to dispose of defense HLW. The use of the term “shall” means that the direction is mandatory and does not allow for discretion on the part of the agency. *Lexecon, Inc. v. Milberg Weiss Bershad Hynes & Lerach*, 523 U.S. 26, 31 (1998). Thus, DOE does not have discretion to dispose of defense HLW somewhere other than a repository established under NWPA.

DOE’s argument that its sole duty is to allocate costs ignores language in NWPA. The provision of § 10107(b)(2), quoted above, states that DOE’s duty is to proceed promptly “with arrangement” to dispose of the defense HLW in a repository, and then states that “[s]uch arrangements shall include the allocation of costs of . . . this repository.” DOE’s reading of subsection (b)(2) ignores the word “include” and treats the phrase regarding cost allocation as a limitation on its duty. That reading violates a cardinal rule of statutory interpretation that no word be

¹ The Nuclear Regulatory Commission (NRC) takes the same view. See 65 Fed.Reg. 62377, 62378 n. 10 (Oct. 18, 2000) (“Neither the NWPA nor 10 CFR Part 60 requires HLW to be disposed of in a geologic repository.”). Moreover, the NRC agrees with DOE that Order 435.1 is a proper exercise of DOE’s statutory authority. See AR 34362.

ignored. *United States v. Luna-Madellaga*, 315 F.3d 1224, 1230 (9th Cir.1993). The word “include” is used to introduce illustrative examples, and is not a term of limitation. *See Federal Land Bank of St. Paul v. Bismarck Co.*, 314 U.S. 95, 100 (1941) (holding that “the term ‘including’ is not one of all-embracing definition, but simply connotes an illustrative application of the general principle.”); *Federal Trade Commission v. MTK Marketing*, 149 F.3d 1036 (9th Cir. 1998) (holding that term “including” does not connote limitation). Thus, subsection (b)(2)’s discussion of cost allocation is simply one illustration of the various arrangements DOE must make to dispose of defense HLW in a NWPA repository.

DOE’s description of its duty is not consistent with the description offered by President Reagan in his determination. There, President Reagan states that the DOE recommended to him that it “proceed with plans and actions to dispose of defense waste in a commercial repository,” not just make a cost allocation. *See* A.R. 44673. Even eleven years later, in 1996, the DOE believed that President Reagan’s determination triggered its duty, under NWPA, “to proceed with plans and actions to dispose of defense waste with commercial spent nuclear fuel in a single repository.” *See DOE, Civilian Radioactive Waste Management Program Plan, Revision 1, May 1996* (excerpted in *Natural Resources Journal, Appendix A* (Fall 1996)).

Congressional intent also weighs against DOE's interpretation. Senator Alan Simpson, in addressing an amendment that eventually became § 10107, discussed the need for a "unified disposal system as an alternative to separate, duplicative systems of civilian and defense repositories," and then stated that the amendment "would remedy this deficiency by *requiring the President . . . to proceed with a unified system unless he [sic] determines there is a demonstrated clear need for a defense-only repository.*" See 128 Cong. Rec. Part 6, p. 8219 (Appendix 7) (emphasis added).

For all these reasons, the Court does not find persuasive DOE's arguments that NWPA does not apply to defense HLW. The Court therefore refuses to reconsider its earlier decision on this issue.

3. Legality of Order 435.1

When a court reviews an agency's construction of a statute it administers, the threshold issue is "whether Congress has directly spoken to the precise question at issue." *Chevron U.S.A. Inc. v. N.R.D.C.*, 467 U.S. 837, 842 (1984). If Congress has so spoken, and its intent is clear, "that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." *Id.* at 843.

In this case, Congress defined HLW in NWPA as "highly radioactive

material resulting from the reprocessing of spent nuclear fuel.” Congress then used the word “including” to signal that what followed were examples designed to illustrate the definition just given. The two examples are (1) “liquid waste produced directly in reprocessing”; and (2) “solid material derived from such liquid waste that contains fission products in sufficient concentrations.”

These two examples neatly cover the manner in which the waste separates in the tanks over time. As discussed above, the solids sink to the bottom, forming a sludge, leaving the liquids on top. This physical separation is analogous to NWPA’s definitional separation: The liquid and solids are treated differently by the Act. While NWPA allows DOE to treat the solids to remove fission products, thereby permitting reclassification of the waste, NWPA does not offer the option of reclassification for liquid waste produced directly in reprocessing.

DOE interprets NWPA much differently. According to DOE, NWPA defines HLW as “‘highly radioactive material resulting from reprocessing’ ‘that contains fission products in sufficient concentrations.’” *See DOE Brief* at p. 31. Once again, DOE is ignoring the word “includes” in the statute. As discussed above, the well-established rules of statutory construction prohibit such a reading. *See Federal Land Bank*, 314 U.S. at 100. When the word “includes” is not ignored, the following phrase referring to concentrations of fission products

applies only to solid material derived from the liquid waste, and is not part of the general definition of HLW.

NWPA's definition of HLW considers both the source of the waste and, in the case of solids derived from liquid waste, its hazard. It is undisputed that the waste stored at Hanford, INEEL, and Savannah River is highly radioactive and the result of reprocessing. No solids have yet been extracted from the liquid waste at those sites and treated to reduce fission products. Thus, the waste at issue in this case falls within NWPA's definition of HLW.

DOE issued Order 435.1 to govern reclassification of that waste. That Order, according to DOE, sets forth three criteria, "each of which must be met," to reclassify HLW as low-level waste. *See DOE Brief* at 37. This rigorous process, DOE implies, will protect against arbitrary action. However, one of those "three criteria" is not a benchmark that could be "met." It requires that HLW reclassified as low-level waste must meet "safety requirements comparable to the performance objectives set out in 10 C.F.R. 61, Subpart C" In other words, DOE will treat waste that it deems to be low-level waste as low-level waste. This is not a "third criteria" that must be "met" but is simply a statement of intent or fact.

There are really only two criteria that must be met. The first is that key radionuclides are removed to the extent technically and economically practical.

This means that if DOE determines that it is too expensive or too difficult to treat HLW, DOE is free to reclassify it as incidental waste.

The second is that HLW incorporated into a solid form must either meet the concentration levels for Class C low-level waste or meet such alternative requirements for waste classification and characterization as DOE may authorize. These “alternative requirements” are not defined, and thus are subject to the whim of DOE.

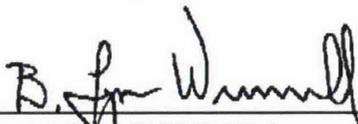
While DOE has the authority to “fill any gap left . . . by Congress,” *Chevron*, 467 U.S. at 843, it does not have the authority “to adopt a policy that directly conflicts with its governing statute.” *Maislin Indus., Inc. v. Primary Steel, Inc.*, 497 U.S. 116, 134-35 (1990). DOE’s Order 435.1 directly conflicts with NWPA’s definition of HLW. NWPA’s definition pays no heed to technical or economic constraints in waste treatment. Moreover, NWPA does not delegate to DOE the authority to establish “alternative requirements” for solid waste. Because Congress has spoken clearly on that subject, “that is the end of the matter,” *Chevron*, 467 U.S. at 842, leaving no room for “alternative requirements.”

Thus, DOE’s Order 435.1 must be declared invalid under *Chevron*. The Court will therefore grant NRDC’s motion for summary judgment and deny DOE’s cross-motion. The Court did not rely on an extra-record material and so

will deem moot the motion to strike that material. The Court will also grant DOE's motion to supplement the administrative record to correct photocopying errors and replace items inadvertently omitted from the administrative record.

NRDC seeks injunctive relief prohibiting DOE from taking any actions inconsistent with NHPA, including plans for grouting with concrete for permanent disposal any HLW in Washington, Idaho, and South Carolina. There is no indication, however, that DOE will ignore this decision and continue with any plan inconsistent with NHPA. Thus, the Court finds no need at this time to issue injunctive relief. Should that need arise in the future, plaintiffs are free to re-open this case and pursue that relief. The Court will prepare a separate Judgment as required by Federal Rule of Civil Procedure 58.

Dated this 2nd day of July, 2003.



B. LYNN WINMILL
CHIEF JUDGE, UNITED STATES DISTRICT COURT

United States District Court
for the
District of Idaho
July 3, 2003

* * CLERK'S CERTIFICATE OF MAILING * *

Re: 1:01-cv-00413

I certify that I caused a copy of the attached document to be mailed or faxed to the following named persons:

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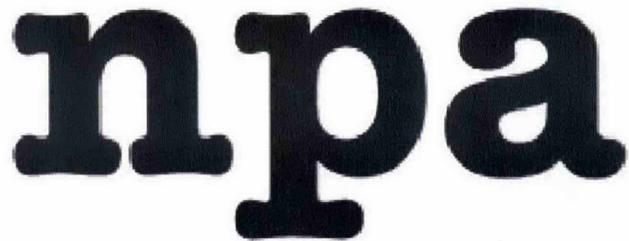
- Chief Judge B. Lynn Winmill
- Judge Edward J. Lodge
- Chief Magistrate Judge Larry M. Boyle
- Magistrate Judge Mikel H. Williams

Visiting Judges:
 Judge David O. Carter
 Judge John C. Coughenour
 Judge Thomas S. Zilly

Cameron S. Burke, Clerk

Date: 7-3-03

BY: WIN
(Deputy Clerk)



new progressive alliance

NewProgs.org

July 20, 2018
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450
MSIN H6-60
Richland, WA 99354

WMACDRAFTWIR@rl.gov

The New Progressive Alliance at <http://newprogs.org/> urges the Department of Energy (DOE) to abandon its proposal to reclassify high-level nuclear waste and leave it in Hanford's underground tanks, soils, and groundwater. Renaming High-Level Radioactive and Toxic Waste as low level radioactive waste is both inaccurate and certainly is not clean up.

The below information is verified by the Columbia Riverkeeper which is funded through a grant from the Washington state Department of Ecology.

DOE proposes to reclassify high-level radioactive waste as low-level radioactive waste in the C Farm, one of Hanford's tank farms holding high-level nuclear waste. The remaining waste—potentially more than 70,000 gallons of the 1.77 million gallons once stored in the tanks—does not magically change to low-level waste just because it is reclassified. This will leave dangerous waste in Hanford's tanks, soils, and groundwater, threatening the Columbia River for generations to come.

DOE's also proposal does not address the concerns raised by tribal nations, Washington Senator Maria Cantwell, and many public interest organizations.

- At least 67 underground tanks have leaked liquid waste into the ground. Some waste has already reached groundwater. And polluted groundwater from Hanford's 200 Area—where the tanks are located—has already reached the Columbia River.
- C Farm waste likely includes transuranic waste. Transuranic waste has a high concentration of long-lived, heavy radionuclides, and is not suitable for shallow disposal at Hanford.
- Waste in the C Farm contains technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants.
- In 2012, the Washington state Department of Ecology (Ecology) wrote in its forward to the Tank Closure Waste Management Environmental Impact Statement (EIS) that Washington state prefers “retrieval of at least 99 percent of the waste from each tank.” DOE failed to meet this expectation and proposes to leave four [percent of the waste in C Farm. DOE has certainly not removed the](#) “maximum technically achievable” amount of waste.
- Contaminants such as technecium-99 and iodine-129 are long-lived, mobile, and could present a long-term risk if not addressed in the C Farm's tanks and soils. DOE has certainly
- Grout lacks durability for immobilizing long-lived and mobile waste. Because Energy will use the Draft WIR Evaluation to justify leaving up to four percent of C Farm's tank waste cement, Energy's proposal will ultimately lead to greater soil and groundwater pollution when the grout fails in hundreds or perhaps thousands of years.
- The cumulative impacts analysis from Energy's Tank Closure Waste Management Environmental Impact Statement suggests that leaving long-lived, mobile waste in grouted tanks, soils, and groundwater will pose a long-term risk to the Columbia River.
- Washington state Department of Ecology has questioned Energy's inventory of waste remaining in the C Farm tanks and raised concerns about how future waste may move through soils and groundwater.

The DOE should and must label waste based on its dangerous nature, not on whether Energy has plans to dispose the waste. The New Progressive Alliance urges the Department of Energy to do the right thing and abandon its proposal to reclassify high-level nuclear waste.

Sincerely,

Ed Griffith

New Progressive Alliance

(b)(6)

Longview, WA 98632-2358

United States of America

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354
WMACDRAFTWIR@rl.gov

November 6th, 2018

I urge you to withdraw the U.S. Department of Energy's DRAFT Waste Incidental to Reprocessing (WIR) Evaluation for the Closure of Waste Management Area C at the Hanford Nuclear Site.

Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as “low-level” waste. C Farm tanks likely contain transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm tanks includes technecium 99, plutonium 239, strontium-90, cesium-137, iodine-129, uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose of the waste.

I urge Energy to abandon its short-sighted, dangerous proposal because:

- 1) Changing a label will lead to cleanup shortcuts. Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources, and the Columbia River.
- 2) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
- 3) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

I am disturbed by Energy's proposal to re-label dangerous waste near the Columbia Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities area. People living downstream, in the Portland area for example, face serious threats from this proposal. Energy must schedule hearings throughout the Cascadia Bioregion. Most of all Energy must abandon its plans to re-label dangerous pollution and invest in cleanup solutions.

Sincerely,

(b)(6)

(b)(6)@gmail.com

(b)(6)

Tualatin, OR 97062

**Draft Waste Incidental to Reprocessing Evaluation for
Closure of Waste Management Area C at the Hanford Site**

WRITTEN COMMENT

These comments are from a concerned citizen of Portland, Oregon, a retired Critical Care RN, and importantly a great grand mother. I'm also familiar with the Hanford Site. My father worked there 65 years ago and I attended 6th grade in Richland, wa in a gun-set out aluminum building usually very hot/cold. Seventy years from its production of plutonium Hanford continues to be a health and safety risk. As a health care professional I taught and practiced "prevention" in all its forms. Prevention is the core issue when considering changes to say a C-tank waste is not "high level." When you hear "high level" think "high risk" to public health. Safe drinking water is at the top of public health's work in "prevention." We know of ten thousand gallons of waste plus many more gallons pose risks from actual/potential leaking rusting C-Farm tanks which contain transuranic wastes and toxic contaminants. Hanford is simply not an appropriate storage site to consider due to the Columbia River verses the removal of key hazardous radionuclides. The Precautionary Principle must be engaged here to ensure the safety of our beautiful Columbia River and its citizens health and welfare.

Name (please print) (b)(6)
RN Retired.

Email: (b)(6) @aol.com

Not ready to turn your comments in today? Send them to:
Mr. Jan Bovier
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Email: WMACDRAFTWIR@rl.gov
Comments due by Nov. 7, 2018

Address (optional): (b)(6)
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(509) 735-1000
TryTri-Cities.org

November 6, 2018

Mr. Jan Bovier
Tank Closure Program Manager
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Mr. Bovier,

We write to express TRIDEC's support for the U.S. Department of Energy (DOE) effort to finalize its current Draft Waste Incidental to Reprocessing (WIR) Evaluation for Closure of Waste Management Area (WMA) C at the Hanford Site. TRIDEC supports the management of WMA C residual waste, tanks, and auxiliary structures as low-level waste.

TRIDEC has worked for decades to support the DOE missions at Hanford, including advocacy for safe, effective cleanup and the funding that it requires. As such, we understand the complex decisions that need to be made regarding cleanup objectives and the best use of limited taxpayer dollars.

We recognize that the Final WIR Evaluation is just one step in the decision-making process for the long-term disposition of WMA C. Considering the potential impacts on human health and the environment, we support a careful examination of these issues and urge DOE and its regulators to proactively address any real threats that are identified during this process. However, barring any unexpected developments, we believe that the only practical solution for the long-term disposition of WMA C is to fill the tanks with engineered grout, and then place a surface barrier above them.

The likely alternative to grouting would be to spend substantial amounts of funds (that are better used elsewhere at Hanford) to endlessly try to retrieve the tanks to new standards, and/or to dismantle and remove the tanks at substantial risk to workers. Even then, those tank materials would likely be re-buried in a landfill elsewhere at the Hanford Site, meaning that a tremendous amount of time and funding would be allocated for very minimal benefit.

Grouting waste tanks has worked well at DOE's Savannah River Site, and at the Idaho National Laboratory, and we see no reason to believe it wouldn't also be effective at Hanford. Closing WMA C represents a very significant step forward with Hanford cleanup, and making the final WIR determination will be an important step in the process.

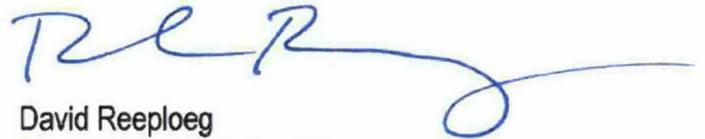


We are excited to see this effort move forward and thank you for your consideration of our input. Please feel free to contact us if you have any questions or if there is any further information we can provide.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Carl Adrian', with a stylized, cursive script.

Carl Adrian
President and CEO

A handwritten signature in blue ink, appearing to read 'David Reeploeg', with a stylized, cursive script.

David Reeploeg
Vice President, Federal Programs



Confederated Tribes and Bands
of the Yakama Nation

Established by the
Treaty of June 9, 1855

November 6th, 2018

Mr. Jan Bovier
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

**RE: *Draft Waste Incidental to Reprocessing Evaluation for
Closure of Waste Management Area C at the Hanford Site***

Dear Mr. Bovier:

The Confederated Tribes and Bands of the Yakama Nation is taking the opportunity to provide comments regarding the above-entitled Department of Energy document dated March 2018 (DOE-ORP-2018-01) and issued for public comment on June 4, 2018 (Draft WIR). The Draft WIR provides the basis for the DOE to issue a determination that wastes generated during the reprocessing of spent nuclear fuel, which are by definition high-level radioactive waste (HLW) under current federal law, may instead be managed as low-level radioactive waste. This is the latest in a continuing effort by your agency, pursuant to DOE Order 435.1, to reclassify HLW being stored at Hanford. We appreciate that the Office of River Protection decided to extend the period for comment for an additional 60 days given the nature and importance of this document.

The Yakama Nation is deeply concerned about being left with the most dangerous wastes of the nuclear age on lands it has used for its subsistence and culture since time immemorial. The Hanford site was established on lands where the Yakama Nation has reserved hunting and gathering rights under the Treaty of June 9, 1855. In addition the Columbia River, which bisects the site, is home to anadromous fish species to which the Yakama people have also reserved treaty rights to harvest. The Federal government maintains a special trust relationship to the Yakama Nation with an enforceable fiduciary responsibility to protect its lands and resources, including those to which treaty rights attach outside the Yakama Reservation.

Since Order 435.1 was approved by the Office of Environmental Management in 1999, DOE has consistently argued that it has discretionary authority under the Atomic Energy Act to reclassify any HLW remaining in the Hanford storage tanks as "waste incidental to reprocessing." The Yakama Nation was a plaintiff in previous litigation regarding this issue and remains convinced that the rulings made in that case, though vacated by the Ninth Circuit Court of Appeals on ripeness grounds, are persuasive legal authority and directly relevant to the current Draft WIR determination. However, aside from this legal question, we are also firmly convinced that leaving such radioactive materials in an unstable shallow land disposal for many generations is simply bad policy. It will inevitably result in serious threats to the health of Yakama enrolled members and the public, both by direct exposure and through consumption of contaminated resources.

Post Office Box 151, Fort Road, Toppenish, WA 98948 (509) 865-5121

Yakama Nation has reviewed the Draft WIR and is providing its comments regarding six overarching issues:

1. Legal Authority

The WMA C tank residual wastes comprise highly radioactive material resulting from the reprocessing spent/irradiated nuclear fuel, and contain fission products in sufficient quantities to qualify as high-level radioactive waste under definitions in the Nuclear Waste Policy Act (NWPA) or 10 CFR §60.2. DOE is now attempting to reclassify the wastes within the WMA C tanks from HLW to low-level radioactive waste based on purported criteria and authority provided in Order 435.1. These criteria contradict the clear congressional directive for deep geologic disposal of all HLW in the NWPA based on both its highly radioactive nature and its source, reprocessing of nuclear fuel in plutonium production. See *NRDC v. Abraham*, 271 F. Supp. 2d 1260, 1266 (D. Idaho 2003) (“NWPA does not delegate to DOE the authority to establish ‘alternative requirements’” for HLW).

2. Consistency with TCWM EIS/ROD

Implementation of the Draft WIR also circumvents several of the requirements, or their intent, of the 2013 Record of Decision (ROD) for the Final Tank Closure and Waste Management Environmental Impact Statement (TCWM EIS). Preferred Alternative 2B included retrieval of 99 percent of the tank waste by volume, separation of high- and low-activity radioactive waste, and potential soil removal or treatment in the vadose zone. Proposed changes made under the Draft WIR to the total volume of tank waste retrieved, handling of material currently classified as high-level radioactive waste, and future closure decisions will preclude implementation of the Preferred Alternative as described in the ROD.

3. Cumulative Effects

Due to the corrosive nature of the wastes stored, the WMA C tanks are associated with releases to the subsurface of radioactive waste from multiple generations of reprocessing chemistry. In 2016, the DOE estimated that the WMA C tanks had released approximately 201,000 gallons of radioactive waste to the vadose zone. Analysis performed in the Draft WIR and supporting Performance Assessment does not address these confirmed releases or the implications for future cleanup associated with grouting the WMA C tanks. Similarly, the WMA C is surrounded by other waste sites and tank farms; is within the boundary of impacts associated with production-period discharges to the subsurface; and is in the flow-path for several established groundwater plumes that are projected to exceed their applicable cleanup levels for decades or more. Future exposure to a member of the public or an inadvertent intruder is being evaluated on the basis of potential migration and/or exposure to residual tank wastes only, and does not include cumulative effects of these releases.

4. Impacts to Cultural Resources

The Yakama Nation has not been consulted by DOE to determine the effects on historic properties as required by the National Historic Preservation Act (NHPA). ER/WM also has not been provided an opportunity to review and comment on the DOE’s analysis of the anticipated

effects on historic properties. Decisions regarding final closure or remedial actions at each site should account for the impacts to traditional cultural properties. The Draft WIR does not include evaluation of the ultimate effect of general fate and transport of residual tank waste and vadose zone releases on exercise of reserved treaty rights to resources at Hanford.

5. Technical Approach

Based on data provided in the Draft WIR and the supporting Performance Assessment, concentrations of long-lived transuranic radionuclides in residual tank wastes exceed the maximum allowable concentrations identified by the Nuclear Regulatory Commission that are acceptable for near surface disposal. The Draft WIR presents a waste classification approach that includes revision to the classification calculations and sum of fractions evaluation to rely on the WMA C Performance Assessment Inadvertent Intruder Analyses. This modified approach does not address long-term protectiveness as intended under existing requirements for disposal.

6. Future Closure and Decision Making

Future closure relies heavily on implementation of institutional and engineering controls including surface barriers to ensure protection of human health and the environment. While such measures may be effective when properly implemented, a significant commitment of resources is required to ensure their success. The actions proposed by the Draft WIR, while relying on these measures, provide no assurances to ensure their effectiveness such as planning for degraded performance over time; incorporating clear and consistent maintenance and stewardship programs as part of proposed closure actions; and providing consistent, conservative, and advance funding for post-closure stewardship with assurances to maintain engineered barriers and access controls. Implementation of institutional and engineering controls also has significant implications for the Yakama Nation's members and the exercising of Treaty rights on the Hanford Site which should also be addressed.

The Yakama Nation supports clean closure, including maintaining a minimum of 99 percent retrieval for residual tank wastes to the maximum extent practicable. High-level waste and transuranic wastes derived from the reprocessing of spent nuclear fuel, including that which currently remains in the WMA C tanks, should be retrieved, segregated, and disposed of in accordance with current Federal law. Instead of implementing the Draft WIR, DOE should focus on meeting current cleanup requirements under federal law and previous Records of Decision that apply to the WMA C.

Please contact Julie Atwood at (509) (b)(6) if you have any questions or want to discuss these comments.

Sincerely,



Phil Rigdon,
DNR Superintendent, Yakama Nation

cc: Maria Cantwell, United States Senator
Patty Murray, United States Senator
Jay Inslee, Washington Governor
Ron Wyden, United States Senator
Jeff Merkley, United States Senator
Kate Brown, Oregon Governor
Sheryl Bilbrey, Director, Environmental Cleanup Office, U.S. EPA
Maia Bellon, Director, Department of Ecology
Anne White, Assistant Secretary for Environmental Management, U.S. DOE
Brian Vance, Office Manager, DOE-ORP
Doug Shoop, Office Manager, DOE-RL
Janine Benner, Director, Oregon DOE

INTRODUCTION

The Yakama Nation Environmental Restoration and Waste Management Program (ER/WM) has prepared the following comments on the *Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site*, DOE/ORP-2018-01 Draft D (Draft WIR) prepared by the U.S. Department of Energy (DOE) and dated March 2018.

The Draft WIR provides background information on previous waste removal from tanks located within Waste Management Area C (WMA C), planned closure activities, and the DOE's rationale for reclassifying residual tank waste from high-level radioactive waste (HLW) to low-level radioactive waste (LLW). The DOE's proposed reclassification appears to be a test case for the closure of additional tanks in the Central Plateau of the Hanford Site, all of which contain residual high-level radioactive waste. Successfully establishing the precedent set forth by the Draft WIR will apply a significantly less stringent set of requirements for the DOE to meet with regard to waste retrieval and environmental protection associated with final closure. The changes proposed by the Draft WIR are inconsistent and incompatible with the requirements identified in the Record of Decision for the *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington* (TCWM EIS), DOE/EIS-0391.

Based on the information presented in the Draft WIR, ER/WM has serious concerns that:

- The reclassification of high-level waste as proposed in the Draft WIR is not supported under current federal law;
- The characterization of WMA C and the analysis performed in support of the proposed reclassification are deficient;
- The DOE has not properly accounted for or evaluated cultural impacts and future protection of human health and the environment; and
- The Draft WIR has been authored and presented in a piecemeal fashion to obfuscate the context in which the proposed WMA C tank closure will occur.

These deficiencies are discussed in the comments below. The Yakama Nation reiterates its opposition to the proposed reclassification, which appears to be designed with an ultimate objective of permanently disposing through shallow burial significant quantities of high-level

radioactive and hazardous waste in the Central Plateau vadose zone. Congress has not granted any legal authority to DOE to perform the proposed reclassification of the high-level radioactive waste remaining in the WMA C tanks to low-level radioactive waste.

LEGAL AND POLICY ISSUES

The Yakama Nation has identified a number of deficiencies with the Draft WIR with regard to the legal and policy basis on which the proposed reclassification and closure will be performed by the DOE.

Legal Authority

The Draft WIR applies to the WMA C tanks, which comprise 12 first-generation 530,000 gallon 100-series single shell tanks; 4 smaller 55,000 gallon 200-series single shell tanks; a 36,000 gallon catch tank; and four “integral” tanks totaling 120,000 gallons; as well as ancillary control and diversion structures. As described in the Draft WIR, the tanks received liquid radioactive wastes from spent nuclear fuel reprocessing and other operations in the 200 Area of the Hanford Site that included B-Plant strontium processing wastes; cladding wastes, self-boiling wastes, sludge supernates wastes, and thorium process wastes from the Plutonium Uranium Extraction and/or Reduction-Oxidation Plants; and hot semi-works waste. ER/WM concurs with the Hanford Advisory Board and Oregon Department of Energy that the DOE does not have the legal authority to reclassify the residual WMA C tank wastes from high-level radioactive waste to low-level radioactive waste, and that doing so would violate existing Federal law.

Classification and disposal schemes for radioactive waste at Hanford have been circumscribed by Congress. High-level waste is defined in the NWPA as “highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations,” or anything else the Nuclear Regulatory Commission (NRC) says “requires permanent isolation.” 42 U.S.C. §10101(12). Under the NWPA all HLW must be disposed of in a deep geologic repository. 42 U.S.C. § 10107 (requiring disposal in a repository), § 10101(18) (defining “repository”). When initially enacted, the NWPA gave the President the option of addressing disposal of defense HLW separately. 42 U.S.C. § 10107(b).

However, in 1985 President Ronald Reagan determined that a separate defense HLW repository was not required.

Low-level radioactive waste is defined in the NWPA and NRC regulations as: 1) any radioactive material that is not HLW, spent nuclear fuel, transuranic waste, or by-product material; and 2) anything NRC says is LLW. It must not exceed certain concentration limits. 42 U.S.C. § 10101(16); 10 CFR § 61.55. LLW is Class A, B or C with on-site, near surface disposal. If it exceeds Class C concentrations, it must go to a “geologic repository” unless NRC specifies otherwise. 10 CFR 61.55 (A, B and C disposal); 10 CFR 61.58 (NRC authority to reclassify). The term “waste incidental to reprocessing” in DOE Order 435.1 is not defined by any statute or regulations.

Regardless of the term used to describe it, the defense nuclear waste in WMA C is “highly radioactive material” left over from the nuclear weapons plutonium extraction process. The liquid waste in the tanks at WMA C was “produced directly in reprocessing” and is therefore governed by the NWPA’s requirements as “high-level waste.” As the Yakama Nation indicates in its comments below, concentrations of long-lived transuranic radionuclides in residual tank wastes exceed the maximum allowable concentrations identified by the NRC that are acceptable for near surface disposal. Indeed, in 2003 the U.S. District Court for the District of Idaho concluded that the waste in the tank farms at Hanford, including WMA C, “falls within the NWPA’s definition of HLW.” *NRDC v. Abraham*, 271 F. Supp. 2d 1260, 1265 (D. Idaho 2003). Moreover, the court also held that DOE in Order 435.1 improperly gave itself classification and disposal discretion which the statute did not permit:

DOE's Order 435.1 directly conflicts with NWPA's definition of HLW. NWPA's definition pays no heed to technical or economic constraints in waste treatment. Moreover, NWPA does not delegate to DOE the authority to establish “alternative requirements” for solid waste. Because Congress has spoken clearly on that subject, “that is the end of the matter,” leaving no room for “alternative requirements. Thus, DOE's Order 435.1 must be declared invalid under *Chevron*.

Id. at 1266. Although this decision was vacated by the Ninth Circuit Court of Appeals on ripeness grounds, its logic remains persuasive fifteen years later given the nature of the residual waste remaining in the tanks at WMA C.

More importantly, the Ronald W. Reagan National Defense Authorization Act (NDAA) for FY2005, enacted by Congress in 2004, created an exception to the NWPA only for waste in Idaho and South Carolina. Under this statute DOE can dispose of that waste on-site, rather than in a geologic repository as otherwise required by the NWPA. P.L. 108-375, § 3116(a). The NDAA defined the waste subject to the Section 3116 exception as that which “exceeds the concentration limits for Class C low level waste as set out in [10 CFR 61.55].” Congress specifically refused to extend the NWPA exemption to waste in Washington, Oregon, or any other state. (§ 3116(c), (e)). Therefore, even assuming that DOE has congressional authority to reclassify HLW, that directive does not apply to any waste at Hanford.

Recommendation:

Residual tank wastes, as well as associated releases to the WMA C vadose zone should be classified based on the radioisotopes present and activity concentrations accordance with current Federal law. Waste that classifies as HLW under the NWPA and its implementing federal regulations at 10 CFR §60.2 should be retrieved and disposed of in a deep geologic repository. Similarly, waste that classifies as transuranic waste under 40 CFR 191 should be segregated and disposed of in accordance with existing Federal requirements.

Compliance with Relevant Closure Requirements

ER/WM concurs with the Hanford Advisory Board that the proposed reduction in waste retrieval from the WMA C tanks does not comply with the formal Record of Decision for the TCWM EIS to retrieve 99-percent of Central Plateau tank wastes. As noted by the Hanford Advisory Board and others, the Draft WIR proposes to leave approximately 4-percent of residual tank wastes in place based on total volume of the tanks to be closed. However, on an individual basis, some tanks may have residual waste volumes as high as 6- to 9-percent of the total tank volume. WMA C falls within the scope of closure activities identified in the TCWM EIS; therefore proposed waste retrieval and tank closure activities described in the Draft WIR should be

consistent with the requirements identified by the TCWM EIS and associated Record of Decision.

The reclassification of high-level radioactive waste to low-level radioactive waste appears to be targeted towards facilitating landfill closure under the Resource Conservation and Recovery Act (RCRA). However, the actions proposed in the Draft WIR fail to comply with previous decisions made under the National Environmental Policy Act (NEPA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). DOE asserts the document was prepared in accordance with its own internal directive Order 435.1 and that Hanford does not fall under § 3116(a) of the NDAA for Fiscal Year 2005, but takes no position on how the authority exercised under its internal order applies to the established requirements for closure.

Recommendation:

Thoroughly review the Draft WIR to ensure that proposed closure actions and requirements, including total waste volumes retrieved, are consistent with the requirements of the TCWM EIS Record of Decision, and applicable NEPA and CERCLA requirements.

Evaluation of Cumulative Effects and Historical Releases

The WMA C Performance Assessment and Draft WIR do not include or consider cumulative impacts associated with radioactive or hazardous waste associated with other waste sites in the Central Plateau. The proposed plans for closure and protection of human health and the environment in the Draft WIR and WMA C Performance Assessment must consider the setting for WMA C, in addition to historical releases to the vadose zone and groundwater within the WMA C itself. The Hanford Advisory Board noted that the DOE previously issued a separate WIR determination for releases to the vadose zone in 2008; whether this WIR determination applies to historical releases has not been specified or confirmed by the DOE. The 2008 WIR determination was neither reviewed nor approved by the Washington State Department of Ecology, yet has significant implications for future closure under RCRA by downgrading high-level radioactive waste formerly requiring vitrification to low-level radioactive waste suitable for shallow burial. To present the Draft WIR for residual tank wastes with no acknowledgement of

the steps DOE has previously taken to leave previously released high-level radioactive and hazardous wastes in the subsurface is not acceptable.

Contamination within the Central Plateau is the result of extensive waste disposal activities during plutonium production that included liquid waste discharges into open bottom cribs and trenches; leakage from waste tanks; operation of the US Ecology Low-Level Radioactive Waste Dump; and other cleanup activities performed to date such as the construction of the Environmental Restoration and Disposal Facility (ERDF). High concentrations of technetium-99 and iodine-129 in groundwater were predicted as part of exposure modeling performed for the TCWM EIS.

However, evaluation of potential exposure to intruders and/or members of the public does not consider the potential contributions from surrounding waste sites to soil or groundwater, including confirmed releases to the WMA C vadose zone and deep groundwater. The Draft WIR notes specifically that the analysis performed does not address contaminated soil or groundwater associated with previous leaks, planned releases, or unplanned releases within the WMA C even though such releases are highly relevant to the exposure scenarios presented and whether the proposed closure is protective of human health and the environment overall. Although not explicitly stated, this statement implies cumulative effects from other waste sites are also excluded from consideration.

Recommendation:

Revise the Draft WIR to incorporate and address historical releases to the Hanford subsurface in WMA C and the surrounding environment. The revised Draft WIR should be consistent with the assumptions and level of protectiveness previously established under the TCWM EIS, and applicable RCRA requirements for closure, and should account for existing and future releases to the subsurface and groundwater associated with proximate waste sites and facilities.

CULTURAL RESOURCES

Yakama Nation has prepared the following comments with regard to future impacts to Yakama Nation cultural resources and compliance with the National Historic Preservation Act (NHPA) on the Hanford Site.

National Historic Preservation Act Compliance

Yakama Nation has not been consulted by DOE to determine the effects on cultural resources as required by the NHPA. ER/WM also has not been provided an opportunity to review and comment on the DOE's analysis of the anticipated effects on historical properties.

Recommendation:

Revise the Draft WIR to incorporate the required NHPA Section 106 review and results of the associated 36 CFR Part 800 consultation process to be performed with ER/WM.

Traditional Cultural Property Impacts

The Yakama Nation is in the process of completing a Hanford Site-wide traditional cultural property study. This study must be completed to fully understand the impacts of this project on traditional cultural properties across the Hanford Site. Decisions regarding final closure or remedial actions at each site should account for the impacts to traditional cultural properties as identified by the Yakama Nation.

Recommendation:

Revise the Draft WIR to incorporate appropriate evaluation of traditional cultural properties.

Area of Impacts Analysis is Deficient

The area of potential effects will include contamination left in the vadose zone or that will remain mobile in the environment. The area of potential effects to be evaluated under NHPA includes any location or land where the character or use may be altered by the proposed actions to be taken.

If the Yakama Nation determines, as part of consultation with the Tri-Party Agencies that there are, or will be, adverse effects to traditional cultural properties, those effects must

be avoided, minimized, or mitigated. The Draft WIR should include evaluation of not only general fate and transport of residual tank waste and vadose zone releases, but also the ultimate effect these residual wastes and releases will have on resources used by the Tribe. The evaluation should specifically address surface water, groundwater, vegetation, site fauna, landforms and view-sheds of cultural importance, and how long it is anticipated the effect will last.

Recommendation:

Perform the appropriate evaluation of potential impacts to the area of potential effects under NHPA and identify the corrective action that will be taken in the revised Draft WIR. The corrective actions should also be specified and documented in a Memorandum of Agreement per the requirements of 36 CFR § 800.6.

TECHNICAL COMMENTS

The Yakama Nation concurs with Hanford Advisory Board and Oregon Department of Energy that the DOE does not have the legal authority to reclassify the residual WMA C tank wastes from high-level radioactive waste to low-level radioactive waste (see previous section “Legal Authority”). However, ER/WM has reviewed the Draft WIR technical elements regardless of the legal basis on which the document has been advanced. ER/WM’s review found that substantial revisions to the Draft WIR will be necessary to result in final closure that is protective of human health and the environment.

Waste Classification Approach

Radionuclide concentration calculations presented in Section 6.0 (Radionuclide Concentrations of Stabilized Residual, Tanks and Ancillary Structures) are both difficult to verify, and do not appear to follow NRC guidance for classification of nuclear wastes. In particular the DOE has included the use of a Site Factor, defined on page 6-9 as:

$$Site\ Factor_i = \frac{Table_Value_i}{C_{PA}} \times \frac{Dose_i}{500\ mrem}$$

Where:

$Site\ Factor_i$ = Site-specific factor for radionuclide "i" at closure.

$Table\ Value_i$ = Class C concentration limit from 10 CFR 61.55 Table 1 or Table 2 for radionuclide "i".

C_{PA} = Concentration, based on the WMA C PA inventory at closure, of the drilled source for radionuclide "i" (Ci/m³ or nCi/g) [see Sections 6.4.2.1 and 6.4.2.2].

$Dose_i$ = Peak dose, based on results of the WMA C PA, that occurs beyond 100 years (for pipelines) or beyond 500 years (for waste tanks, catch tank C-301 and 244-CR vault) after closure, for radionuclide "i", units in mrem/yr.

Incorporation of the Site Factor into equations presented for waste concentration calculations cancels out the Class C concentration limit included in Tables 1 and 2 of 10 CFR 61.55. The reduced equations calculate the peak dose equivalent based on the previously estimated value presented in the WMA C Performance Assessment, scaled to reflect the change in radioisotope inventory realized during additional tank waste recovery divided by the annual allowable 500 millirem total effective dose for an inadvertent intruder.

The adjusted ratio of the DOE-modeled dose over the allowable total effective dose equivalent is not an appropriate metric to classify nuclear waste for disposal. The approach presented by DOE does not comply with that laid out in Section 3 of the Nuclear Regulatory Commission guidance document *NRC Staff Guidance for Activities Related to U.S. Department of Energy Waste Determinations* (NUREG-1854) and appears to purposefully sidestep classifying residual wastes based on the radionuclides present, which would rate them as unsuitable for shallow burial.

For example, the Draft WIR states WMA C tank C-107 contains 16 curies of plutonium-239 (Table 2-6) in a residual waste volume of 39.4 cubic meters (m³, Table 4-7). Using the DOE-estimated residual waste density of 2.05 grams per cubic centimeter (g/cm³) the waste contains approximately 198 nanocuries per gram (nCi/g) plutonium-239. The calculated concentration exceeds the applicable value in Table 1 of 100 nCi/g in 10 CFR §61.55 (3), and is therefore not acceptable for near surface disposal.

Recommendation:

Residual tank waste should be classified based on calculation of long- and short-lived radionuclide activity per unit mass using the approved, unmodified formulas identified by 10 CFR § 61.55 and NUREG-1854. Waste should be classified for disposal accordingly.

Evaluation of Historical Releases

Historical releases of tank wastes to the WMA C vadose zone are not addressed in the Draft WIR. The DOE-estimated total releases to the subsurface include more than 200,000 gallons of radioactive waste including approximately 39,000 curies of cesium-137, 18 curies of technetium-99, and 1.5 curies of cobalt-60, and 31 kilograms (kg) of uranium, as well as 40,000 kg of nitrate (RPP-RPT-42294). Additional radioactive and hazardous wastes associated with the tanks and the reprocessing waste streams that were stored there, including transuranic radionuclides such as plutonium, are likely present although not specifically quantified by the DOE.

The Draft WIR proposed closure will leave radioactive and hazardous waste in the vadose zone without any treatment, or any attempt to stabilize and recover those wastes. Leaked waste present in the WMA C vadose zone will remain in the subsurface where it may be further remobilized when encountered by lateral groundwater flow or future infiltration. Radionuclides released to the vadose zone are not accounted for in the exposure scenarios evaluated as part of the WMA C Performance Assessment (RPP-ENV-58782, Rev. 0) used to demonstrate how the proposed closure will remain protective of human health and the environment. The exposure scenarios presented in the WMA C only evaluate future doses associated with residual tank wastes, assuming that the surrounding environment is free of additional contamination; this is demonstrably false and brings the validity of the results presented into serious question.

Recommendation:

Revise the Draft WIR and associated WMA C Performance Assessment to address releases to the WMA C vadose zone and groundwater. Evaluate potential exposure pathways that include stabilized tank waste and contaminated vadose media as well as the potential for mobilization of residual tank waste and vadose zone contamination to groundwater.

Environmental Fate and Transport Analysis is Deficient

In addition to failing to account for releases and contamination associated with other waste sites and facilities in the Central Plateau, supporting documentation presented as part of the WMA C Performance Assessment relies on environmental transport modeling that requires significant simplification of the subsurface environment. Unsaturated transport models such as STOMP do not account for the fine-scale heterogeneities that are known to exist in the WMA C vadose zone and that may alter fate and transport of contaminated groundwater or migration of contaminants in the subsurface. Such preferential pathways may result in accelerating the migration of contamination to groundwater, particularly if lateral groundwater flow is present during snowmelt or other high-infiltration events. Furthermore, the analysis performed assumes pristine boundary conditions and does not account for contributions to groundwater or the vadose zone from historical operations or future releases at other proximate waste sites.

ER/WM concurs with the Hanford Advisory Board that the analysis performed by the DOE is deficient in its accounting and analysis of:

- Fine-grained silt or clay lenses that may result in anisotropic transport in the subsurface;
- Lateral groundwater flow associated with high groundwater elevations during active operations and/or future high-infiltration events associated with snowmelt or other unusual meteorological events;
- The substantial existing inventory of radioactive contamination in the subsurface including highly mobile technetium-99 associated with historical operations;
- Cumulative effects associated with multiple releases at the Central Plateau waste sites and facilities.

Recommendation:

Revise the Draft WIR and WMA C Performance Assessment to address the data gaps identified above and to address the considerable uncertainty they introduce to long term closure and stability of the WMA C. Plans for closure, barrier use, and waste retrieval should be appropriately conservative to ensure even large deviations from the DOE's modeled exposure scenarios do not result in risks to human health and the environment that exceed limits set by existing Federal requirements.

Stability of Residual Wastes

The proposed stabilization of the WMA C tanks with grout does not ensure uniform incorporation of residual wastes. The DOE previously estimated the density of the residual wastes to be approximately 2.05 g/cm³, approximately 1.4 times the typical density of wet grout (approximately 1.5 g/cm³). Based on the density differences between residual waste and wet grout and the absence of measures to ensure thorough incorporation, the proposed stabilization measures may result in pushing residual wastes to the tank edges rather than incorporating them into a stable physical form as specified by DOE's Order 435.1. The Draft WIR contains no provisions for evaluating whether uniform incorporation is achieved following addition of grout to the tanks, and does not present the results of a pilot demonstration test or other proof of concept that would suggest such an approach is likely to succeed.

Recommendation:

Revise the Draft WIR to include appropriate detail and performance assurances that residual wastes will be uniformly and completely incorporated into the grout introduced into the WMA C tanks. The revision should include substantiating documentation from a pilot test or similar application as appropriate.

Overreliance on Surface Barrier Performance

The Draft WIR relies on surface barriers in order to meet basic performance criteria for protection against inadvertent intruders and reductions in waste mobility. The DOE has generally adopted the position that using surface barriers for landfill closure of radioactive waste is appropriately conservative because the barriers will last longer than 500 years even in the absence of active maintenance measures. However, no substantive documentation has been presented by the DOE to support this assertion. Moreover, such assumptions are not conservative and are not consistent with published research which indicates that surface barriers that can reasonably be expected to degrade due to damage from desiccation, freezing, and thawing; differential settlement; deep root penetration by vegetation; and burrowing by animals. The National Research Council's report, *Long-Term Institutional Management of U.S.*

Department of Energy Legacy Waste Sites (2000), addressed the DOE's use of barriers as a tool for isolating and containing waste and concluded that:

- Physical barrier systems that keep hazardous wastes in isolation will require their own ongoing support from an institutional management system;
- Stewardship measures not likely to remain effective for as long as residual contamination presents risks without constant upkeep and attention;
- Given that decisions made at facilities such as WMA C are often made with considerable uncertainty the best approach is to plan for failure of engineered barriers, institutional controls and other stewardship measures, rather than rely on them.

The Draft WIR appears to rely on similar assumptions of exceptional performance with minimal upkeep as have been applied in other DOE analyses rather than realistically addressing the points above. Such reasoning is not appropriately protective when considering shallow burial of high-level radioactive waste.

Recommendation:

Revise the Draft WIR to include appropriate information regarding surface barrier maintenance and stewardship measures planned for the WMA C and Central Plateau. Revise proposed closure activities to minimize reliance on surface barriers to the maximum extent practicable.

Use of Institutional Controls and Surface Barriers

The Yakama Nation has consistently opposed the use of surface barriers and institutional controls as a primary means of ensuring the long-term safety and security of the Hanford Site. ER/WM reaffirms that opposition with regard to the proposed closure of tanks in WMA C as described in the Draft WIR. Institutional controls are incompatible with Tribal reserved rights recognized by the Treaty of 1855 and are unlikely to be effective or adequately protective of future populations, particularly over the timeframe required for residual tanks wastes to decay to safe levels.

As described by the 2000 National Research Council publication, application of institutional controls is susceptible to multiple unfavorable long-term factors including:

- Atrophy of vigilance, which results in growing complacency and predictable cost control concerns;
- Informal mission change, wherein activities regarded as peripheral to an agency's core function are cut back or otherwise reduced; and
- Lack of predictable and consistent funding.

Unfortunately, as noted above, the DOE has not demonstrated the commitment to long term stewardship and maintenance that will be required to ensure the safety of shallow disposal for HLW, such as:

- Incorporating clear, detailed, and consistent descriptions of the maintenance and stewardship measures to be enacted as part of closure;
- Encouraging and embracing cultural and technical commitments to vigilant stewardship; and
- Providing consistent and conservative funding with assurances in advance rather than through annual appropriations, required to maintain engineered barriers and access controls.

In many instances the DOE has already shown signs of atrophying vigilance and/or overly optimistic expectations of performance with both minimal funding and upkeep. Examples of these include:

- Assuming that an uninformed individual with no institutional memory would elect not to drill through a Hanford barrier due to the presence of visibly crushed rock;
- Assuming surface barriers will remain effective for individuals with no institutional memory and will not be mistaken as markers of potentially valuable materials;
- Frequently assuming, with no supporting evidence, that future members of the public with no institutional memory will remain outside of waste site buffer areas;
- Unrealistically favorable expectations for surface barrier performance and limited surface infiltration over periods of 1,000 years or more without consideration for 100-year or 1,000-year meteorological events or barrier damage that may compromise effectiveness;

- Consistently favoring expedient and/or inexpensive disposal options with an emphasis on surface barriers and institutional controls rather than waste reduction and removal that may negate the need for such measures;
- Planning for long term closure and institutional control in a disjointed and/or piecemeal fashion that does not consider cumulative effects from surrounding waste sites and/or other environmental factors that may compromise the margins of safety reported for each waste site on an individual basis.

Recommendation:

Thoroughly review the Draft WIR's proposed use of institutional controls and surface barriers as part of closure activities and the associated uncertainty in their performance. Revise the Draft WIR to minimize the application of both institutional and engineering controls to the maximum extent practicable through additional waste retrieval and other means of reducing waste toxicity, volume, and mobility. Clearly identify and confirm the funding that will be provided for those institutional and engineering controls that are used.

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October 4, 2018

Mr. Jan Bovier
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Dear Mr. Bovier:

Thank you for this opportunity to provide comment on the Draft Waste Incidental to Reprocessing (WIR) Evaluation and accompanying Performance Assessment for Waste Management Area C (WMA-C) at Hanford. Oregon appreciates the fact that the U.S. Department of Energy (DOE) granted Oregon's request for a 60-day extension of the public comment period for these documents, in consideration of the complexity of the decision being evaluated.

The State of Oregon retains a long-term interest in the safety of the Columbia River, which is directly influenced by subsurface conditions at Hanford. The DOE's decision whether to reclassify the high-level radioactive waste in the C Tank Farm via a WIR determination has the potential to directly threaten the Columbia River by allowing wastes to remain on site that otherwise by law would have to be disposed in a deep geologic repository. To support such a decision, DOE has produced the WIR Evaluation and accompanying Performance Assessment to try to demonstrate to the public, and stakeholders such as Oregon, that the risk is actually not that great.

Oregon previously joined litigation against DOE in 2002 after it first promulgated DOE Order 435.1, the Directive that introduced the WIR process. This decision to join the litigation was made for several reasons: because we believed DOE Order 435.1 failed to follow the statutory definition of high-level waste; the "evaluation method" of the order provided DOE with unlimited discretion to determine whether high-level waste was required to be disposed of in a deep geologic repository; and Oregon wanted to ensure that we had continued access to the discussions.

Waste remaining in the tanks originated directly from the reprocessing of spent nuclear fuel to produce plutonium for the nation's nuclear weapons program. By definition, this is high-level waste. However, we recognize that a rational approach to long-term radioactive waste management also considers the risk a waste poses to potential future receptors rather than the pedigree of the waste alone.

Oregon does not necessarily oppose DOE's attempt to test their Order 435.1 process for WIR determinations, in part because the plan for Hanford tank waste treatment depends on the ability to separate high-level waste into different disposal pathways. If the results of a rigorous and scientifically defensible analysis show there is a reasonable expectation for minimal risk to future receptors and the Columbia River, and DOE engages in an inclusive and integrative process of uncertainty management, then Oregon will respect that result.

We have historically differed with DOE on how to manage the remaining uncertainty that leaving key long-lived radioactive wastes on site at Hanford presents. DOE has made efforts to guarantee, via a suite of models, that receptors will be safe for the lifetime of those wastes. We have argued repeatedly that these models leave out key features and processes observable in the real world, supported by decades of data and evidence from DOE's own reports. Our concerns are shared by other interested parties, including the Washington Department of Ecology and the Nez Perce Tribe. Together these entities and the State of Oregon represent many decades of experience studying the Hanford environment.

To DOE's credit, they have conducted and supported numerous evaluations of the lateral waste transport mechanism that was at the heart of our concern. These studies have shed additional light regarding the scale of potential risks associated with lateral transport. However, our specific technical comments below will highlight that potentially significant uncertainties remain and are relevant to this and to other decisions on the horizon. We offer a recommendation for an inclusive Adaptive Management process to address these uncertainties while allowing the cleanup to move forward.

DOE has gone to great lengths to limit the scope of this WIR decision. The WIR Evaluation focuses exclusively on the residual waste in the WMA-C tanks post-retrieval, while consigning the high-level waste that historically leaked from these tanks into the soil to be addressed via RCRA and CERCLA. This approach presumes that the leaked waste, which derived directly from the reprocessing of spent fuel, can be treated as something other than high-level waste without the rigor of a WIR evaluation. Further, it leaves a hole in the present WIR Evaluation because the tank residuals are not modeled within the context of the contaminated environment in which they currently sit. We are also concerned that the data on past leaks from these tanks is sparse, meaning that our understanding of future risk from the migration of these wastes is ultimately uncertain.

By failing to account for these leaked wastes and the complexities of reactive transport and cumulative risk from waste sources in the vicinity, we are left without a holistic picture of the risk to a future receptor. We find it unlikely that the 10 CFR Part 61 regulations governing the creation of a new low-level radioactive waste disposal facility (which the grouted tank farms would become) intended such a facility to be located atop already contaminated and inadequately characterized soil and groundwater.

We believe that leaving the contaminated soil under the tanks that resulted from past high-level waste leaks would require a WIR evaluation and should have to meet the same performance standards and scrutiny as the tanks that once contained that waste. Alternatively, Oregon expects at the very least for the three WIR evaluation criteria to be applied to leaked tank waste in soil as a substantive Applicable Relevant or Appropriate Requirement under CERCLA, as required by DOE Order 435.1¹.

We are willing to accept DOE's approach to separate decisions for waste tank residuals and the leaked high-level wastes that are currently migrating toward groundwater beneath the tank farm. However, we contend that the appropriate use of DOE Order 435.1 should consider cumulative impacts from all nearby wastes that could impact future receptors, and therefore DOE should make a Composite

¹ Per DOE-M-435.1-1, Field Element Managers are responsible for, "Ensuring the management and disposal of radioactive waste resulting from environmental restoration activities, including decommissioning, meet the substantive requirements of DOE O 435.1, Radioactive Waste Management, and this Manual . . . Compliance with all substantive requirements of DOE O 435.1 not met through the CERCLA process must be demonstrated."

Analysis, as required by DOE Order 435.1, available for public review before making a final WIR determination.

Finally, near-term tank closure is not a schedule or budget priority for Oregon. We believe that early closure of these tanks could also foreclose future cleanup of waste in the vadose zone or a chance to retrieve more waste from tanks in the future if more varied technologies are pursued. Furthermore, DOE's decision to devote limited site resources to tank closure while the capacity to treat tank wastes is still under construction is not representative of a priority to reduce the highest impact risks at Hanford.

We recognize the technical and financial difficulties of emptying, let alone fully excavating these tanks, and we understand the pressure on DOE to look for less costly alternatives. However, we remain concerned that the criteria for a WIR determination have not been met with the utmost confidence this decision requires.

Given the uncertainty of the risk that remains, we offer the following recommendations to introduce additional safety factors and process improvements into DOE's prospective decision and better manage the residual risk:

1. Prior to making a final WIR determination, DOE should conduct additional uncertainty analyses in the WMA-C Performance Assessment to address the potential risk stemming from compound model uncertainties.
2. Because the post-WIR DOE Closure Plan for WMA-C has no requirement for public involvement under DOE Order 435.1, it is important that DOE presents the whole package of this decision for public view as part of the WIR decision. This includes the Composite Analysis required for Closure Plans under DOE Order 435.1 and the Performance Assessment Maintenance Plan.
3. The Performance Assessment Maintenance Plan represents an opportunity to manage the remaining uncertainties associated with potential lateral transport of moisture and wastes into and out of WMA-C, while still moving forward with cleanup. Oregon would like to be involved in the development of this plan, in addition to other stakeholders, as a form of collaborative Adaptive Management². Engagement in such a process would instill confidence in Oregon that DOE is committed to good long-term risk governance, and that the Performance Assessment maintenance process will seek the right information.

² An innovative approach to resource management in which policies are implemented with the express recognition that the response of the system is uncertain, but with the intent that this response will be monitored, interpreted, and used to adjust programs in an iterative manner, leading to ongoing improvements in knowledge and performance (Holling, 1978; Walters, 1986, 1997; Walters and Holling, 1990; Lee, 1993). As noted by Lee (1999), "Adaptive management is learning while doing; it does not postpone action until 'enough' is known but acknowledges that time and resources are too short to defer...action." As such, adaptive management provides a structured approach for addressing uncertainty, making decisions in the face of it, and seeking to improve these decisions in an iterative manner by actively acquiring the knowledge necessary to reduce uncertainty. Excerpted from: National Research Council. 2003. *Environmental Cleanup at Navy Facilities: Adaptive Site Management*, Washington D.C., The National Academies Press. <https://doi.org/10.17226/10599>.

4. DOE should conduct a WIR Evaluation process or equivalent for the wastes associated with past WMA-C tank leaks and spills. This evaluation should be concurrent with the RCRA process currently ongoing for WMA-C soils.
5. Before implementing a final closure action for the WMA-C tanks, DOE should continue to evaluate new and more powerful waste retrieval technologies, including stronger pumps and/or dry mining techniques, and fulfill the promise of using the C Farm as a proving ground for more effective retrieval technologies. DOE has committed to a goal within the Tri-Party Agreement Milestone M-45-00, TPA Appendix H, and the Record of Decision following the Tank Closure and Waste Management EIS (2012) to retrieve at least 99 percent of waste from the tanks. Retrieval efforts within the C Tank Farm have fallen short of that total.
6. DOE should not proceed to approval of a Closure Plan for WMA-C at least until after the Waste Treatment Plant is operational.

It has been said that one of the reasons why Hanford is in the situation it is in now is because operators of the past treated the environment as a container for waste. That decision was based on the best information of that time, and it proved to be short-sighted. The question today is very similar to the one grappled with 70 years ago: is the environment an adequate container for waste? If we are wrong today, future generations could suffer harmful health effects, and the Columbia River that Oregon stewards could be irreversibly changed for centuries. Together we share a responsibility to design a decision that is coherent, risk-aware, inclusive, and adaptive if it is to endure.

Our more detailed technical comments follow, along with more specific recommendations.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

Cc: Kristen Sheeran, Energy Policy Advisor to Governor Kate Brown
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Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation
Rose Longoria, Yakama Nation
Jack Bell, Nez Perce Tribe
Oregon Hanford Cleanup Board
Susan Leckband, Hanford Advisory Board

Evaluation of the Three WIR Criteria for WMA-C Tanks and Residuals

Criterion 1: Wastes have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical

- The use of the term “cleaned tanks” (Page 1-4 of the draft WIR evaluation), implies a level of no risk, which is not accurate. “Retrieved tanks” is a more accurate term.
- On cessation of retrieval activities at WMA-C, a total of 62,900 gallons of waste representing an estimated 472,000 curies of radioactivity³ are proposed to be left behind for potential future release to the environment. The WIR Evaluation document notes that in Tank C-112 and others, waste solids larger than grains of sand were not able to be suspended and pumped from the tanks, and thus were left behind as “impractical” to retrieve.
 - The WIR evaluation does not specify the strength of the suction pumps used to lift tank solids from the tank bottoms to the transfer lines at ground surface. This is an important detail, as the justification given at the June 18, 2018 public meeting for why particles larger than grains of sand could not be retrieved from the tank was that the pumps lacked sufficient power. By contrast, the F Tank Farm retrieval at Savannah River achieved 99.7% retrieval efficiency⁴ via a Sand Mantis retrieval technology that used a 17,500 PSI eductor to aspirate dislodged wastes. Tank retrieval in Idaho achieved an estimated 99.9% retrieval⁵ using a washball, directional nozzle, and steam jet pump, with residual solids pumped out during the first stages of grouting as wastes were pushed toward the pump⁶. The WIR evaluation should provide sufficient detail for a reader to more fully determine how the retrieval technologies used in the C Farm tanks compare to those at Savannah River and Idaho.
 - During the public meeting for the WIR process on June 18, 2018, a DOE presentation showed that a miniature robotic bulldozer (Off Riser Sampler) was capable of collecting residual solids for the purposes of post-retrieval characterization. This begs the question of why dry mining or mechanical retrieval of waste solids were not pursued as a supplemental retrieval technology. We have heard that multiple dry mining proposals have been put forward in recent DOE Grand Challenge competitions, so it is reasonable to expect this is a new technology avenue that may be forthcoming. Looking to the future as DOE plans to retrieve single-shell tanks that have breached or corroded to the point that liquid-based retrieval threatens to mobilize tank residuals further into the environment, DOE should plan on the need to incorporate non-liquid-based retrievals. As the WMA-C retrieval was originally intended to be the proving ground for retrieval

³ Estimate based on data retrieved from phoenix.pnnl.gov on 8/23/18.

⁴ Savannah River Remediation LLC, 2012. “Cost Benefit Analysis for Removal of Additional Highly Radioactive Radionuclides from Tank 18.” SRR-CWDA2012-00026.

⁵ US NRC, 2006. “U.S. Nuclear Regulatory Commission Technical Evaluation Report for the U.S. Department of Energy Idaho National Laboratory Site Draft Section 3116 Waste Determination for Idaho Nuclear Technology and Engineering Center Tank Farm Facility.” October 2006. <https://www.nrc.gov/docs/ML0624/ML062490142.pdf>.

⁶ US Department of Energy, 2006. “Basis for Section 3116 Determination for the Idaho Nuclear Technology and Engineering Center Tank Farm Facility.” November 2006. <https://www.nrc.gov/docs/ML1431/ML14317A056.pdf>.

technologies to be used throughout the tank closure mission, this seems a missed opportunity that can still be remedied.

- For multiple retrievals, a justification in the evaluation to not pursue additional retrieval via caustic dissolution was that limitations on double-shell tank space would further limit future retrieval activities. We do not agree that double-shell tank space limitations are a reasonable justification for declaring technical or economic impracticality for further risk reduction. This is an issue of timing due to the unavailability of the Waste Treatment Plant and DOE's decision to not build the storage capacity needed to properly complete the retrieval mission.
- The Tri Party Agreement (TPA) documents agreement between DOE, the U.S. Environmental Protection Agency, and Ecology that, "Closure will follow retrieval of as much tank waste as technically possible, with tank waste residues not to exceed 360 cubic feet in each of the 100 series tanks, 30 cubic feet in each of the 200 series tanks, or the limit of waste retrieval technology capability, whichever is less" (M-045-00). Cost is not a TPA retrieval factor unless Appendix H of the TPA is invoked and accepted by Ecology. Even if DOE determines, based on its criteria of practicality, that waste retrieval has been performed adequately enough for a WIR determination, this does not automatically mean that the TPA requirements have been satisfied. It would therefore be inappropriate to grout the tanks until the full breadth of regulatory decisions have been made regarding the tank residuals and the surrounding environment.
- The definition of practicality is by its nature subjective. It can be defined in a dictionary as "adapted to actual conditions," or, "mindful of the results, usefulness, advantages, disadvantages, etc., of the action or procedure." However, all definitions require an application of judgment. DOE's modifiers of "technically and economically" introduce a bias away from precautionary safety. DOE's usage of the term "practical" in the WIR Evaluation seems to center around the concept of "bang for the buck." Additional waste retrieval is deemed impractical if diminishing returns have been reached in the rate of retrieval using the current technologies, and if DOE's Performance Assessment indicates that remaining wastes pose minimal risk. We suggest that the "actual conditions" to be "adapted to" should include consideration of remaining uncertainties in the natural system model, future uses of the area, and other unknown unknowns. Actual conditions should also include WMA-C's proximity to the Columbia River and the corresponding risk of irreversible harm to an irreplaceable resource if the unexpected should come to pass. In other words, practicality should be enhanced by a healthy dose of precaution that involves additional source term removal using new, more varied methods.
- A 2006⁷ report by the National Academy of Sciences urged the DOE to not be hasty in its tank retrievals and to consider the potential benefits of delaying tank closure in order to allow time for additional retrieval technologies to mature. Specifically, the NAS report concluded: "*DOE should decouple its schedule for tank waste retrieval from its schedule for tank closure for those tanks that still contain significant amounts of radioactive material after initial waste retrieval is completed. . . Decoupling will enhance future opportunities to remove additional*

⁷ <https://www.nap.edu/read/11618/chapter/6> National Academies Press, 2006. Tank Waste Retrieval, Processing, and On-site Disposal at Three Department of Energy Sites: Final Report.

radioactive material from these tanks as retrieval technologies are improved.” DOE appears not to be heeding this advice in an effort to push forward with a WIR determination. If the TPA agreed-upon retrieval targets cannot be met with the technology DOE has employed so far, it would be wise to leave the option open for further retrieval in the future rather than preclude the use of future technologies by grouting the tanks and installing an interim asphalt cap over the area.

Criterion 2: Wastes will be managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, *Performance Objectives*

- The draft WIR evaluation indicates that the Oregon Department of Energy, among many other entities and agencies, have reviewed the technical aspects of the Hanford geological data package, and that this high-level of review, “has helped ensure a rigorous understanding of bounding geologic, seismic and volcanic risks (page 2-6).” The language implies the review equates to concurrence, which is not entirely the case.
- Oregon acknowledges the work performed by DOE to improve the Performance Assessment modeling via a stochastic parameter sensitivity analysis. We generally agree this effort resolves some of the uncertainties associated with variability of parameters in DOE’s chosen base model (e.g., groundwater recharge rates, residual waste inventory, etc.). However, the parameter sensitivity analysis does not adequately account for conceptual/structural uncertainties in the coupled natural-engineered-human system. DOE conducted a “sensitivity case” uncertainty analysis, which evaluated the effect of single aspects of the larger disposal system performing differently than expected (e.g., early cap failure, alternative subsurface conceptual models, presence of a clastic dike, etc.). These analyses are a good start, but we contend that a more complete uncertainty analysis should consider the effects of cumulative uncertainty if more than one of these unexpected conditions were to occur at once. For example, no apparent scenario included an alternative conceptual subsurface model with additional fine-grained subunits, a clastic dike, early cap/grout failure, and variable recharge rates.
 - Recommendation: Additional uncertainty analysis should be included in the Performance Assessment supporting the final WIR Evaluation. This analysis should include multiple fine scale silt layers, a clastic dike, the highest average precipitation, and early failure of the cap and grout. Additional combination uncertainty cases may also be appropriate, but the proposed scenario would at least provide a bounding uncertainty case to increase confidence that the proposed action is robust enough to withstand multiple unexpected conditions.
- Oregon has long maintained that lateral contaminant transport along preferential fast travel pathways, including fine-scale heterogeneous subsurface layers and vertical clastic dikes, is a significant natural process not captured by the Performance Assessment model. The heart of our concern is that fine grain layers may promote lateral transport of water. This matters for two reasons. First, if water can enter the soil outside of the engineered control and circumvent the proposed cap, then waste may be mobilized faster than predicted. Second, if waste migrates laterally through preferential pathways, then the peak dose to future residents may be in a

place not modeled, at a time sooner than predicted, at a higher concentration that no attempt has been made to calculate. This leaves the future risk uncertain if three conditions are present: 1) these subsurface conditions do indeed exist in this specific location, 2) thin silty layers surrounded by sand and gravel will actually act as a sufficiently impermeable surface to cause water to travel laterally; and 3) the amount of lateral transport is significant enough to affect peak dose.

- Regarding Condition 1, neutron moisture data from probes at WMA-C exhibited characteristics that Oregon and others interpreted to show the possible location of sloping fine-grained soil layers that were correlatable and mappable. PNNL-15617 documented the investigation of a pipeline leak within the WMA-C boundary, and Page 2.3 contains neutron moisture log cross-sections that identify correlated spikes of subsurface moisture similar to the work of Oregon and the Nez Perce, providing further evidence of the existence of at least four discernable lithologic boundaries (fine layers) where moisture concentrates within 40 feet of the surface (p. 2.8). The geologists' core logs from the boreholes also identify many moist samples containing silts, laminated fine sands, and "mud." The location of the investigation was outside the original backfilled excavation of the tanks, where the shallow soils are consistent with the H2 formation that dips northeast to underlie the backfill for the tanks. Based on the available evidence, Oregon concludes that fine layers likely exist within WMA-C, and those layers can be treated as continuous with respect to the model.
- Regarding Condition 2, Oregon remains uncertain. While numerous studies at Hanford describe lateral transport of contaminants from source zones, the scale of this travel tends to be on the order of tens of meters in past events. These events were during site operations, when greater amounts of water were released to soil than what is predicted for future meteoric water infiltration. The field study experiments at the "Sisson and Lu" site also provide well-documented evidence of lateral transport, but again this was based on a relatively large moisture infiltration event (20,000 liters over four discrete injections). A validated relationship between the amount of infiltration required to mobilize transport laterally within fine subsurface layers and the distance traveled still needs to be established. Further work could help define the permeability characteristics of these layers.
- Regarding Condition 3, Oregon remains uncertain. We recognize that lateral transport of "tens of meters" from the tanks would not significantly affect the peak dose in a hypothetical groundwater well 100 meters downgradient of the WMA; however, increased lateral inflow could drive potentially significant additional mobilization of tank wastes. We further recognize that DOE's repeated efforts to model heterogeneity have all predicted that the peak dose concentration and time of arrival are not significantly different between a subsurface with heterogeneous layers versus one without. However, aspects of DOE's supplemental modeling designs impede their usefulness.
 - An early modeling exercise (presented to Oregon but not documented in a report) uses a stylized 2-D modeling approach to argue that the arrival time and concentration of a hypothetical Technetium 99 source is not appreciably different between a subsurface with, versus without, fine layers fitting hypothetical hydraulic conductivity properties. However, if the layer acted as a plastic barrier and was totally impermeable, then waste concentrations would

be more than three times higher and the arrival time approximately 30 percent sooner. Three aspects of the stylized model make the significance of these findings difficult to conclude definitively. First, the lack of sloping in the stylized fine layers underestimates the contributing force of gravity to facilitate transport. Second, the model may be underestimating the effect of extreme pressure and earthquakes to create a less permeable surface than the silt characteristics used in the model. Third, the episodic nature of precipitation or rapid snowmelt events at Hanford allows the possibility for future flooding to form "temporary lakes" in the vicinity of WMA-C, which may introduce enough water to make fine layers more active transport features.

- A PNNL study from 2017 attempted to more accurately model the potential effects of heterogeneity using a data driven approach. This effort applied a kriging methodology to build a three dimensional image of the subsurface based on the neutron moisture data. The kriged data were then used to statistically synthesize "pseudo-boreholes" to further populate the parameters in the model domain. This report concluded that the arrival time and concentration of a hypothetical Technetium 99 source in soil was not appreciably different than the Performance Assessment base model. Unfortunately, the research was not designed to address the specific concern raised by Oregon. Rather than evaluate the potential effects of structured heterogeneity (i.e., discrete layers of bedded fine layers consistent with the natural historical process of cataclysmic Ice Age floods that would have created them), the applied kriging method "smeared" the fine soils. This approach failed to capture the essence of our concern, which is the potential for lateral inflow and preferential fast travel pathways due to the specific behavior of low-permeability lenses. We are also concerned that the modeled parameter values for the soil types may not be sufficiently different to mimic the natural process of interest.
 - Appendix F of the Performance Assessment presents a facies-based model approach. This model also concluded that arrival time and concentration of a hypothetical Technetium 99 source would not be significantly different from the base model; however, this model assumed a very low infiltration rate of 3.5 mm/year and therefore cannot address the potential of greater lateral flow under higher infiltration conditions.
- It is unclear from the provided reports whether and/or how any of DOE's supplemental modeling approaches incorporated the potential for lateral inflow from outside an assumed cap.
 - PNNL-15617 showed lateral transport to the northeast of a pipeline leak from the 1960s, but it is likely that this transport occurred along the compacted excavation in which the ancillary pipelines were laid. While this finding does not strengthen the case of fine layer transport, it does demonstrate that anthropogenic lateral transport pathways not modeled in the Performance Assessment exist within WMA-C, which could be a future moisture infiltration pathway from outside a future WMA-C cap. However, this study also showed that the highest observed concentrations of Technetium 99 occurred 80 feet beneath the site of the original leak, which supports

DOE's assertion that the majority of transport will still be vertical.

- The Performance Assessment model does not appear to consider the effects on contaminant migration if rapid-snowmelt lakes form around the tank farm. A similar event happened in January 1979 when a lake formed over the T Farm. While the presence of a cap will encourage runoff, the presence of lateral subsurface migration pathways leaves the possibility that a large infiltration event could allow water to travel laterally under the cap and into the tank backfill material.
- The WIR Evaluation does not contain the results of a Composite Analysis.
 - Recommendation: The Composite Analysis specific to the closure of WMA-C, required under 435.1, should be included as part of the "decision package" for the WIR determination.
- The Best Basis Inventory for the C Tank Farm reports 175 Curies of Plutonium 239 and 164 Curies of Americium 241 remaining in tank residuals. The migration of Plutonium 239 to groundwater was pre-screened from being modeled in the Performance Assessment under the expectation that no radionuclide with a $K_d > 1.5-2.0$ would reach groundwater within 10,000 years (plutonium was given an assumed K_d of 600). However, a 2015 study by PNNL (PNNL-23468 Rev. 1) found that when considered in the context of actual Hanford soils and tank waste compositions including organic complexants, plutonium sorption was limited with K_d s ranging from 1.4 to 40. Another recent report (PNNL-21651) concludes that, "In order to demonstrate to regulators and other interested parties that we have a technically defensible understanding of plutonium and americium behavior in the Hanford environment, and to predict the impact of remediation or closure options with reasonable confidence, a number of unresolved issues and research needs and challenges need to be addressed."
 - Recommendation: Due to these uncertainties, a sensitivity case in the Performance Assessment should evaluate the potential effects of more rapid plutonium and americium migration in the subsurface.
- Guidance within DOE M-435.1 IV (P) 4 requires that Performance Assessment maintenance be conducted to "*evaluate changes that could affect the performance, design, and operating basis for the [disposal] facility... and shall include the conduct of research, field studies, and [environmental] monitoring needed to address uncertainties or gaps in existing data . . . Additional iterations of the performance assessment and composite analysis shall be conducted as necessary during the post-closure period.*"
 - Recommendation: Oregon recommends that DOE fully develop the Performance Assessment Maintenance Plan consistent with the tenets of Adaptive Management (Holling, 1978), in consultation with the U.S. Nuclear Regulatory Commission, Oregon, Washington, Native American tribes and the public, prior to making a final WIR determination. This activity would make the complete package of the decision available for review and should include funding for additional investigation and verification of the assumptions supporting the Performance Assessment.

- The Performance Assessment states that “*The engineered cover for WMA-C is not yet designed, but is assumed to be similar to the Modified RCRA Subtitle C Barrier that limits infiltration through the waste primarily by evapotranspiration processes (i.e., surface barrier) based on the work done for the Hanford Prototype barrier.*” If the infiltration rate (i.e., performance) of the assumed barrier relies on vegetation to provide evapotranspiration, the barrier should be considered an “active control” that would degrade after loss of Institutional Control at 100 years, because it will require upkeep to recover from future fires and invasive plant species that could change evapotranspiration assumptions. Furthermore, the figure for the Generic Modified RCRA C Baseline Design (Figure 3-50) assumes that vegetation root depth will not exceed 1 meter. Studies of Hanford flora have found that rooting depth of native species can exceed 15 feet⁸ and could conceivably penetrate the deeper layers of the cover, thereby increasing water infiltration. At the same time, the RCRA process for remediating past leaks to the soil assumes the placement of asphalt covers over portions of the WMA to reduce infiltration and direct exposure risk, yet this interim cover does not appear to be integrated into the design of the final cover proposed in this WIR evaluation.
 - Recommendation: DOE should clarify whether and how these uncertainties are addressed in the uncertainty analysis, or revise the uncertainty analysis to include these potential failure factors.

- If the tanks and the residual waste contained therein are modeled with the assumption that no external contamination is present, as presented in the scope-limited WMA-C Performance Assessment, then the proposed closure strategy for the tanks appears to present minimal risk to human health and the environment. However, multiple variables preclude meaningful calibration of the transport model. First, underlying soils and groundwater have been contaminated by past releases. The Technetium 99 contribution of contaminant mass resulting from residual tank waste cannot be measured in isolation. Second, and more importantly, the model is run forward through time beginning at the installation of the cap and emplacement of the grout. Without an initialization period which can be compared to existing data, the model cannot be referenced to observed physical conditions. Although a calibration of transport of existing contamination is located in the Analysis of Past Leaks document (RPP-RPT-59197), that calibration is not included in the Order 435.1 Performance Assessment.

- While the WIR evaluation attempts to limit the scope of the Performance Assessment to tank residuals, excluding contaminated soils within the Waste Management Area, this approach fails to consider the actual risk to receptors under a well driller scenario. It is reasonable to expect that if a well driller exhumes waste from a subsurface pipeline on the way to groundwater, any contamination in the excavated column of soil would also be brought to the surface for human exposure. Presently, the WMA-C WIR Performance Assessment is the only analysis that evaluates a well driller scenario.

⁸ Lovtang, S., Delistraty, D., & Rochette, E. (2018). The biologically active zone in upland habitats at the Hanford Site, Washington, USA: Focus on plant rooting depth and biomobilization. *Integrated environmental assessment and management*, 14(4) 442–446.

- Recommendation: The intruder well driller exposure scenario should be revised to include a reasonably anticipated contaminated soil column from the surface to groundwater in addition to the waste from a remaining subsurface pipeline.

Criterion 3: The waste will be incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, Waste Classification

- We understand that DOE is opting to make a scenario-based argument, consistent with NRC Guidance NUREG-1854, in the development of Class C equivalent concentrations. In this analysis, DOE asserts that due to the depth of the buried tanks and ancillary structures and pipelines, the concentrations in 10 CFR 61 that were based on a basement excavation scenario are not appropriate. Therefore, the near-surface pipelines contained the “most credible” source term for the assessment. In order to qualify for the “deep waste, no intruder barrier” category within NUREG-1854, these pipelines would need to be deeper than 15 feet below ground surface. Page 6-5 of the WIR Evaluation only commits to burying the pipes greater than 10 feet below the WMA-C closure barrier, which is assumed to be approximately nine feet thick. It is uncertain whether the phrase, “below the barrier” is meant to indicate below the bottom or the top of the barrier. For DOE to pursue this path, the final fill material and barrier will need to be massive enough to ensure that all buried pipelines associated with WMA-C are at least 15 feet below ground surface. This represents a significant additional soil overburden requirement, which will come at significant cost, and we suggest an analysis to determine if it would be more economically practical and protective in the long-term to remove the pipelines and emplace a less massive cover.
- Based on Page 6-4 of the WIR evaluation, it appears that DOE does not intend to grout an unknown portion of the nearly eight miles of ancillary pipelines within WMA-C. The residual wastes within these pipelines would consequently not be incorporated in a solid physical form. It is unclear how DOE proposes to satisfy Criterion #3 for the wastes remaining in these pipelines.
- Oregon is concerned that residual wastes in the tanks will not be incorporated into the grout but will rather be overlain while remaining in a concentrated mass or, in some cases, may be pushed to the sides of the tank or floated to the top of the pour. These concentrated lumps/layers of waste could potentially be located in the portions of the tank that would be the first to encounter water as the tank liners corrode and water works preferential pathways into the layer cake monolith. It is unclear how DOE’s proposed approach will satisfy Criterion #3 requiring incorporation of the waste into a solid physical form.



Oregon

Kate Brown, Governor



550 Capitol St. NE
Salem, OR 97301

Phone: 503-378-4040

Toll Free: 1-800-221-8035

FAX: 503-373-7806

www.oregon.gov/energy

June 25, 2018

Brian Vance
Manager, Office of River Protection
U.S. Department of Energy
PO Box 450, MSIN H6-60
Richland, WA 99352

Dear Mr. Vance:

I officially request a 60 day extension to the comment deadline on the *Draft Waste Incidental to Reprocessing (Draft WIR) Evaluation for Closure of Waste Management Area C*. The importance and ultimate impact of the decisions that are being made require deliberate and thorough consideration by not just the State of Oregon, but by all affected parties.

I appreciate that the U.S. Department of Energy initially offered an extended comment period for this document. However, the 96 day period is not sufficient, for the following reasons:

- The documents themselves, the Draft WIR and the supporting *Performance Assessment of Waste Management Area C*, are lengthy (312 and 1,023 pages respectively), technically complex, and require extensive study and analysis. Due to other pressing issues at Hanford, my small technical staff is not able to devote all of its time to this review.
- As this is the first Hanford tank farm to go through the WIR process, this will be a precedent-setting action with potentially irreversible impacts well into the future.
- Because there was previous litigation challenging DOE's processes to reclassify waste, and Oregon was involved in that litigation, our comments will need legal and high-level policy review, which adds to the time we need to finalize comments. (This does not mean that we will necessarily engage in future litigation on this issue).
- Our staff has been promised an explanation from DOE's Office of River Protection and DOE Headquarters staff regarding the legal and regulatory basis for soils contaminated by past tank leaks. This briefing with DOE-ORP is tentatively scheduled for early August and will likely affect our final comments and our internal review schedule.
- The U.S. Nuclear Regulatory Commission is producing a Technical Evaluation Report of the WIR and associated Performance Assessment analyses, which is expected to be completed in March 2019. NRC will issue its first Request for Additional Information to DOE in the September timeframe. These actions by the NRC are critical inputs to public understanding of the WIR decision being proposed and may result in a revision to the WIR Evaluation and the Performance Assessment. Because DOE will offer no other opportunity for public comment between this draft WIR Evaluation and the final WIR determination, ideally the public comment period should extend until after the NRC report has been issued, or another comment period should be initiated for any revisions to the WIR evaluation. A 60 day extension to the comment

period would at least allow us to understand what information the NRC has found to be lacking in the draft documents.

In addition, there really is no urgency, as Hanford regulators have indicated that tank farm closure is not a priority at this time.

Thank you for your consideration of this request.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Niles". The signature is fluid and cursive, with the first name "Ken" being more prominent than the last name "Niles".

Ken Niles
Assistant Director for Nuclear Safety

Cc: Alex Smith, Washington Department of Ecology
Doug Shoop, U.S. Department of Energy
Dave Einan, U.S. Environmental Protection Agency
Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation
Rose Longoria, Yakama Nation
Jack Bell, Nez Perce Tribe
Oregon Hanford Cleanup Board
Susan Leckband, Hanford Advisory Board

Bovier, Jan B

From: (b)(6)@comcast.net>
Sent: Monday, November 19, 2018 11:48 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: WIR comments

Sent from [Mail](#) for Windows 10

Comments on **Waste Incidental to Reprocessing (WIR)** decision at the Hanford Nuclear Reservation.

August 20, 2018

The proposal to reclassify high level nuclear wastes in the single shell tanks at Hanford so 4% of the waste can be capped and grouted should be rejected. Instead of continuing with this deceptive scheme, USDOE should clean up the spills around the tanks and extract the remaining residue for glassification and burial in deep underground storage, as required by federal law.

In DOE's own modeling assessment in the TCWMEIS, they admitted that if the waste remains in the tanks and the soil, it would continue to migrate and contaminate the groundwater to levels far above drinking water standards for thousands of years. To now try to reclassify the wastes to get around this responsibility is disingenuous and irresponsible. The state of Washington should insist on full cleanup, per the Tri-Party Agreement and their responsibility to the citizens of Washington and Oregon to leave this area inhabitable for future generations.

This ill-advised idea was proposed in 2004 and specifically prohibited in the 2005 NDAA and to keep bringing it up is a waste of taxpayers' resources and precious time to prevent accidents and contamination. Washington should fulfill its responsibility and reject this proposal, and DOE should tackle the immense job of removing, treating and disposing of this waste without further delay.

(b)(6)

Lake Oswego, OR

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 13, 2018 11:38 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to "low-level" waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford's C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Reclassifying highly radioactive waste as "low'level" is a sick joke dreamed up by psychopaths hell bent on destroying this planet and everything on it. Just say NO to this lame-brain idea.

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 02125

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, November 11, 2018 11:37 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

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Please write your personalized comment below:: Don't be lazy and lax when it comes to the land and future generations!

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: r3a0r5

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, November 9, 2018 7:51 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: Do not reclassify the nuclear waste at Hanford. I have already had my thyroid operation for a tumor (I am 72 so you will remember what that Hanford is likely the cause of treat. No more cancer please also remember that fire and earthquakes are likely

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97239

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, November 9, 2018 10:16 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98037

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, November 9, 2018 9:28 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: We have cities around Hanford. You can't call it safe EVER!

Name: (b)(6)

Email Address: (b)(6).com

ZIP Code: 98951

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, November 8, 2018 3:33 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 97206

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@owt.com>
Sent: Thursday, November 8, 2018 1:41 PM
To: ^WMA CDRAFTWIR
Subject: (b)(6) Paper Attached
Attachments: 2016 12 01 (b)(6) WMA_C_moisture.docx

The attached paper by (b)(6) is an attachment to (b)(6) Comment #3 on the C-Farm PA.

Thank you.

(b)(6)

email: (b)(6)@owt.com

Bovier, Jan B

From: (b)(6)@msn.com>
Sent: Thursday, November 8, 2018 1:39 PM
To: ^WMACDRAFTWIR
Subject: Hanford toxic waste

- ***U.S. Department of Ecology:***
-
- ***Once again a short cut is being pursued in the clean up messes that have been made by incompetent sub contracted businesses. The renaming of the toxic waste is a joke and insult to the public***
-
- ***This scheme cannot meet cleanup standards, so stop wasting time and money by trying to rename waste to leave behind.***
-
- **USDOE should show how the risks from contaminated groundwater will exceed allowable cancer risks under federal and state Superfund and hazardous waste cleanup laws.**

Sent from my Sprint Phone.

Bovier, Jan B

From: (b)(6)@pwt.com>
Sent: Thursday, November 8, 2018 1:37 PM
To: ^WMACDRAFTWIR
Subject: Computer Problems
Attachments: 2018 11 02 Ancient Lake Beds at Hanford.docx

It is not clear that any of my emails have been sent.

I will try this once more to see if I can shrink the size of the email message.

I have left off a 10 MB attachment by Dr. Stan Sobczyk.

Comments on C-Farm PA

By (b)(6)

November 7, 2018

COMMENT #1: The C-Farm PA does not address the radionuclides in the soil beneath the tank farm which originated from overflowing HLW from cascading tanks into cribs. Also omitted from the PA are tank leaks, pipeline leaks and diversion box overflows. Since the PA only addresses the residual solids in the bottom of C-Farm Tanks, the predicted concentration of radionuclides entering the groundwater over time (which will include radionuclides presently in the soil under the tanks) is under-reported. This results in under-reporting the dose to the public which will mislead decision makers using the faulty PA.

COMMENT #2: Only 6 pipeline leaks are documented. Five occurred between 1964 and 1966. No leaks are documented for the 1940s, 1950s, 1970s and only one in 1980s. This pattern raises questions.

Aging pipelines cannot decide to spring 5 leaks in 2 years and no leaks for the next 20 years. There is a suspicion that pipeline leaks continued but were not reported.

Also, only those pipeline leaks with large volumes resulted in surface radiation which could be detected. Smaller pipeline leaks which did not result in surface radiation were never detected. As a result, the inventory of radionuclides in the soil is under-reported. The effect of this under-reporting needs to be addressed openly in the PA together with a range of uncertainty in the dose to the public.

COMMENT #3: The modeling at WMA-C does not reflect the actual flowpath to groundwater and therefore produces invalid predictions of future radionuclide movement in soil. The modeling assumes a vertical flowpath straight down to groundwater. This

model ignores the many ancient lake beds under the C-Farm which result in a series of lateral flow along a lakebed coupled with vertical drops to the next lakebed etc resulting in a zig-zag flowpath to groundwater over multiple lakebeds. See the attached paper on Ancient Lakebeds Under the 200 Areas.

The use of the erroneous model in the current WMA-C performance assessment (PA) is dangerous because of how the model can mislead decision-makers and affect the future safety of workers at Hanford. (1) By ignoring lateral flow, lives of workers are put at risk from contamination flowing under areas where the ground surface is free of contamination when the soil beneath the surface is highly contaminated. (2) When lateral flows carries radionuclides away from monitoring wells, the information obtained from the monitoring well does not reflect the actual contamination which moved laterally. When monitoring wells intercept all ancient lake beds to groundwater, they contain information on flows coming back into the footprint of the original discharge point on lower ancient lake beds which can be either from the original discharge point, or from near-by discharge points. This phenomenon is seen on many monitoring wells and has led to false conclusions. Failure to understand this complicated lake bed structure misleads decision makers into making erroneous and sometimes dangerous decisions about the performance of the liquid discharged to the soil.

(3) The failure to model lateral flow results in a significant under-predicting of the radionuclide inventory in the soil because a zig-zag flowpath to groundwater can contain orders of magnitude more inventory than a straight line down to groundwater. Many Hanford documents have described lateral flow along the multiple ancient lakebeds. DOE continues to use a vertical flow model for the C-Farm PA. DOE has never developed a core drilling technique with the sophistication to characterize the 20-30 thin-layered ancient lake beds. (See attached papers by (b)(6) on Ancient Lakebeds Under Hanford and by Dr. Stan Sobczyk on the WMA-C Conceptual Model.)

Comment #4: The C-Farm PA should include the inventory of HLW which was placed into three cribs from the overflowing of the three sets of cascading tanks. The idea of preparing one PA for tank residuals and a separate PA for radionuclides in soil is not effective in calculating the total radiation dose from C-Farm sources received by the public.

In the next few thousand years the source of radionuclides seeping into the groundwater beneath C-Farm will be complicated by several sources such as the following:

- Radionuclides in the soil beneath C-Farm.
- Radionuclides which seeped laterally away from the C-Farm footprint, and then seeped back into the groundwater near C-Farm.
- Radionuclides from C-Farm tanks.

- Radionuclides from up-slope plumes.
- Radionuclides from other sources carried in with groundwater.

The presence of multiple sources complicates any attempt to differentiate the origin of specific streams. Therefore, it seems rather non-productive to prepare a performance assessment only for the residuals in the bottom of the C-Farm tanks when the total dose to the public from C-Farm includes many more sources.

The dose to the public from contaminated Hanford groundwater will be a result of multiple sources within C-Farm combined with the rest of Hanford. Until the total dose to the public from all of the 200-Area sources is determined, the determination of whether or not the contribution of dose from C-Farm is acceptable has to be delayed.

If the risk budget for Hanford groundwater is exceeded, DOE may need to remediate the soil under or near C-Farm. The potential need to remediate the soil should delay closure of C-Farm tanks. This topic needs to be discussed in the C-Farm PA and WIR determination document.

Comment #5: The grid size used in modeling is often too coarse to include the fine-scale heterogeneities (thin layers of ancient lakebeds) present within individual formations. (See Page 104 of RPP-33441, Rev. 0.) DOE needs to develop improved techniques for mapping ancient lakebeds and improved techniques for modeling lateral flow along these lakebeds.

Comment #6: Figure 6-59 on page 6-135 of the C-Farm PA shows mammal burrows to a depth of 7 feet and shrub roots to a depth of 7 feet as typical depths for intrusion. The C-Farm PA should include a discussion of how badgers dug a burrow much deeper than 7 feet into the BC Cribs which was then used by rabbits to transport high levels of contamination over hundreds of acres. The C-Farm PA should also include a presentation on how tumbleweed roots reach a depth of 20 to 25 feet and transport radionuclides to the surface where they break off and carry radionuclides across the Hanford project, all the way to the Columbia River.

Comment #7: Section 10.8 of the C-Farm PA mentions the requirement for a PA Maintenance Plan but does not address when or how often this Maintenance Plan will be produced. In addition, there is no indication that such a Plan will be funded. Additional details of the C-Farm PA Maintenance Plan need to be added

Bovier, Jan B

From: (b)(6)@owt.com>
Sent: Thursday, November 8, 2018 12:51 PM
To: ^WMACDRAFTWIR
Subject: Comments on C-Farm PA
Attachments: 2018 11 02 Ancient Lake Beds at Hanford.docx; 2016 12 01 (b)(6) WMA_C_moisture.docx

Comments from (b)(6) member of the public. (Retired program manager at Hanford.)

email: (b)(6)@owt.com

Comments on C-Farm PA

By (b)(6)

November 7, 2018

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COMMENT #2: Only 6 pipeline leaks are documented. Five occurred between 1964 and 1966. No leaks are documented for the 1940s, 1950s, 1970s and only one in 1980s. This pattern raises questions.

Aging pipelines cannot decide to spring 5 leaks in 2 years and no leaks for the next 20 years. There is a suspicion that pipeline leaks continued but were not reported.

Also, only those pipeline leaks with large volumes resulted in surface radiation which could be detected. Smaller pipeline leaks which did not result in surface radiation were never detected. As a result, the inventory of radionuclides in the soil is under-reported. The effect of this under-reporting needs to be addressed openly in the PA together with a range of uncertainty in the dose to the public.

COMMENT #3: The modeling at WMA-C does not reflect the actual flowpath to groundwater and therefore produces invalid predictions of future radionuclide movement in soil. The modeling assumes a vertical flowpath straight down to groundwater. This model ignores the many ancient lake beds under the C-Farm which result in a series of

lateral flow along a lakebed coupled with vertical drops to the next lakebed etc resulting in a zig-zag flowpath to groundwater over multiple lakebeds. See the attached paper on Ancient Lakebeds in the 200 Areas.

The use of the erroneous model in the current WMA-C performance assessment (PA) is dangerous because of how the model can mislead decision-makers and affect the future safety of workers at Hanford. (1) By ignoring lateral flow, lives of workers are put at risk from contamination flowing under areas where the ground surface is free of contamination when the soil beneath the surface is highly contaminated. (2) When lateral flows carries radionuclides away from monitoring wells, the information obtained from the monitoring well does not reflect the actual contamination which moved laterally. When monitoring wells intercept all ancient lake beds to groundwater, they contain information on flows coming back into the footprint of the original discharge point on lower ancient lake beds which can be either from the original discharge point, or from near-by discharge points. This phenomenon is seen on many monitoring wells and has led to false conclusions. Failure to understand this complicated lake bed structure misleads decision makers into making erroneous and sometimes dangerous decisions about the performance of the liquid discharged to the soil.

(3) The failure to model lateral flow results in a significant under-predicting of the radionuclide inventory in the soil because a zig-zag flowpath to groundwater can contain orders of magnitude more inventory than a straight line down to groundwater. Many Hanford documents have described lateral flow along the multiple ancient lakebeds. DOE continues to use a vertical flow model for the C-Farm PA. DOE has never developed a core drilling technique with the sophistication to characterize the 20-30 thin-layered ancient lake beds. (See attached papers by (b)(6) on Ancient Lakebeds Under Hanford and by Dr. Stan Sobczyk on the WMA-C Conceptual Model.)

Comment #4: The C-Farm PA should include the inventory of HLW which was placed into three cribs from the overflowing of the three sets of cascading tanks. The idea of preparing one PA for tank residuals and a separate PA for radionuclides in soil is not effective in calculating the total radiation dose from C-Farm sources received by the public.

In the next few thousand years the source of radionuclides seeping into the groundwater beneath C-Farm will be complicated by several sources such as the following:

- Radionuclides in the soil beneath C-Farm.
- Radionuclides which seeped laterally away from the C-Farm footprint, and then seeped back into the groundwater near C-Farm.
- Radionuclides from C-Farm tanks.
- Radionuclides from up-slope plumes.

- Radionuclides from other sources carried in with groundwater.

The presence of multiple sources complicates any attempt to differentiate the origin of specific streams. Therefore, it seems rather non-productive to prepare a performance assessment only for the residuals in the bottom of the C-Farm tanks when the total dose to the public from C-Farm includes many more sources.

The dose to the public from contaminated Hanford groundwater will be a result of multiple sources within C-Farm combined with the rest of Hanford. Until the total dose to the public from all of the 200-Area sources is determined, the determination of whether or not the contribution of dose from C-Farm is acceptable has to be delayed.

If the risk budget for Hanford groundwater is exceeded, DOE may need to remediate the soil under or near C-Farm. The potential need to remediate the soil should delay closure of C-Farm tanks. This topic needs to be discussed in the C-Farm PA and WIR determination document.

Comment #5: The grid size used in modeling is often too coarse to include the fine-scale heterogeneities (thin layers of ancient lakebeds) present within individual formations. (See Page 104 of RPP-33441, Rev. 0.) DOE needs to develop improved techniques for mapping ancient lakebeds and improved techniques for modeling lateral flow along these lakebeds.

Comment #6: Figure 6-59 on page 6-135 of the C-Farm PA shows mammal burrows to a depth of 7 feet and shrub roots to a depth of 7 feet as typical depths for intrusion. The C-Farm PA should include a discussion of how badgers dug a burrow much deeper than 7 feet into the BC Cribs which was then used by rabbits to transport high levels of contamination over hundreds of acres. The C-Farm PA should also include a presentation on how tumbleweed roots reach a depth of 20 to 25 feet and transport radionuclides to the surface where they break off and carry radionuclides across the Hanford project, all the way to the Columbia River.

Comment #7: Section 10.8 of the C-Farm PA mentions the requirement for a PA Maintenance Plan but does not address when or how often this Maintenance Plan will be produced. In addition, there is no indication that such a Plan will be funded. Additional details of the C-Farm PA Maintenance Plan need to be added to the C-Farm PA.

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, November 8, 2018 11:10 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Hanford must be cleaned up properly. It’s on earthquake lines, could be a terrorist target, and has already done terrible damage. These are my tax dollars. Please do your job.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97034

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, November 8, 2018 10:24 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: Take immediate action to stop the flow of radioactive materials and other contaminants into the Columbia River adjacent to the Hanford site.

Name: (b)(6)

Email Address: (b)(6) (b)(6).org

ZIP Code: 97218

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, November 8, 2018 10:19 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98106

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, November 8, 2018 10:17 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@seattleu.edu

ZIP Code: 98106

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, November 8, 2018 8:29 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: If you want to stick your head in the sand, stick it in the sand near Hanford! We cannot gloss over the dangers of nuclear waste, for the sake of futurr generations, is f not our own.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97123

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@msn.com>
Sent: Wednesday, November 7, 2018 11:32 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Comments on Draft Waste Incidental to Reprocessing (WIR) Evaluation for Closure of Waste Management Area C

To: WMACDRAFTWIR@rl.gov

RE: Comments on Draft Waste Incidental to Reprocessing (WIR) Evaluation for Closure of Waste Management Area C (WMA C)

FROM: (b)(6)
(b)(6) Seattle, WA 98115
(b)(6)@msn.com

Date: November 7, 2018

The USDOE proposal to reclassify the remaining material tank waste from "High" Level to "Low" Level Waste is wrong and should not be done. The attempt to grout and "temporarily" leave 70,315 gallons in C-Farm tanks = 4% of the High Level Nuclear Waste in the C-Farm tanks, and Tanks C-102 and C-112 with 20,500 gallons (6.5%) and 10,100 gallons (9.7%) is a dangerous strategy and an unsafe strategy of storage and/or disposal of nuclear wastes already known to be hazardous or lethal to humans after even limited exposure.

Nuclear waste is forever, in regards to generations of humans and their lifespans. The USDOE has a responsibility to protect the future and present populations from materials escaping into the groundwaters and surface. The USDOE is pretending that these high level wastes can be stabilized for thousands of years with grout. This stabilization is impossible and a falsehood. These high level wastes must be disposed of in a manner suitable to high level wastes. If tank wastes remain in tanks and in the soil, they will migrate and contaminate the groundwater far above drinking water standards over and over again for ten thousand years. Renaming the wastes does not change the impact.

High Level Nuclear Waste that have leaked or was deliberately or accidentally discharged from the single walled tanks must be removed and stabilized as high level wastes. They cannot be changed to be safe merely by relabeling them as low level wastes. A plan to extract and remove these spills and store them as high level wastes must be found.

Federal law says High Level Nuclear Wastes should be permanently disposed in a deep underground repository. High Level Wastes under the federal Nuclear Waste Policy Act includes the waste in Hanford's tanks created by melting down the fuel rods removed from reactors to extract Plutonium and Uranium for

weapons. By trying to rename or reclassify the wastes to call them "Low Level," USDOE hopes to leave them behind near the surface.

USDOE calls this a "Waste Incidental to Reprocessing" determination. Instead of cleaning up the leaks, discharges and residues in the tanks and sending the High Level Nuclear Wastes to be glassified / vitrified and disposed deep underground, USDOE would leave the waste in the bottom of tanks or in the soil if it can reclassify the wastes followed by Washington Ecology permitting. The USDOE SHOULD NOT LEAVE THESE WASTES STORED AT HANFORD, but should prepare a plan to properly dispose of them as High Level wastes.

USDOE tried reclassifying tank wastes in 2004. After one court stopped USDOE, Congress allowed reclassifying tank wastes and adding concrete for USDOE's sites in Idaho and South Carolina. However, Congress explicitly said it was not giving USDOE authority to reclassify tank wastes at Hanford.

I agree with Sen. Cantwell's statement on Proposed Reclassification of Nuclear Waste May 20, 2004. Ms. CANTWELL: The Department of Energy thinks they can sneak in language to this Defense authorization bill that would allow the reclassification of hazardous, high-level nuclear waste and basically call it incidental waste. Basically it would reclassify nuclear 1 Draft WIR Evaluation, Tables 4-7, 4-8, with 5,500 gallons estimated remaining C-105 per USDOE June 18, 2018....waste that is in existing tanks in my State, in South Carolina, in Idaho, and in New York, and basically say that waste can be covered over with cement, with sand, and could be grouted. Basically, it says we can take high-level nuclear waste and grout it--grout it.

For most Americans, grout is something they see in their bathroom, not something they do with nuclear waste. Yet this is what we have before us in the underlying Department of Defense authorization bill. It is a shame. It is a shame that this body would allow such a significant change, really a change to the Nuclear Waste Policy Act on how nuclear waste is classified in this country, without public debate, without a public vote, without a public hearing, even without legislation discussing that change...Fifty-three million gallons of nuclear waste reside at the Hanford nuclear reservation in the State of Washington.

USDOE was blocked from doing this in 2004, but "it's back": Senator Cantwell and the WA and Oregon Congressional delegations stopped USDOE from reclassifying Hanford's tank wastes in 2004. Section 3116(e)(2) of the National Defense Authorization Act of 2005 (NDAA) explicitly says USDOE may not apply this special authority and WIR process in regard to "the management, storage, treatment, and disposition of radioactive and hazardous materials" at Hanford in Washington State. Instead, USDOE is seeking to do the same thing using its own rules (DOE Order 435.1) under the Atomic Energy Act.

Waste from the tanks needs to be removed to the maximum extent possible. It is not the shell of the tanks or the act of landfill closing that increases the environmental impacts, it is the extent of retrieval from the tanks and the amount of vadose zone remediation (soil cleanup).

Renaming wastes doesn't change the need to remove tank wastes and contaminated soil.

Consider the cumulative impacts from all wastes which have leaked from tanks, were discharged into the soil from tanks, and which are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.

USDOE should compare the total risk from all cancer causing radionuclides, and chemicals, it proposes to leave in all of the tanks, and the discharged, leaked or spilled materials from the tanks to the cleanup standards. USDOE should show how the risks from contaminated groundwater will exceed allowable cancer risks under federal and state Superfund and hazardous waste cleanup laws. It is wishful thinking that reclassifying high level wastes as low level wastes will solve this extremely difficult disposal problem.

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 7:26 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: In memory of (b)(6)

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 98938

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 7:24 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@icloud.com

ZIP Code: 98501

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Beatrice Brailsford <bbrailsford@snakeriveralliance.org>
Sent: Wednesday, November 7, 2018 6:59 PM
To: ^WMACDRAFTWIR
Subject: Comments on Draft Waste Incidental to Reprocessing (WIR) Evaluation for Closure of Waste Management Area C (WMA C) at the Hanford Site - Snake River Alliance, Idaho
Attachments: NRDC v Abraham 07.03.03.pdf

The Snake River Alliance was founded as a member-based public interest group in 1979 and serves as Idaho's grassroots nuclear watchdog and clean energy advocate. The following comment is on behalf of our members.

For decades, the Department of Energy has been trying to lighten its cleanup obligations, not by actually cleaning up and lessening environmental threats, but by changing the rules unilaterally. The current proposal to rename, cover in concrete, and then abandon 66,000 gallons of liquid high-level waste in Area C tanks at the Hanford Site follows this well-worn path. It is unacceptable. The Nuclear Waste Policy Act is clear about both what constitutes high-level waste and the management responsibilities for it. It is not appropriate for the DOE to try to rewrite, finagle, or ignore the NWPA. I attach a memorandum decision from the District Court of Idaho rejecting an earlier attempt by the DOE to establish its own, alternative HLW definitions and management requirements.

Best,

*Beatrice Brailsford
Snake River Alliance
(b)(6)
Pocatello, ID 83204
208, (b)(6)
bbrailsford@snakeriveralliance.org
www.snakeriveralliance.org*

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Wednesday, November 7, 2018 6:02 PM
To: ^WMACDRAFTWIR
Cc: (b)(6)
Subject: Comments on Draft WIR Evaluation for Closure of WMAC at Hanford Site

November 6, 2018

To: Mr. Jan Bovier

US Department of Energy Office of River Protection

PO Box 450, MSIN H6-60

Richland, WA 99354

Via email: WMACDRAFTWIR@rl.gov

Re: Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site (Draft WIR Evaluation)

I am (b)(6) an environmental health scientist/epidemiologist with 40+ years of experience evaluating the human health effects of environmental contaminants within Federal and State agencies, academia, and the private sector. I am providing comments today because of my fears that a dangerous error is being made by attempting to rename high level radioactive hazardous wastes at Hanford as less hazardous (low-level radioactive wastes) in order to avoid the expense of properly and lawfully cleaning them up. My concerns center around the inadequate implementation of precaution, and therefore, prevention of current and future irreversible risks, in this proposal to address the tank wastes in Area C at Hanford.

First, the use of the term 'cleaned tanks' is misleading and just wrong. (Pg. 1-4, DWIR) Sixty-two thousand, nine hundred gallons of waste, potentially producing 472,000 curies of radioactivity, that is proposed to be left in the tanks is NOT CLEAN. The DWIR suggests that the 'reason' for leaving them in the tanks is that the waste solids are not able to be suspended and pumped from the tanks in a "technically and economically practical" way. First of all, it is technically practical for other nuclear facilities (e.g., Savana River and Idaho) to remove 99.7 – 99.9% of wastes. Why can't these methods be used at Hanford? In the second place, not "economically practical" leaves open the possibility of just deciding that any price (\$1?) is too expensive, without concern about the true health, economic, environmental, or social costs. How is implementation of this vague criterion legal? It is not. This proposed non-clean-up contradicts court decisions that do not allow reclassification of high-level wastes at Hanford.

Hanford's underground tanks were used to store chemical and radioactive byproducts of plutonium production. Waste in the C Farm contains technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, some of which are extremely long-lived, and many other radioactive and toxic contaminants. How can this be reclassified as low-level waste? It is likely that it will not be cleaned up or even characterized if it is reclassified.

The proposal to grout the remaining waste in the tanks is not a long term solution to the problem and could make the remaining wastes unidentifiable. And grout lacks durability for immobilizing long-lived and mobile waste. This will ultimately lead to further soil and groundwater pollution when the grout fails.

It is a given that there is contamination of soils beneath the tanks and the tank farm at Area C. Toxic and radioactive waste has already leaked. Under the proposed plan, polluted soils around and beneath the tanks would remain in place and not be treated or cleaned up. This is an abrogation of the responsibilities of the agencies tasked with cleaning up and removing these extremely dangerous wastes.

Soil and water contamination around and below the tanks has not been remediated. At least 67 underground tanks have leaked liquid waste into the ground, some of which has already reached groundwater. Polluted groundwater from the Hanford 200 area, where the tanks are located, has already reached the Columbia River, increasing health risks for past, current, and future communities in the Columbia River region. This is and will continue to cause irreversible harm to an irreplaceable resource if the proposed irresponsible WIR plan is allowed.

Furthermore, lateral contaminant transport along preferential pathways, a significant natural process has not been adequately assessed in the Department of Energy's models. If water can circumvent a proposed cap, for example, waste can be mobilized faster than predicted, and peak dose to future residents may be at another place than predicted, at a sooner time, and at a higher concentration, leaving future risks to future residents uncertain and unmanageable. Time, place and dose cannot be predicted. Therefore, the potential for lateral migration of wastes such as plutonium and americium, for example, must be evaluated if future risks are to be prevented or at least minimized.

Finally, the proposal to reclassify high level radioactive wastes at Hanford lacks any real attempt at present or future prevention of exposures to these dangerous wastes. Under the Precautionary Principle, when an action poses an unknown risk, the burden of proof falls on those taking the action to show that it does not pose a risk. When evidence exists of potential harm, especially serious or irreversible threats to health or the environment, taking action to prevent exposure and adverse impacts is warranted even though a cause-effect relationship has not been established. It is based on an understanding of the contingent nature of knowledge. What this means for the present situation is, actions taken must be taken to reduce the risks, not hide them. If a solution to a remediation problem is not available, or even "not economically practical" it is not appropriate or

prudent to just change the name and expect the risks to go away. A rose, by any other name may smell as sweet, but plutonium by any other name is still 'forever'.

Thank you for this opportunity to comment. I strongly urge you to rethink the proposed action. The draft WIR evaluation is inadequate. The Department of Energy must demonstrate that the agency has removed the "maximum technically achievable" amount of waste. The DOE should not leave long-lived, highly radioactive contamination in Hanford's soils. Long term impacts to soils and groundwater of this waste must be evaluated. And impacts now and in future to the Columbia River, a regional and national irreplaceable resource, must be rigorously elucidated.

(b)(6)

Bovier, Jan B

From: Tom Carpenter <tomc@hanfordchallenge.org>
Sent: Wednesday, November 7, 2018 4:34 PM
To: ^WMACDRAFTWIR
Cc: Geoff Fettus; Dan Serres; Nikolas Peterson; Liz Mattson; Marco Kaltofen
Subject: Comments of Hanford Challenge, NRDC and Columbia Riverkeeper
Attachments: NRDC et al Draft WIR Comment & Attachments sm.pdf

Dear Mr. Bovier,

Attached please find the combined Comments of Hanford Challenge, the Natural Resources Defense Council and Columbia Riverkeeper regarding the Department's Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site, Washington.

Respectfully,

Tom

Tom Carpenter, Executive Director

[Hanford Challenge](#)

2719 E. Madison Street, Suite 304

Seattle, WA 98112

(206) 292-2850

(206) (b)(6) cell

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Wednesday, November 7, 2018 4:21 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Renaming nuclear waste-NOT

Dear Sirs:

Renaming nuclear waste does not reduce the danger from this waste. It does not change the risk to the people of Washington and Oregon or to the natural environment of the Columbia River when this waste escapes from a leaking tank at some future time. Renaming only decreases the cost to the cleanup efforts by ignoring its risk.

Please do not waste further time and money by proceeding with the renaming plan.

Sincerely yours,

(b)(6)
Washington state resident and voter

Bovier, Jan B

From: (b)(6)@comcast.net>
Sent: Wednesday, November 7, 2018 4:20 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: URGENT: Do Not Reclassify High Level Waste

Do not reclassify the "High Level Waste".

I concur with Senator Cantwell's assessment when DOE tried to reclassify the Nuclear waste back in 2004.; "I do not believe that can happen by pouring cement on top of it and putting sand in those tanks and all of a sudden now say we have cleaned up waste. Nowhere has that policy been promulgated as sound science."

---<https://drive.google.com/file/d/1G1kWip3VVDh5qFw2DXYGBeQL58c7FWUR/view>

"If tank wastes remain in tanks and in the soil, they will migrate and contaminate the groundwater far above drinking water standards over and over again for ten thousand years. Renaming the wastes does not change the impact!!!"

The following is horrific! (italics and bold type...mine):

"Consider the cumulative impacts from all wastes which have leaked from tanks, were discharged into the soil from tanks, and which are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to ***violate groundwater and cancer risk cleanup standards.***"

Please be mindful of such unintended consequences as the recent tunnel collapse. It is not known what level of waste they will be encapsulating in concrete and will ultimately leach out. Such occurrences should be cautionary lessons about unforeseen consequences and the need to err on the side of caution. The double shell tanks that were to be retired this year were given a new expiration date of 2040 back in 2008. There is no telling as to their long term viability. Given the track record of Hanford's leaky tanks it is unconscionable to take such chances in this important habitat that supports salmon, wildlife, irrigation (affecting even more groundwater) and recreation. "Grouting does not prevent chemicals and radionuclides from leaching from the tunnels; and, USDOE has not surveyed for contamination under the tunnels."

Again, do not reclassify these high level wastes.

(b)(6)

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 4:08 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: The Fifth Risk

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98201

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6) (b)(6)@com>
Sent: Wednesday, November 7, 2018 4:02 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: USDOE proposal to rename residual high-level tank waste

The following public comments are related to the USDOE proposal to reclassify high-level nuclear tank waste at the Hanford Cleanup site in Washington State:

- 1) Renaming waste will not change risks associated with waste remaining in the tanks and/or any other waste associated with previous tank farm operations, leaks, and spills that remain in the soil.
- 2) Renaming tank waste will not alter the need to remove tank waste and associated contaminated soil in order to achieve cleanup standards to protect human health and the environment.
- 3) USDOE must consider the cumulative impacts from the following: a) all past waste discharges to the soil from underground storage tanks, b) all past intentional discharges into the soil from tank farms including cribs, drain fields, ponds, ditches, etc., c) all waste left in the tanks following planned removal operations. Cumulative impacts from all of these sources need to be compared to Federal and State human health and environmental risk-based cleanup standards.
- 4) Based on previous USDOE and other related studies/reports/documents/advice, this new proposal will not meet cleanup standards no matter how the waste is classified and/or renamed.
- 5) Calculate the combined total risk from all cancer causing radionuclides and other cancer causing chemicals that USDOE proposes to leave in all the the underground storage tanks, including leaked tank waste and all waste discharged to the soil. Compare that data/information to the cleanup standards.
- 6) USDOE needs to reference all related studies (i.e., Environmental Impact Statements) that show how risks from contaminated ground water will exceed allowable cancer risks under Federal and State Superfund and Hazardous Waste Cleanup Laws.

Thanks for your consideration. I look forward to your response.

Sincerely,

(b)(6)

(b)(6)

Tacoma, WA 98407

Bovier, Jan B

From: (b)(6) (b)(6) net>
Sent: Wednesday, November 7, 2018 3:57 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Reclassification of High Level Waste

Dear DOE:

It's said that someone once asked Abraham Lincoln "How may legs would a horse have if you called a tail a leg?" His answer: "Four — Calling a tail a leg doesn't make it a leg."

It's just as foolish to suppose that you can make high level waste safe by reclassifying it as low level waste.

Please stop this nonsense and focus on real cleanup of *all* high level waste at Hanford.

Sincerely,

(b)(6)

Seattle, WA 98115

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 3:14 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Although I have lived in Seattle since 1970, I grew up in Richland (Richland High School Bomber Class of 1965). My late father was a nuclear engineer at Hanford from 1949 to 1967 - he would be appalled at what DOE is proposing. It is dishonest of DOE to pretend that re-labeling this waste is a solution. Please agree not to re-label, and to follow steps 1 to 4 as listed

Name: (b)(6)

Email Address: (b)(6)@msn.com

ZIP Code: 98105

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@ (b)(6) org>
Sent: Wednesday, November 7, 2018 2:57 PM
To: HLWnotice@em.doe.gov; ^WMACDRAFTWIR
Subject: Public Input for Draft WIR Evaluation
Attachments: Comments

Dear Mr. Bovier,

My name is (b)(6) and I am a middle school (b)(6) teacher at (b)(6). My classes were learning about Hanford and we have comments regarding the reclassification of the nuclear waste. Attached are the letters to address our concerns. Thank you for considering our inputs.

Regards,

(b)(6)

(b)(6) Middle School (b)(6) Teacher (b)(6)
(b)(6) Seattle, WA 98115
206 (b)(6)
(b)(6) org

(b)(6) is committed to developing each student's potential to become an intellectually courageous, socially responsible citizen of the world.

(b)(6)



Bovier, Jan B

From: (b)(6)@aol.com
Sent: Wednesday, November 7, 2018 2:15 PM
To: ^WMA CDRAFTWIR
Subject: Comment on Draft WIR Evaluation for Closure of Waste Management Area C
Attachments: scan0001.pdf

To Mr Jan Bovier
U.S. Department of Energy, Office of River Protection
Richland WA99354
Via email

Dear Mr. Bovier,

Thank you for the opportunity to comment. Please see my attached comments.

Respectfully,

(b)(6)

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 12:53 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: I used to work at Hanford. Please clean it up. Please clean up the tank waste by removing, treating and disposing in a deep geological repository. The Columbia River is too important for an incomplete cleanup.

Name: (b)(6)

Email Address: (b)(6)@sonic.net

ZIP Code: 94951

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@bmi.net>
Sent: Wednesday, November 7, 2018 12:48 PM
To: ^WMACDRAFTWIR; Office at Heart of America
Subject: Opposition to renaming high level nuclear wastes at Hanford

Renaming 4% of the High Level Nuclear Waste in Hanford's single shell tanks to Low Level Waste does NOTHING to reduce the radioactive contamination of groundwater from leaking single shell tanks for the next **10,000 years!**

Federal law says High Level Nuclear Wastes should be permanently disposed of in a deep underground repository. High Level Wastes under the federal Nuclear Waste Policy Act include the waste in Hanford's tanks created by melting down the fuel rods removed from reactors to extract Plutonium and Uranium for weapons. By trying to reclassify the wastes to "Low Level," the USDOE hopes to leave them behind near the surface, calling this a "Waste Incidental to Reprocessing" determination.

Basically the USDOE wants to create a cheap fix now by just filling the single shell tanks with sand & then grouting them. Let present and future generations for **10,000** years deal with the radiation sicknesses that will result from the contamination of groundwater, the Columbia River, and all the land drained by the Columbia, that will result from radioactive leakage from single shell tanks! Several years ago the USDOE modeled in an impact statement (TCWMEIS) that if tank wastes remain in tanks and in the soil, they will migrate and contaminate groundwater far above drinking water standards for **10,000 years**. There is NO sound scientific evidence that grouting can prevent the leakage of high level nuclear waste from leaking tanks.

The USDOE was blocked from doing this in 2004 by the National Defense Authorization Act of 2005: "**The USDOE may not apply this special authority and WIR process in regard to "the management, storage, treatment, and disposition of radioactive and hazardous materials" at Hanford in Washington State.**"

The USDOE goal is to get the required approval of the Washington State Dept of Ecology to let the renamed waste remain under concrete in the tanks and under asphalt and soil caps in the "tank farm" area as the permanent cleanup. Instead of sending the High Level Nuclear Wastes to be glassified/vitrified and disposed of deep underground, the USDOE would be able to leave the waste in the bottom of tanks or in the soil. The WA State Dept of Ecology must NOT permit this.

It is most unfortunate that the DOE has allowed so little time for public input into a decision that will impact them and countless generations to come for 10,000 years. It should be spending its limited budget in working on real solutions, NOT in avoiding them.

Submitted by

(b)(6) Walla Walla, WA 99362

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 12:47 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 97124

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 12:45 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97544

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Wednesday, November 7, 2018 12:15 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: no to USDOE RENAMING High-Level Nuclear Waste

Hi

My comments are as follows:

1. Renaming wastes doesn't change the need to remove tank wastes and contaminated soil.
2. Consider the cumulative impacts from all wastes which have leaked from tanks, were discharged into the soil from tanks, and which are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.
3. This scheme cannot meet cleanup standards, so stop wasting time and money by trying to rename waste to leave behind.
4. USDOE should compare the total risk from all cancer causing radionuclides and chemicals it proposes to leave in all of the tanks and discharged, leaked or spilled from the tanks to the cleanup standards. USDOE should show how the risks from contaminated groundwater will exceed allowable cancer risks under federal and state Superfund and hazardous waste cleanup laws.

Further in addition to all of the ruined health of Hanford workers, my (b)(6) are also the result of my dad drilling for the National Guard in the immediate area prior to my conception (he has had (b)(6) including (b)(6) removed). This stuff is BAD NEWS.

thank you

(b)(6)

Bovier, Jan B

From: (b)(6)@juno.com
Sent: Wednesday, November 7, 2018 11:39 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Please, CLEAN UP!

Dear people,

You recognize that the task at Hanford is to clean up the toxic/ nuclear waste and make the area as safe and restored as possible. Please do this to the utmost, and drop the effort to rename the high level nuclear waste and leave it in the tanks and ground. CLEAN it, don't just grout it. We need to, and can, do this right.

Sincerely,

(b)(6)

Seattle, WA 98122

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 11:40 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 11377

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 11:34 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: My father's life was already taken because of being exposed to the dangers of Hanford. Please do the right thing.

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 98930

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Wednesday, November 7, 2018 11:27 AM
To: ^WMACDRAFTWIR
Subject: Renaming waste - cheap trick w/lethal consequences!

Renaming wastes doesn't change the need to remove tank wastes and contaminated soil.

- Consider the **cumulative impacts** from all wastes which have leaked from tanks, were discharged into the soil from tanks, and which are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Thos cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.
- ***This scheme cannot meet cleanup standards, so stop wasting time and money by trying to rename waste to leave behind.***

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 11:18 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: People have lost their lives due to cleaning nuclear waste at Hanford. Don't let more deaths be on your hands.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 20904

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6) Comcast Email <(b)(6)@comcast.net>
Sent: Wednesday, November 7, 2018 10:13 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Do not reclassify high level nuclear waste!!

In the interest of time and convenience I am using the language provided by Heart of America Northwest to object most strenuously to the reclassification of high-level nuclear waste in the Hanford tanks so that they can be dealt with in a totally irresponsible manner by grouting.

- Renaming wastes doesn't change the need to remove tank wastes and contaminated soil.
- Consider the **cumulative impacts** from all wastes which have leaked from tanks, were discharged into the soil from tanks, and which are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.
- ***This scheme cannot meet cleanup standards, so stop wasting time and money by trying to rename waste to leave behind.***
- USDOE should compare the total risk from all cancer causing radionuclides and chemicals it proposes to leave in all of the tanks and discharged, leaked or spilled from the tanks to the cleanup standards. USDOE should show how the risks from contaminated groundwater will exceed allowable cancer risks under federal and state Superfund and hazardous waste cleanup laws.

Sincerely,

(b)(6)

Seattle, WA

Bovier, Jan B

From: (b)(6)@aol.com
Sent: Wednesday, November 7, 2018 10:08 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Comment on High Level Nuclear Waste

I am writing to comment on the proposal to rename High Level Nuclear Waste to Low Level Nuclear Waste in the form of "reclassification. This is nuclear waste and no level is safe from what I understand. This allows the Department of energy to avoid clean up standards and cover it up with an unsafe, short term band aid and forget about dealing with it. The waste needs to be removed as well as all of the contaminated soil.

The US Department of Energy(USDOE) needs to consider all of the cumulative affects that this High Level Nuclear Waste will produce. Current projections violate groundwater and cancer risk clean up standards.

This is an irresponsible plan to avoid responsibility.

USDOE should compare the total risk from all cancer causing radionuclides and chemicals it proposes to leave in all of the tanks and discharged, leaked or spilled from the tanks to the cleanup standards.

USDOE should show how the risks from contaminated groundwater will exceed allowable cancer risks under federal and state Superfund and hazardous waste cleanup laws.

This is a bad plan.

Thank you for allowing me to comment

(b)(6)

Custer, WA. 98240

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, November 7, 2018 9:49 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: I have attended public meetings and after hearing how the tanks will be filled I do not feel confident in this solution. There was no answer to my question of what happens if there is an earthquake. More national attention needs to be brought to this. We have not found the best way to remove the waste YET. Please do not give up or futures generations will pay the price for years!

Name: (b)(6)

Email Address: (b)(6) yahoo.com

ZIP Code: 98115

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@ (b)(6) .org >
Sent: Wednesday, November 7, 2018 9:41 AM
To: ^WMACDRAFTWIR
Subject: Do not rename the waste remaining in High Level Nuclear Waste tanks fo that you can abandon it forever.

To: US Department of Energy

From: (b)(6)

The US Department of Energy must not rename the waste remaining in High Level Nuclear Waste tanks, and waste leaked from those tanks, in order to cover the waste with concrete or soil and abandon it forever.

Renaming wastes doesn't change the need to remove tank wastes and contaminated soil.

It must consider the cumulative impacts from all wastes which have leaked from tanks, were discharged into the soil from tanks, and which are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.

This scheme cannot meet cleanup standards!

DOE must stop wasting time and money by trying to rename waste to leave behind.

(b)(6)

(b)(6)

Portland OR 97202

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Wednesday, November 7, 2018 8:08 AM
To: ^WMACDRAFTWIR
Subject: hanford renaming waste

Please protect our water from dangerous waste.
Pouring cement over these toxins will not protect the water.
Water is one of our most precious commodities.
Thank you

(b)(6)

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Wednesday, November 7, 2018 7:22 AM
To: ^WMACDRAFTWIR
Subject: Renaming Hanford waste

I am writing out of concern for water quality. Renaming hanford waste and burying it under concrete and sand will contaminate the groundwater, scientific studies have theorized. Do you really want carcinogens in our groundwater? It is very irresponsible to the Columbia River, the oceans, and the world, to take the step of reclassifying this nuclear waste. Reclassifying means it will not be dealt with properly.

[Sent from Yahoo Mail for iPad](#)

Bovier, Jan B

From: (b)(6)@hotmail.com >
Sent: Wednesday, November 7, 2018 3:40 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Hanford nuclear waste

Dear USDOE,

The effort to rename the high level nuclear waste at Hanford is anti common sense and a clear effort to avoid responsibility for cleaning up a mess that will affect the health of many generations of humans and other creatures.

Please act in the best interests of the people you were hired to protect.

Sincerely,

(b)(6)

Bovier, Jan B

From: (b)(6)@(b)(6).com>
Sent: Wednesday, November 7, 2018 2:25 AM
To: ^WMACDRAFTWIR
Cc: (b)(6)
Subject: Testimony on the disposition of radiological threats on the Hanford Reservation

This is testimony, in reference to plans for covering the mostly emptied 15 of 77 tanks of high level radioisotopes. These aging steel tanks and their equally old concrete containers are recognized as incapable of safely containing their remaining and still dangerous contents for the many thousands of years that must pass before they have decayed to be a negligible threat to the their ecological surroundings. including the nearby Columbia River and its downstream populations.

This is in stark contrast to the Onkalo repository in Northern Finland, which has been explicitly designed to contain the dangerous high-level isotopes, produced by Finland's nuclear power plants between 2020 and 2100, for a full 100.000 years.

The on corresponding proper action in Hanford is to either remove the contamination to a safe location or, perhaps, divert the Columbia to a much greater distance. Either approach is now considered prohibitively expensive, but this is false economy, sacrificing our own health and welfare and that of our children , much less that of our later descendants, for the sake of current budgetary restrictions.

None of this addresses the deeper concern of dealing with the migration of the deep plumes containing large quantities of highly toxic chemical and radioactive residues that are gradually diffusing and leaching toward the river, and therefore toward major population centers in Oregon and Washington.

There are indeed very large potential costs involved in proper mitigation, and it may require an effort on the scale of the Manhattan Project that caused it, but it is the only moral course of action.

I urge you to recommend a reconsideration of the scale of what is needed for proper resolution.

Sincerely yours,

(b)(6)
(b)(6)@(b)(6).com
cell: 503 (b)(6)
(b)(6)
Portland, OR 97215-4012

Bovier, Jan B

From: Gerry Pollet <gerry@hoanw.org>
Sent: Tuesday, November 6, 2018 10:17 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Comments of Heart of America NW on draft WIR
Attachments: Heart of America Northwest comments on Hanford tank waste WIR reclassification to USDOE 11-7-18 .pdf

Please see attached comments for submission re Draft WIR. Please confirm receipt.

Gerry Pollet, JD;
Executive Director,
Heart of America Northwest
"The Public's Voice for Hanford Clean-Up"
gerry@hoanw.org

Bovier, Jan B

From: (b)(6)@gorge.net>
Sent: Tuesday, November 6, 2018 8:06 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Hanford

To All It May Concern:

I am writing to stop U.S. Dept of Energy in the latest attempt to abandon the nuclear waste at the Hanford Reservation. Changing the name of High Level Nuclear Waste does not change the horrific danger. We humans have created this mess and ultimately owe it to all living beings to act responsibly, using the utmost technology and science. We must prevent any further contamination of the groundwater and Columbia River.

In 2010, USDOE's own environmental impact statement found that leaving the wastes in the bottom of tanks would contaminate the groundwater flowing to the Columbia River over and over for ten thousand years. \$85 million dollars was spent to determine this! Are we actually going to ignore this? Pretend it is now miraculously Low Level? NO! We will act responsibly and not risk further contamination and health risks! This sludge of radionuclides and chemicals will impact life all along the river for the next 10 thousand years. We do not want to be victims of this shortsightedness. Do not waste time. High Level Nuclear Waste should be vitrified and permanently disposed in a deep underground repository. This is federal law! Do not reclassify and leave spent rods and radioactive sludge in shallow graves under concrete.

Spend the money to finish this nightmare responsibly. Do you job with integrity.

Thank you.

Sincerely,

(b)(6)

(b)(6)

Hood River



Virus-free. www.avast.com

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Tuesday, November 6, 2018 9:00 PM
To: ^WMACDRAFTWIR
Subject: Comments on the WIR
Attachments: Comments on Draft Waste Incidental to Reprocessing.docx

I am attaching my comments to the Draft WIR. I know I am a day late, but I have been recovering from surgery. I hope you can still accept them! Thank you! (b)(6)

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Tuesday, November 6, 2018 7:36 PM
To: ^WMACDRAFTWIR; Office at Heart of America
Subject: Hanford

I am writing as a concerned citizen of Portland, OR.

To The Governing Body at the USDOE,

To those official who are overseeing the clean-up of Hanford. I urge that you, please, DO NOT rename the High Level Nuclear Waste that is left at Hanford, as a round about way to avoid cleaning it up appropriately. This would be so devastating for the environment and communities downstream.

In 2010, the USDOE found that leaving the Highly Radioactive Wastes in tanks found to be leaking, would continue to contaminate the groundwater flowing to the Columbia River for over ten thousand years.

That was in 2010! Why has this been ignored? Please Do The Right Thing, and stop this despicable and outrageous Renaming Scheme, and treat this waste matter, for what it truly is. Respect it's devastating effects on our community as if your own life depended on it, for we all are global neighbors after all,.

Clean water will matter for centuries and millennia to come.

Thank you

(b)(6)

Bovier, Jan B

From: (b)(6)@icloud.com>
Sent: Tuesday, November 6, 2018 7:24 PM
To: ^WMACDRAFTWIR
Subject: Hanford's nuclear waste

Please just clean up the nuclear waste at Hanford and let us not try to hide it. A plan was put forth to clean it up permanently, so please let us just do it.

Thank you,

Very truly yours, (b)(6)

Bovier, Jan B

From: Julie Atwood <jatwood@ynerwm.com>
Sent: Tuesday, November 6, 2018 6:53 PM
To: ^WMACDRAFTWIR
Subject: Yakama Nation Comments on the Waste Incidental to Reprocessing Evaluation
Attachments: Waste Incidental to Reprocessing Comments to USDOE.PDF

Importance: High

Attention: Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Mr. Bovier
Attached are Yakima Nation comments submitted November 6th 2018.
Additional copies will be sent to those who are identified on our cc list.

Thank you.
Julie Atwood
jatwood@ynerwm.com
(509)(b)(6)

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Tuesday, November 6, 2018 6:08 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Comment: Hanford renaming High Level Nuclear Waste

To Whom It May Concern,

Please understand that renaming wastes does not, has not, and will never change the need to remove tank wastes and contaminated soil to protect the living organisms that will come into contact with it through leaching over time.

Please consider the cumulative impacts from all wastes which have leaked from tanks, were discharged from tanks, and are left in the bottom of tanks. Compare these to federal and state health-risk-based cleanup standards. **These cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.**

We all know that this immoral scheme cannot meet cleanup standards, so stop wasting time and money by trying to rename dangerous waste to leave behind.

The only responsible thing to do is for the USDOE to compare the total risk from all cancer causing radionuclides and chemicals it proposes to leave in all of the tanks and discharged, leaked or spilled from the tanks to the cleanup standards. USDOE needs to demonstrate how the risks from contaminated groundwater will exceed allowable cancer risks under federal and state Superfund and hazardous waste cleanup laws.

Vigilant & Appalled,

(b)(6)

Olympia, WA

Bovier, Jan B

From: (b)(6)@ (b)(6) com>
Sent: Tuesday, November 6, 2018 6:02 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Re: Renaming High Level Nuclear Waste at Hanford

The Risks Last for Ten Thousand Years!

Can we even grasp how long that is? How ludicrous to think that this waste will not leak into our groundwater during this period. USDOE modeled this in an impact statement (TCWMEIS) several years ago. If tank wastes remain in tanks and in the soil, they will migrate and contaminate the groundwater far above drinking water standards over and over again for ten thousand years. Renaming the wastes does not change the impact!!!

Thank you,

(b)(6)

Bovier, Jan B

From: Dan Serres <dan@columbiariverkeeper.org>
Sent: Tuesday, November 6, 2018 5:41 PM
To: ^WMACDRAFTWIR
Subject: Comments Collected by Columbia Riverkeeper on Draft WIR Evaluation for Waste Management Area C
Attachments: 2018.11.6 WIR Comments Submittal Cover Letter.pdf; 2018.11.6 Hanford WIR Comments Collected online by CRK.pdf; 2018.11.6 Hard Copy comments collected by Columbia Riverkeeper.pdf

Dear Mr. Bovier,

Please accept Columbia Riverkeeper's submittal of 1,111 comments collected regarding the Draft WIR Evaluation for Waste Management Area C.

Please contact me directly if you have any questions or difficulty opening the attached documents.

Thank you,

Dan Serres

Conservation Director
Columbia Riverkeeper
503.890.2441

--

Dan Serres | Conservation Director
Columbia Riverkeeper | 1125 SE Madison Suite 103A Portland 97214
503.890.2441 | dan@columbiariverkeeper.org

[River Currents 2018 Issue 3 Newsletter—Read it Now](#)

The Interview Edition: Superheroes vs. Big Oil; How Penalties from Columbia Riverkeeper Lawsuits Restore, Protect Clean Water; and more

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Tuesday, November 6, 2018 5:16 PM
To: ^WMACDRAFTWIR
Subject: Hanford reclassification

Dear Mr. Bovier,

I am very concerned about the reclassification of Hanford's waste. Reclassifying it won't make it any less dangerous, it will just make it less of a priority to clean and/or contain it. I am particularly wondering about the effect of this waste on the water table. I hope that the general health and well being of the environment and the people are the objectives of any decision regarding waste, not minimization of the problem.

Thank you,

(b)(6)
(b)(6)@yahoo.com

Oregon resident
97116

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Tuesday, November 6, 2018 5:07 PM
To: ^WMACDRAFTWIR
Subject: Renaming Nuclear Waste

You don't do well by this beautiful Northwestern part of the United States if you rename nuclear waste in order not to take responsibility to clean up the leaking tanks. Our Columbia River, if it were to take in the nuclear waste, would be a disaster — economically, ecologically, and humanistically.

PLEASE USE YOUR AUTHORITY WISELY AND WITH FUTURE GENERATIONS IN MIND. CLEAN UP THE NUCLEAR WASTE AT HANFORD IN THE BEST WAY. Your future and ours depend on it.

(b)(6) and (b)(6)
Voting citizens in Seattle, WA

Sent from my iPhone

Bovier, Jan B

From: (b)(6)@comcast.net>
Sent: Tuesday, November 6, 2018 4:52 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Please do not proceed with the plan to re-name High-level waste

I am writing today to oppose any renaming of High-level waste – whether a small residual amount or the rather larger amount that seems to remain in tanks and the tank farm at Hanford.

DOE has spent much of my lifetime (I'm 70 years old) "planning" to deal with the waste at Hanford, with agonizingly slow results. We know for a fact that radioactive waste HAS travelled all the way to the Columbia River already. Any residual waste not glassified or removed will pose a similar risk over the long haul.

PLEASE DO NOT RENAME this waste in order to perform an end run around current plans and regulations. Future generations will NOT forgive us if we take this ill-considered step. It makes ZERO sense to our posterity or to the science of likely harm from our past necessary nuclear activities at Hanford. It may possibly make some sense to a beaurocracy – but those beaurocrats will not be alive to see the harm they inflict on future generations of humans – let alone the biota of the Columbia River.

This is NOT a plan to deal with the waste; rather, it is an abdication of any plan and smacks of haste and opportunism rather than careful consideration.

Thanks for your attention to my plea.

Sincerely,

(b)(6)

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Tuesday, November 6, 2018 4:41 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Reclassifying High Level Nuclear Wastes

Dear Official,

I oppose any proposal to reclassify high level nuclear wastes. They were given that classification because of their risk to life and the environment. The federal government needs to finish up the cleanup of these wastes rather than waste time with reclassification schemes.

Sincerely,

(b)(6)

Santa Monica, CA 90402

Bovier, Jan B

From: (b)(6)@comcast.net>
Sent: Tuesday, November 6, 2018 4:33 PM
To: ^WMACDRAFTWIR
Subject: hanford & reducing high level ratings

As someone said so plainly;

- This scheme cannot meet cleanup standards, so stop wasting time and money by trying to rename waste to leave behind.

PLEASE.... Let's use our our heads! Changing / reducing the level of danger associated with nuclear waste is like shooting ourselves in the foot - and shooting our kids and grandkids, etc.. in more than their feet! To even take a chance of poisoning the Columbia River is insanity! Let's show the world that the USA has a brain!

(b)(6)

Resident: WA. State

Former resident of the Tri-Cities, WA.

Bovier, Jan B

From: Dahmen, Lois (ECY) <ldah461@ECY.WA.GOV>
Sent: Tuesday, November 6, 2018 4:12 PM
To: ^WMACDRAFTWIR
Cc: Smith, Alex (ECY)
Subject: Comments on the Draft WIR Evaluation
Attachments: 18-NWP-181 EcologyComments on Draft WIR Evaluation.pdf

The Washington State Department of Ecology submits the attached comments as part of the comment period for the Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site.

Please confirm receipt or let me know if there is any problem regarding this transmittal.

Lois K. Dahmen
Program Administrative Assistant
Nuclear Waste Program
Washington State Department of Ecology
(509) 372-7893

Bovier, Jan B

From: (b)(6)@uw.edu>
Sent: Tuesday, November 6, 2018 4:05 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Do NOT rename high level waste in C tanks

I urge you not to reclassify the 4% remaining in C tanks as anything other than high level waste. Changing the name would not change the nature: these are chemically and radioactively dangerous substances.

I understand that you have used currently available technology as far as you can go without damaging the tank walls. But that doesn't mean they're safe, or can be made safe or even stable by adding grout. Instead, these wastes should continue to be monitored and treated as the high level dangers they really are.

Future technological advances in chemistry, robotics, or other fields may make it possible to remove more of the waste. Changing the classification of the tanks would make that politically harder. And reclassifying would make it likely the tanks would be filled with grout. That would make it much more difficult for any technology to remove more waste without damaging the tanks.

Do not block off future efforts at removal, and do not downplay the dangers that will remain at this site for thousands of years if you just fill it in.

(b)(6)

(b)(6)

Seattle, WA 98103

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 3:52 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: As a resident of the Portland Metropolitan area, I take this very seriously and very personally. The Hanford high-level nuclear waste is a clear and imminent danger to the Portland/Vancouver WA Metropolitan area, the Tri Cities and Spokane, as well as all land and habitation down the Columbia River to Astoria and the Pacific Ocean beyond. We KNOW that Hanford is within range of the Cascadia Subduction Zone Faultline where a Class 9+ Earthquake on the Richter scale is predicted as LIKELY within the next 50 years. Unless the light-level nuclear waste is evacuated and the residue cleaned up, this WILL contaminate huge areas including the highly populated Metropolitan Area where I and my family and all my friends live. It would FOREVER contaminate huge regions of Oregon and southern Washington, and propel large amounts of high-level nuclear waste into the Pacific Ocean, as well as devastation to the Columbia River Estuary. It would be CRIMINAL if the United States Government sanctions such a catastrophe through its inaction and denial, instead of taking EVERY POSSIBLE PRECAUTION against this horrific future aggrevation of the forseable Level 9+ earthquake. Even without the seizmic event, high-level nuclear waste has been for years leaching in ever increasing amounts into the surrounding land, groundwater, and the Columbia River. During the War Effort in the 1940's nothing was known about Cascadia Subduction Zone earthquakes; in fact the long-term danger and widespread ecological effects of high-level nuclear waste were neither known nor understood. While the region did its best to patriotically contribute to Victory via the Hanford project and the Portland Shipyards, we will not stand idly by to have our lives and region's future put at risk and eventually sacrificed based on political and economic expediency and indifference within the Administration in Washington DC, 3000 miles away from our homes. Yes it WILL be expensive to Safely Evacuate the Nuclear Waste and move it to a region which is geologically stable and far from human habitation. It would be best to entomb it through chemical vitrification surrounded by heavy and durable shielding to prevent it from exposing the ecosystem and human beings. At any rate OUR REGION has the RIGHT to sign in on the future of Hanford, and WE WILL NOT BE SIDELINED AND IGNORED in this life and death matter for ourselves and our future in all perpetuity.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97034

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: David Reeploeg <dreeploeg@tridec.org>
Sent: Tuesday, November 6, 2018 3:30 PM
To: ^WMA CDRAFTWIR
Subject: TRIDEC letter re. WMA C WIR Evaluation
Attachments: TRIDEC Letter re. WMA C WIR Evaluation.pdf

Please find TRIDEC's letter attached.

Thank you,
David

David Reeploeg

Vice President for Federal Programs

TRIDEC

7130 W. Grandridge Blvd., Ste. A

Kennewick, WA 99336

Phone: (509) 735-1000, ext. 242

Mobile: (509) (b)(6)

Fax: (509) 735-6609

dreeploeg@tridec.org



Bovier, Jan B

From: (b)(6)@q.com>
Sent: Tuesday, November 6, 2018 2:34 PM
To: ^WMACDRAFTWIR
Subject: Hanford

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354
WMACDRAFTWIR@rl.gov November 6th, 2018

I urge you to withdraw the U.S. Department of Energy's DRAFT Waste Incidental to Reprocessing (WIR) Evaluation for the Closure of Waste Management Area C at the Hanford Nuclear Site.

Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as “low-level” waste. C Farm tanks likely contain transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm tanks includes technetium 99, plutonium 239, strontium-90, cesium-137, iodine-129, uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose of the waste.

I urge Energy to abandon its short-sighted, dangerous proposal because:

1. Changing a label will lead to cleanup shortcuts. Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources, and the Columbia.
1. Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
1. Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities. People living downstream, in the Portland area for example, face serious threats from this proposal. Energy must schedule hearings throughout the Cascadia Bioregion. Most of all Energy must abandon its plans to re-label dangerous pollution and invest in cleanup solutions.

I, like many others, use the Columbia and Willamette Rivers for swimming, fishing and boating so I need it to be as clean and safe as Possible.

Sincerely,

(b)(6)

(b)(6)@q.com

(b)(6)

Portland, OR 97203

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 1:14 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97206

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Tuesday, November 6, 2018 12:29 PM
To: ^WMACDRAFTWIR
Subject: public comment on Hanford reclassification of waste
Attachments: Reclassification of Wastes.docx

Mr. Bovier,

Please take seriously my attached public comments.

Thank you,

(b)(6)

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 11:52 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best

accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: You know how if you are being attacked by a mountain lion, you can't just relabel it as a house cat and make it all better, right?

Name: (b)(6)

Email Address: (b)(6)@gorge.net

ZIP Code: 98635-0010

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 11:34 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: By leaving poorly encapsulated high level radioactive waste at Hanford, and just sweeping it under the radar with a linguistic wink, you are seriously jeopardizing our entire country, and even the planet. This waste can not only escape from this paltry cement barrier in the case of a major earthquake (the whole Hanford complex is on major faults) but floods, fires and terrorist attacks could easily unleash this nightmare as well. You must understand that radiation does not stay put- those you love and I love could all be poisoned by this deadly radiation. And death by radiation poison is particularly grisly and horrifying. If you love this country, and want to protect and safeguard it, then you will do the right thing and stop this charade of re-classification, and simply demand the best science be employed to contain this monstrously deadly waste.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97202

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 10:55 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 97218

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 10:36 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: Two of us attended a meeting in Portland recently where government representatives spoke about relabelling high-level waste at Hanford. We came away with many questions. There have not been sufficient opportunities for the community to (1) understand the volatility of the nuclear waste and (2) believe that citizens are able to have a voice in this dangerous environmental problem. More public hearings desperately needed!

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97201

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, November 6, 2018 10:19 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97267

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@msn.com>
Sent: Tuesday, November 6, 2018 9:26 AM
To: ^WMACDRAFTWIR
Subject: Waste Management Area C at Hanford

Dear Mr. Bovier,

I am very concerned about the reclassification of waste that is highly contaminated to a lower level classification that may make it easier to have "accidents" or spills.

This could result in the contamination of the Columbia River and could have untold negative effects for human and other species lives. This chemically dangerous pollution must be treated with the utmost care, and anything that reduces the protections from its harms is NOT in the public interest.

I am requesting the withdrawal of this proposal until further hearings can be held.

We are living at a time of inter-sectional crisis and the protection, health and safety of people and clear water must be prioritized over other concerns.

Please take time to get this right.

Sincerely,

(b)(6)

Eugene, Oregon

Bovier, Jan B

From: (b)(6)@frontier.com>
Sent: Tuesday, November 6, 2018 4:11 AM
To: ^WMACDRAFTWIR
Subject: Comment on Hanford Site (Draft WIR Evaluation)

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Mr. Bovier:

I am requesting a stay of this proposal until further hearings can be held throughout the Pacific Northwest. People living downstream need to have a better understanding of what is being proposed and a better chance of having their concerns addressed. The Department of Energy (Energy) must classify tank waste based on its dangerous nature---not on a failure of the Department to develop plans to dispose of the waste.

There are concerns that:

- 1.) Changing a hazard label will lead to cleanup shortcuts. For Example, the Dept of Energy will likely fill tanks with grout. The result: the Dept of Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources, and the Columbia.
- 2.) The Dept of Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
- 3.) The Dept of Energy has failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

The Dept of Energy must invest in cleanup solutions and not just re-label dangerous pollution.

Sincerely,

(b)(6)

North Bend, OR 97459

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Monday, November 5, 2018 10:41 PM
To: ^WMACDRAFTWIR

Can it be proven that waste meets the criteria for reclassification to low-level radioactive waste? What impact analysis has been performed to protect Indigenous stakeholders and those living downstream from said reclassification? These things are necessary to proceed responsibly.

(b)(6)
Klamath Falls, Oregon

Bovier, Jan B

From: McGeary, Malcolm (Wyden) <Malcolm_McGeary@wyden.senate.gov>
Sent: Monday, November 5, 2018 12:30 PM
To: ^WMACDRAFTWIR
Subject: Wyden Hanford Comments
Attachments: 110518 Hanford Comments Letter.pdf

Hello,

I've attached Senator Wyden's comments regarding DOE's WIR Evaluation for the Closure of Waste Management Area C at Hanford.

Regards,
Malcolm

Malcolm McGeary
Advisor for Energy and Natural Resources
Office of U.S. Senator Ron Wyden
221 Dirksen Senate Office Building
Washington, DC 20510 | (202) 224-5244

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Saturday, November 3, 2018 12:25 PM
To: hanford comment; (b)(6)
Subject: Notice of Public Meetings for the Draft Waste Incidental to Reprocessing Evaluation for

1. Remove all nuclear waste,
2. Do not allow anymore nuclear waste into the facility,
3. Replace all the single storage tanks,
4. Stop all the nuclear leakage entering the Columbia River

(b)(6) Redmond WA

Bovier, Jan B

From: (b)(6)@gmail.com >
Sent: Tuesday, October 30, 2018 1:24 PM
To: ^WMACDRAFTWIR
Cc: maria@cantwell.senate.gov; patty@murray.senate.gov
Subject: Comments on DOE's Draft Waste Incidental to Reprocessing Evaluation

Dear Mr. Bovier,

I am writing to offer my comments on the Department of Energy's "*Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site*" (Draft WIR Evaluation). The proposed reclassification of high-level nuclear waste in Hanford's tank farms represents a significant shift in DOE's commitment to cleaning up the Hanford Site. While I understand that DOE asserts authority to undertake this action under Order 435.1, promulgated in 2002, the current proposed reclassification represents an important policy decision that merits further analysis and review.

It is known that tank waste in the C Farm contains technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, as well as other toxic and radioactive contaminants. Yet the proposed reclassification does not appear to be based on a complete characterization of the tank components. Rather, the proposal is based solely on DOE's authority asserted under Order 435.1. It is inappropriate to re-label waste without a more rigorous scientific basis or risk analysis of the remaining tank waste.

The reclassification proposed in the draft would leave 4% of the waste remaining in the C farm tanks on site. This would equate to approximately 70,000 gallons of long-lived radioactivity remaining in place, secured only by concrete-like "grout." This represents an important change to previous expectations and commitments. For instance, the 2012 forward to the Tank Closure Waste Management Environmental Impact Statement (EIS) outlines the Department of Ecology's expectation that 99% of the tank waste will be removed, not 96% as proposed under this Draft WIR Evaluation. Further, DOE has committed to the goal of retrieving 99% of the waste in Milestone M-45-00 of the Tri-Party Agreement, TPA Appendix H, and the Record of Decision following the Tank Closure and Waste Management EIS (2012).

Prior leaks from the tanks in C Farm have resulted in contamination of the soil underneath the tanks. Pouring concrete grout onto the 70,000 remaining gallons of tank waste in the 16 C-Farm tanks would leave the existing contamination under the tanks. The existing soil contamination is known to be migrating into the groundwater, significantly increasing the risk to the Columbia River. Closing these tanks with grout would foreclose the possibility of future remediation of the soil and groundwater underneath, or further retrieval of the waste remaining in the tanks. Taken together, the waste that has already leaked into the soil, along with the half a million curies remaining in the tanks, would result in an extraordinary risk to the Columbia River for thousands of years to come.

In addition to the obvious environmental concerns, the risks to human health and the economy of the local region are unthinkable. While this reclassification would conveniently reduce the costs of cleanup, the long-term costs would far outweigh any short-term savings. The risks of actual or even perceived contamination to agricultural products from the area are not worth taking. While the attraction of short-term savings and the need to meet milestones for closing one of the tank farms is understandable, it is in the responsibility of the Department of Energy, and Washington State's elected officials and regulatory

authority to ensure that the area's communities and economy are protected for generations to come. Mitigating the greatest risks should be the foremost priority.

This priority does not appear to be supported by the information and analysis within the Draft WIR Evaluation. DOE's Performance Assessment and review of potential soil and groundwater impacts don't support reclassification of the remaining waste. This kind of analysis would require a cumulative assessment of the impacts of waste already leaked into the surrounding soil and groundwater, as well as longer term risks of contamination from waste remaining in the tanks. Further, such a reclassification would most certainly set a precedent for the closure of other tank farms, so any cumulative analysis should consider the impact of closing each of the farms in this manner by conducting a Composite Analysis as required by Order 435.1.

Finally, DOE should consider the legal implications of shifting its approach to cleanup of the site. Reclassification would essentially mean the creation of a new low-level waste disposal facility at Hanford, atop already contaminated soil and groundwater. This action would surely prompt legal challenges based on tribal treaties, existing agreements with the Department of Ecology and Environmental Protection Agency, and requirements outlined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Waste Policy Act. In the absence of further analysis to support the reclassification of waste, DOE will surely encounter further costs and delays resulting from litigation.

I urge the Department of Energy to withdraw the Draft WIR Evaluation and return to a commitment to retrieve, treat, and remove the remaining tank waste from the Hanford Site. Should DOE pursue reclassification, I suggest a more robust analysis of the long-term risks and costs, greater collaboration with regulatory agencies and signatories of the Tri-Party Agreement, and increased transparency and public participation in the process.

Sincerely,

(b)(6)

Snohomish, WA 98296

425 (b)(6)

CC:

Senator Maria Cantwell
511 Hart Senate Office Building, Washington, DC 20510
Delivered via e-mail : maria@cantwell.senate.gov

Senator Patty Murray
154 Russell Senate Office Building, Washington, DC 20510
Delivered via e-mail: patty@murray.senate.gov

Governor Jay Inslee
Office of the Governor
P.O. Box 40002, Olympia, WA 98504-0002
Delivered via contact form located at www.governor.wa.gov/contact

Bovier, Jan B

From: Kinzd Official <fbkinzd@gmail.com>
Sent: Tuesday, October 30, 2018 1:37 AM
To: ^WMACDRAFTWIR
Subject: Sponsored Post for Wallet

[View this email in your browser](#)



Hi friend,

Nice to talk with you, I am Linner from Kinzd, Kinzd is a brand in Amazon, Ebay, selling slim wallets, card holders, accessories etc. We would like to inquire about sponsoring a post about our wallet in your website. Could you please let me know if you are interested and how to work with you?

Looking forward to your respond soon.

Best regards,

Linner

<https://www.kinzd.com/>

<https://www.instagram.com/kinzdwallet/>



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Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, October 29, 2018 11:26 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Reclassification of HLW is illegal, not protective of HH and the environment, and does not honor the US government's Trust responsibility to the Yakama Nation.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98902

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Rod Skeen <RodSkeen@ctuir.org>
Sent: Monday, October 29, 2018 2:10 PM
To: ^WMACDRAFTWIR
Cc: Matthew Johnson
Subject: CTIUR Comments to WMA-C Draft WIR Evaluation
Attachments: CTUIR_Comments_WIR_V2.pdf; Draft_WIR_Evaluation_WMAC_Comment_LTR.pdf

Please see the attached.

Thank You

=====
Rodney S. Skeen, Ph.D., P.E.
Energy and Environmental Sciences Program
Department of Natural Resources
Confederated Tribes of the Umatilla Indian Reservation
Phone: (541) 429-7420
Cell: (541) (b)(6)
Fax: (541) 429-7420
Email: rodskeen@ctuir.org
Mailing/FedEx Address: 46411 Timine Way, Pendleton, OR 97801
=====

The opinions expressed by the author are his or her own and are not necessarily those of the Confederated Tribes of the Umatilla Indian Reservation. The information, contents and attachments in this email are Confidential and Private.

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 28, 2018 12:40 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: I want to comment on the current prime contractor CH2M Hill who appears to be having their own way with all these Projects. They built a fully operational Grouting Plant with no public comments or Permits. Using the Excuse that they placed a temporary Grout system for Purex Tunnel 1 and just added to the system to make it Permanent. They then pushed forward on deciding Tunnel 2 was about to collapse, maybe but was some ways away from the report they did and appeared self-interest was part of the reports writings.

Name: (b)(6)

Email Address: (b)(6)@mkd-usa.com

ZIP Code: 03064-2877

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 25, 2018 11:39 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: Our government needs to stop The Manhattan Project secrecy, denial and lies. We must develop an entire industry to resolve remediation issues of Hanford and other toxic sites created during the development of nuclear weapons. NO to reclassifying the most toxic waste in Hanford for the sake of "saving money" to the detriment of our entire planet. We need universal healthcare, so people who get sick from nuclear contamination can get help, we need free college education so we can develop first rate scientists to deal with this issue, we need a Truth And Reconciliation Council, to allow the nuclear liars can come clean and nobody goes to jail or is threatened, and can be part of the solution. STOP DENYING NUCLEAR WASTE HARMS PEOPLE, EVEN "LOW LEVEL" IS DANGEROUS AND WE MUST CHANGE THE CULTURE TO START WITH FACTS, TRUTH AND CONCERN FOR HUMANITY INSTEAD OF OUR CURRENT MODEL OF PROFITS OVER PEOPLE.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97404

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, October 22, 2018 12:47 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: I live in Kennewick WA. I would be directly effected by these changes. Please keep safety standards as they are.

Name: (b)(6)

Email Address: (b)(6)@juno.com

ZIP Code: 99336

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, October 22, 2018 8:08 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Stop murdering human beings .

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 98902

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 21, 2018 2:50 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 98282

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 21, 2018 2:09 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Please be responsible and remove all this toxic waste to deep geologic repository

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 98003

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 21, 2018 9:34 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 99301

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 21, 2018 3:54 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 99336

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Saturday, October 20, 2018 5:50 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99352

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Saturday, October 20, 2018 3:38 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@live.com

ZIP Code: 12144

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 19, 2018 8:44 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: The Columbia River is too close to the handford area to allow anymore radioactive materials into the ground.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99330

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 19, 2018 12:12 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 99207

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 19, 2018 10:33 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@eagles.ewu.edu

ZIP Code: 99204

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Friday, October 19, 2018 8:07 AM
To: ^WMACDRAFTWIR
Subject: relabel of high level to low level toxic waste at Hanford

To the United States Department of Energy--

I live 230 miles downriver from Hanford Nuclear Reservation on the Columbia River in Portland Oregon.

I would like to state my objections to the relabeling of toxic high level nuclear waste to low level in order to qualify leaving thousands of gallons of high level toxic waste sludge in the 16 tanks "emptied" so far out of 177 at Hanford Nuclear Reservation. By law, high level toxic waste must be stored in deep underground repositories. Additionally the large toxic waste plume in soils beneath these 16 tanks is not being addressed in this plan.

I am very concerned about the huge legal implications for all 177 tanks (and country-wide) by changing the nomenclature to fit this particular situation of 16 tanks. US DOE must spend money to find new technologies to remove this sludge, plus come up with a robust environmental review. Renaming is not clean-up.

And while I am at it, air safety at Hanford has for years not been properly handled and hundreds of workers have been exposed to toxic air with lifelong illness as a result. This is unacceptable. Management has to provide better and adequate protection for workers.

The wider affected public in the Columbia watershed and in the Pacific Northwest is not being heard because there are too few public hearings.

Lastly, the calibration for future "safety" of this site is being done with an antiquated and incorrect model to reflect the population--age, sex, ethnicity, size, etc.--I refer to "Reference Man"--at least this was the presentation by USDOE at the recent hearing in Portland. The simplistic and tired comparison of radionuclides in air travel and X-rays to high level toxic nuclear waste is simply a false analogy and should be retired along with the "Reference Man" calibration model for "safety."

Sincerely,

(b)(6)
Portland, Oregon

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 19, 2018 5:40 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 9:35 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: My family lives in this beautiful area of Eastern Washington don't leave this mess in our back yard

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 99344

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 5:59 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed.

Please write your personalized comment below:: Please do reclassify the waste. Grout the remaining waste in C Farm and, in fact, other farms should be grouted as well, some of them without retrieval. Hanford Challenge is unreasonable in their expectation to remove an extremely high fraction of residual waste, and is indicative of their general competence on the issue - that is to say, very little.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 4:51 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: As a (b)(6) responsible for the fission products lab at the Oak Ridge Reactor, 1943-46, I strongly advocate taking responsibility for the fallout and radioactive waste of the tanks at Hanford. We must protect the Hanford Reservation, Columbia River basin, and the North Pacific Ocean. We think we won World War II, but this legacy gives new meaning to the phrase, "To the victor belongs the spoils."

Name: (b)(6)

Email Address: (b)(6).org

ZIP Code: 98105

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 4:46 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: I advocate: Protect the Hanford Reservation, the Columbia River basin, and North Pacific from radioactive and other toxic pollution. We think we won World War II, but the fall-out and waste--our multi-generational responsibility--gives new meaning to the phrase, "To the victor belong the spoils." We must take responsibility for the tanks and be accountable.

Name: (b)(6)

Email Address: (b)(6).org

ZIP Code: 98105

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 12:13 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99223

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 12:13 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 99022

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 12:03 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: I just (b)(6) Hanford and its deleterious effects on the environment. Don't let this menace to our health (especially for Inland Northwest residents) continue.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99203

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 8:53 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98926

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 18, 2018 12:45 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@aol.com

ZIP Code: 98225

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 17, 2018 5:05 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: I want to comment on the current prime contractor CH2M Hill who appears to be having their own way with all these Projects. They built a fully operational Grouting Plant with no public comments or Permits. Using the Excuse that they placed a temporary Grout system for Purex Tunnel 1 and just added to the system to make it Permanent. They then pushed forward on deciding Tunnel 2 was about to collapse, maybe but was some ways away from the report they did and appeared self-interest was part of the reports writings.

Name: (b)(6)

Email Address: (b)(6)@(b)(6).com

ZIP Code: 03064-2877

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 17, 2018 4:05 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: This reclassification plan is very dangerous to public health and safety. It would bequeath that dangetous legacy to the future, a strategy of pasding the buck that has already gone on for 73 years. We must properly address this high level waste now, once and for all.

Name: (b)(6)

Email Address: (b)(6)@(b)(6).edu

ZIP Code: 20901-2150

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 17, 2018 3:02 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99362

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 17, 2018 9:44 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: This cleanup has gone from one crisis to another, time for a real solution.

Name: (b)(6)

Email Address: (b)(6)@msn.com

ZIP Code: 99336-4030

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 17, 2018 8:08 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: I appreciate the public meetings you have scheduled, but wanted you to know that your job is to protect the public from the contamination the United States government has produced. That is a key part of your mandate. In fact, if you cannot fulfill that role, all nuclear waste production needs to stop PERIOD!

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98115

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 17, 2018 7:00 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: Hello. I was born during the 2nd World War. And so so was the waste at Hanford. I am now an old person. I would have thought that the US Government would have had sufficient time by now to fix the mess that it mandated! To ignore the waste or to underestimate its danger is negligent at best and criminal at worst. How about diverting some of the money that goes to the Pentagon to make MORE nuclear devices to Hanford to clean up after the old ones! Do you not think that we humans are already doing enough to make our world unhabitable without this added insult?

Name: (b)(6)

Email Address: (b)(6)@comcast.net

ZIP Code: 98115

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 10:25 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: Please don’t destroy Eastern Washington. I live here and so does my family!!!

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 98902

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 9:46 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@earthlink.net

ZIP Code: 98908

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 9:30 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@icloud.com

ZIP Code: 98908

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 8:55 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99338

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 8:09 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: Think of the generations to come...

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 99301

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 7:35 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 98926

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 7:14 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: Having worked a number of years at Hanford and recognizing what those tanks hol, this would be akin to terrorism to the people who live herr

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99337

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 5:54 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: I live in Richland. If you don’t want a wasteland fix the problem

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 4:12 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Show some integrity DOE, do the right thing. All of you. People live near this site.

Name: (b)(6)

Email Address: (b)(6)@charter.net

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, October 16, 2018 3:53 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 14, 2018 10:18 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Considering the ever increasing natural disasters that are now becoming part of the norm, I find it negligent to leave radioactive materials in the ground. You can not wish this away.

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 98115

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 14, 2018 1:20 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@seattleu.edu

ZIP Code: 98155

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, October 14, 2018 10:47 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: Now that we understand how vulnerable the hydrogeology of the plateau and the Columbia River, and mobility, toxicity, and lifespan of the wastes that were released, we have a duty to properly secure, contain, and treat in a responsible manner that does not pose hazards or extra challenges to future generations.

Name: (b)(6)

Email Address: (b)(6)@outlook.com

ZIP Code: 98065

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Ken Berg <bergk@cox.net>
Sent: Sunday, October 14, 2018 8:53 AM
To: ^WMACDRAFTWIR
Subject: Nuclear reclassification

I'm opposed to the reclassification of Hanford Nuclear waste because it sets a bad precedent by allowing government agencies to bury their problems by fiat. It does not reduce the hazard. It does not seek safe disposal. It does not seek to provide safe disposal standards and sites.

Ken Berg

THE MOTORSPORTS EDUCATION FOUNDATION--a non-profit society

22701 Lajares

Mission Viejo, California 92692-1335, U.S.A.

(949) 830 6888

e-mail: bergk@cox.net

Kenneth L. Berg-archivist

Who's Who in the West 1998, Honorary member 4th Armored Division, Associate member Veterans of the Battle of the Bulge, biographer of Smoky Joe Wood, Leo Goossen, Dale Drake, John Drake, Lou Meyer and other notables,

Burgess Shale Foundation, East Kootenay Childhood Foundation

Governor-General of Canada Confederation Medal 1992

Ken Berg - Academia.edu

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 12, 2018 10:04 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Thank you for holding hearings. DOE should develop an overall clean up plan and not be piecemeal re-defining away the serious threat posed by this waste.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98112

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 12, 2018 5:51 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: Our lives, our childrens' lives and many generations beyond, depend on the highest-level handling of our nuclear waste. Please do not lower the standard of care!

Name: (b)(6)

Email Address: (b)(6)@comcast.net

ZIP Code: 98103

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 12, 2018 4:45 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: Any major work proposed at Hanford should/must be reviewed by all stake holders especially the citizens of the US. There have been so many problems related to the nuclear industry in the US that every decision must be examined carefully by every agency and interest groups.

(b)(6)

Name: (b)(6)

Email Address: (b)(6)@ (b)(6) com

ZIP Code: v2w1z2

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, October 10, 2018 10:31 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: I grew up in Richland, WA. The DOE proposal's environmental risks to my hometown are unacceptable. Human safety is more important than the potential fiscal savings sought with the reclassification. DO NOT reclassify the waste.

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 98117

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 5, 2018 11:19 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
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Please write your personalized comment below:: This will make Mycoremediation via (b)(6) process almost impossible

Name: (b)(6)

Email Address: (b)(6)@comcast.net

ZIP Code: 98126

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Friday, October 5, 2018 11:05 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: Tom Carpenter

Email Address: (b)(6)@gmail.com

ZIP Code: 98118

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: BURRIGHT Jeff * ODOE <Jeff.Burright@oregon.gov>
Sent: Friday, October 5, 2018 8:21 AM
To: ^WMACDRAFTWIR
Cc: NILES Ken * ODOE
Subject: Oregon Response to the Waste Incidental to Reprocessing Evaluation for Waste Management Area C at Hanford
Attachments: WIR Comments - Oregon_Final 10-4-18.pdf

Good morning,
Ken Niles is out of the office today but did want me to share these comments with you.



Jeff Burright
Nuclear Waste Remediation Specialist
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
P: 503-378-3187
Cell: 503-(b)(6)
Jeff.Burright@oregon.gov
Oregon.gov/energy



**OREGON
DEPARTMENT OF
ENERGY**

Leading Oregon to a safe, clean, and sustainable energy future.

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, October 4, 2018 4:32 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: You can't make something safe by calling it something else. Nature doesn't work that way

Name: (b)(6)

Email Address: (b)(6)@gorge.net

ZIP Code: 98635-0010

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, October 1, 2018 1:24 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::
Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below:: As the great grandson of a man whose property was taken for Hanford reservation and the son of a down winder KILLED by the DOE and DOD, I am well versed in the slipshod ways clean up has been performed at Hanford. This policy of merely downgrading waste is ridiculous. Do you jobs, clean this up, do just sweep it into tanks and pretend it is a lesser danger than it is.

Name: (b)(6)

Email Address: (b)(6)@mac.com

ZIP Code: 98513

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Wednesday, September 26, 2018 12:20 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: The topic of handling nuclear waste at Hanford needs to be dealt with in an ethical and transparent way as it has the potential to negatively impact human and environmental health in the region.

Name: (b)(6)

Email Address: (b)(6)@uw.edu

ZIP Code: 98052

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Sunday, September 16, 2018 10:39 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: The government has to stop the hiding the truth just to save money. Do the right thing

Name: (b)(6)

Email Address: (b)(6)@outlook.com

ZIP Code: 99301

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Thursday, September 13, 2018 6:30 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@yahoo.com

ZIP Code: 97206

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@aol.com>
Sent: Thursday, September 13, 2018 12:49 AM
To: ^WMACDRAFTWIR
Subject: Fwd: COMPLETE HANFORD SITE CLEANUP

Sorry, I've Corrected the address, (b)(6)

From: (b)(6)@aol.com
To: WMACDRAFT-WIR@rl.gov, Doug.Shoop@rl.doe.gov, Brian.T.Vance@orp.doe.gov, dleeploeg@tridec.org, jhed461@ecy.wa.gov, Hanford_Advisory_Board@rl.gov, maria_cantwell@cantwell.senate.gov, the.secretary@hq.doe.gov, john.price@ecy.wa, colleen.french@rl.doe.gov, sharon.brown@leg.wa.gov, hanfordpriorities2019@rl.gov, brave.jennifer@epa.gov
Cc: acary@tricityherald.com
Sent: 9/13/2018 12:36:22 AM Pacific Standard Time
Subject: COMPLETE HANFORD SITE CLEANUP

Hi to Distribution,

The purpose of this Email is to **again** express my concerns regarding our prolonged, costly and risky Hanford Cleanup. Retrieval of the more difficult high level contaminated waste in facilities, and underground storage/disposal volumes are resulting in serious undefined Worker Health problems. As these difficult retrievals continue on for many more years, they are extending the Time and Cost of Cleanup, but more important result in greater Risk to the Public, Groundwater, Environment, and our Workers. The unknowns just seem to keep growing and could become dangerous!

Recent articles in our Tri City Herald talked of grouting being considered for cleanup of Trenches and Liquid Waste Tanks. In response, I have included below a copy of my past comments which then suggested a similar Cleanup Approach to expedite getting Cleanup done in **TIMELY** and **SAFE** manner!

Thank You for listening, (b)(6) 509-(b)(6)

June 6, 2017

GET DIFFICULT RAD WASTE CLEANED UP ALREADY!

My concerns regarding the Hanford Site FY-2019 Cleanup Budget Priorities are for completion of Hanford Cleanup, and specifically about retrieval of radioactive contents from Hanford's Waste Tanks. Risks with delaying retrieval of tank liquid waste (some then leaking), were identified back about 1990! Now that some of these same risks still exist concerns me, especially as years pass on. Of main concern is the escalating health risks to tank waste retrieval workers, and the prolonged progress

of Waste Treatment Plant/ New Facilities construction. We don't need radioactivity leaking and contamination of our environment. Should that happen, WHAT THEN?

After 25+ years of Hanford Cleanup, we still have some of more difficult and higher risk radiological conditions to isolate. Originally we were told to get tank waste retrieved as high priority effort to assure no contamination to the Groundwater, Columbia River, and Environment. We also had to minimize risk to the Workers' Health, the Public and the Columbia Corridor. So far, we have been very fortunate to dodge most of the Risks.

For years, comments have been sent to Hanford contractors, Local, State and Federal DOE and political organizations about getting this prolonged CLEANUP DONE! (maybe in more optimum way?). Suggested alternate approach features for Cleanup have been repeatedly rejected by some Reviewers, and authors of the Tri Party Agreement (TPA), which established very stringent requirements (now possibly unreasonable?). Some requests to review the TPA may presently be considered. Also of concern is retrieval of high level solid wastes from dry locations like under the Hanford 324 Bldg, Basins, Trenches, Cribs, Silos, and other contaminated structures and waste storage volumes.

I think back over all the years of Time, Spending, Risk, and added Waste Generation while Hanford Cleanup continues on. The TPA MUST be revisited by an "in-the-know" group to arrive at a more realistic approach **to complete Cleanup**. You'd think the DOE would surely question if a simpler, more cost effective and quicker cleanup approach could still be within all acceptable risk limits. A simpler and more economical completion of construction/use of the Vitrification Plant might also result!

"My concerns with continual increases in cost and schedule towards completion of Hanford Cleanup are renewed with each annual Hanford Budget Meeting. Priorities for FY-2019 Budget requires a Realistic Action PLAN for Completing Cleanup in a Safe, Timely and Cost Effective way. That PLAN will be basis for an optimum Spending Proposal that Congress can approve and fund. The Spending Proposal must be Safe for workers, Utilize proven methods and equipment, and Meet safe radiological levels.

My recommended priority action for generating that Realistic PLAN follows::

1. Get all authors of the Tri Party Agreement (TPA) together and revisit, evaluate and update the existing very stringent TPA requirements
2. PLAN how to meet those updated and more realistic Requirements, sell the Proposal to Congress, and obtain Time/Funding to get the Hanford Cleanup Done! SAVE TIME, RISK, AND COST!
3. Retrieve high risk liquid wastes from tanks, basins, cribs, etc. with past proven Hanford methods, (i.e. sluicing and evaporating).
4. Dispose of structures/solid waste volumes in place -- some might become Monuments for our Manhattan Project Historical National Park?
5. Clean the 324 Bldg. and non-retrievable solid waste storage sites of radioactivity as much as possible, then isolate and caccoon similar to Reactors.
6. Complete Cleanup this way with funds separate from the Waste Vitrification Plant, with its problems and now two separate waste streams?

For years now, Hanford Cleanup has struggled to meet very stringent TPA requirements, i.e. to restore the Site to its original natural state. A PLAN is now needed to **complete Cleanup in a realistic manner!** The present approach requires retrieval, handling, re-identification, and repackaging of previously disposed waste.

These operations result in generating more waste while exposing workers to more danger, radiation and inhalation exposure.

Its time NOW, for all original authors of TPA to get together and revisit those tough requirements. Applying "lessons learned" and characterizing waste retrieved from original storage and disposal locations can show what true and realistic extent of Cleanup is required. **That would be a good unanimous basis for The PLAN!**

Congress and our Country wants HANFORD to get this Cleanup done in a safe, timely and cost effective way, then help other nuclear sites to cleanup in those successful ways.

(b)(6) Surely we can get more new DOE contracts at Hanford to develop other types of clean energy. Here, we use our years of successful Experience and PNNL Research, **and this is where nuclear work is welcomed!**

[redacted] Ph: 509-[redacted]

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 5:35 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@aol.com

ZIP Code: 98008

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 5:20 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@comcast.net

ZIP Code: 97225

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 4:16 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@comcast.net

ZIP Code: 98043

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 3:08 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99185

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 1:38 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

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Please write your personalized comment below:: It’s dangerous and irresponsible

Name: (b)(6)

Email Address: (b)(6)@msn.com

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 1:36 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

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Please write your personalized comment below:: This proposal will environmental, economic , and health issues and can’t be allowed the tax payer will pay double for allowing irresponsible actions do it right the first time

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 99354

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 1:24 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

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Please write your personalized comment below:: The science pertaining to management of high-level nuclear waste must be on the top of the agenda, not the political expediency of renaming the the waste to qualify for different treatment. You must provide public meetings.

Name: (b)(6)

Email Address: (b)(6)@seanet.com

ZIP Code: 98107

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 11:35 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: I have seen the impacts of nuclear radiation on humans, and I know firsthand the importance of keeping this classification of high-level waste

Name: (b)(6)

Email Address: (b)(6)@gmail.com

ZIP Code: 97207

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@earthlink.net>
Sent: Monday, September 10, 2018 10:44 AM
To: ^WMACDRAFTWIR
Subject: WIR Evaluation

Dear Mr Jan Bovier,

I just accidentally located this site looking for Hanford Alliance groups and wanted to comment if I'm not too late, per the date stated "when to email by".

In moving back to the Pacific NW, being (b)(6) since born in the early 40's, I hope you will accept my email. I strongly believe the Public Hearings should be allowed not only in the state of WA, OR, but also in Boise ID. The clean-up needs to be most complete that it can be, for various reasons, one major reason being the possibility of an earthquake. An earthquake would be absolutely horrific as would have major effect all over the NW & into the Pacific Ocean, causing extreme problems, perhaps stretching World Wide...

(b)(6) there are Downwinder effects occurring in Western ID... (b)(6) (b)(6)
(b)(6) back in the early 90's, due to my Medical background & knowledge about the Nuclear & other toxic storage ammunition, waste that is buried on the Umatilla Army Ordnance Depot in Oregon. For the record (b)(6)
(b)(6) in the early '90's & affiliated with (b)(6) Dept. of Physics & Environmental Sciences, Portland State University, Portland Or.

Please reply to my request.

Thanks,

(b)(6)
Meridian Id. 83646
(b)(6)@earthlink.net

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, September 10, 2018 10:08 AM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

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Please write your personalized comment below:: (b)(6) born in the early 40's in Eastern Oregon, near the Columbia Rive, I feel all I checked above, HIGH priority & public hearings should also be held in Boise ID. There are Downwinders in Western Idaho, so I feel they should be included & have a voice in the hearings.

Name: (b)(6)

Email Address: (b)(6)@earthlink.net

ZIP Code: 83646

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6) @gmail.com >
Sent: Thursday, September 6, 2018 1:58 PM
To: ^WMACDRAFTWIR
Subject: Proposal to Reclassify Hanford Nuclear waste

To Whom it May concern:

I am adamantly opposed to reclassification of radioactive waste in Hanfords tank farms, especially leaking ones, leaving waste in the ground, etc. To expose the public and our water sources and millions of people downstream to probable radioactive contamination from leaking tanks demonstrates in my opinion complete disregard for the public's health, safety and wellbeing. It is a short term prescription for human civilization which will suffer the genetic defects.

Our military cannot find billions of dollars. Yet it is problematic giving Hanford Nuclear Reservation the necessary money for cleanup. This represents a bomb dropped on north America, not on our enemies.

I request the following:

Energy should hold public hearings throughout the Pacific Northwest. Holding only one public meeting in Richland, WA, undercuts robust public involvement in a critical government decision.

Energy must label waste based on its dangerous nature, not on whether Energy has plans to dispose the waste.

- Reclassifying waste is not cleanup. Instead, Energy's proposal would create health and safety risks for future generations.
- Energy must address risks from long-lived contaminants.

Energy fails to demonstrate that the agency has removed the "maximum technically achievable" amount of waste.

- In 2012, the Washington Department of Ecology (Ecology) wrote in its forward to the Tank Closure Waste Management Environmental Impact Statement (EIS) that Washington state prefers "retrieval of at least 99 percent of the waste from each tank."

Sincerely,

(b)(6)

Portland Oregon 9722



Virus-free. www.avast.com

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Thursday, September 6, 2018 1:32 PM
To: ^WMACDRAFTWIR
Subject: re Proposal to Reclassify Hanford Nuclear waste

To Whom it May concern:

I am adamantly opposed to reclassification of radioactive waste in Hanfords tank farms, especially leaking ones, leaving waste in the ground, etc. To expose the public and our water sources and millions of people downstream to probable radioactive contamination from leaking tanks demonstrates in my opinion complete disregard for the public's health, safety and wellbeing It is a short term prescription for human civilization which will suffer the genetic defects.

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- Energy must address risks from long-lived contaminants.

Energy fails to demonstrate that the agency has removed the "maximum technically achievable" amount of waste.

- In 2012, the Washington Department of Ecology (Ecology) wrote in its forward to the Tank Closure Waste Management Environmental Impact Statement (EIS) that Washington state prefers "retrieval of at least 99 percent of the waste from each tank."

Sincerely,

(b)(6)

Portland Oregon 97223



Virus-free. www.avast.com

Bovier, Jan B

From: Todd Hurley <toddevents@missiontix.com>
Sent: Wednesday, September 5, 2018 2:16 PM
To: ^WMACDRAFTWIR
Subject: Increase revenue, while increasing customer satisfaction.. It can be done!

Hello,

After working in the event production business for over 15 years, I can understand front gate and ticketing operations are a major pain point for many events. It's time consuming and tedious work. MissionTix is an organization dedicated to helping event producers like yourself overcome these challenges.

I have worked with events of all sizes and shapes to customize ticketing and front gate management solutions that increase patron satisfaction and increase event revenue. The quicker a patron is in the gate, the more opportunity they have to spend money at the event, that means more money in your pocket.

For over a decade, MissionTix had been providing event producers like yourself a simple and effective means of ticketing, managing front gate operations and event marketing. Event ticketing does not have to be a major hurdle in the planning and execution of your event. MissionTix simple user friendly online platform allows you to offer an easy means to purchase tickets for your event to potential buyers, while keeping fees lower than the major providers. This means more revenue in your pocket.

At the end of the day our goal is to provide professional solutions for your event that affords a high degree of flexibility, customization, and real-time service. We offer solutions to make the ticketing and event management experience personal and professional for both you and your customers.

Our clients often view us as a one stop shop for best in class marketing, event production consultation and customer service. Let's set up a time to see how MissionTix can best serve your event and help increase revenue and customer satisfaction.

If you'd like to chat, please shoot me an email or call me directly at 410-982-0799 to talk ticketing!

Thank you, and I look forward to connecting with you and your team.

Best regards,

Todd Hurley
MissionTix Event Specialist
todd@missiontix.com
sell.missiontix.com
410-982-0799

Todd Hurley

(b)(6)

Baltimore, MD, 21202

[Unsubscribe](#)

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Thursday, August 30, 2018 1:46 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Do NOT reclassify Storage Tanks at the Hanford Nuclear Site to Low Level Nuclear Waste!

I do not support the proposal to rename / reclassify the average 4% left in 16 C Farm tanks at the Hanford Nuclear site from "high level" to "low level" nuclear waste. A new name or classification does not change the nature of this waste which is high level.

This proposal would permit the waste to be covered over with cement which would allow DOE to leave the waste at the tanks, rather than removing it to a deep geologic depository. The latter process will protect the lives of Washington citizens which should be your paramount concern. You work for the public, after all.

Bovier, Jan B

From: Squarespace <no-reply@squarespace.info>
Sent: Tuesday, August 28, 2018 1:06 PM
To: ^WMACDRAFTWIR
Subject: Form Submission - Not on my watch! - public comment

I am concerned about the proposal to reclassify the remaining high-level nuclear waste in the C Farm tanks to “low-level” waste. This represents a move to permanently leave an estimated 4% of waste, or 62,900 gallons, in Hanford’s C Tank Farm, with cement grout added to the tanks. USDOE estimates that 1/2 million curies of radioactivity will be left in the tanks. This process has the potential to set precedent for how much waste is left behind in all of its 177 tanks, yet the USDOE is not planning to hold public hearings on this important proposal. Regional public hearings are a necessary step in ensuring adequate and meaningful public comments are solicited and collected. The technical nature and complexity of this process necessitates clear and comprehensive public discussion and evaluation, which is best accomplished in person in public hearings around the region. I specifically request that the USDOE::

Request 1: Immediately announce regional public hearings on this proposal to occur in Seattle, Portland, the Tri-Cities and Spokane. Public comments should be taken at these hearings., Request 2: Withdraw its proposal to relabel high-level waste in the underground tanks at Hanford, and follow the requirements in the law to remove, treat, and dispose of this waste in a deep, geological repository., Request 3: Should not fill the tanks with grout or cement until most of the tank waste is removed and the high-level waste in the soils beneath the tanks is removed., Request 4: Stop the piecemeal approach of the tank farms cleanup and consider the cumulative impact of its proposed actions/decisions to include both the high-level nuclear waste in C Farm Tanks and the liquid waste intentionally discharged and leaked to soils.

Please write your personalized comment below::

Name: (b)(6)

Email Address: (b)(6)@hotmail.com

ZIP Code: 94110

(Sent via [Hanford Challenge](#))

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Monday, August 27, 2018 10:21 AM
To: ^WMACDRAFTWIR
Subject: Hanford clean up

Please do not allow the USDOE to reclassify the nuclear waste at Hanford. Reclassifying something does not change its level of danger to the planet. Grouting over something does not make it go away. A full clean up must be done. It is shameful that the USDOE did this in the first place, and now they want to just sweep it away and act like it never happened. NO! Clean up this mess, including contaminated soil before the problems magnify.

Thank you,

(b)(6)

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Saturday, August 25, 2018 11:09 AM
To: ^WMACDRAFTWIR
Subject: re: Draft Waste Incidental to Reprocessing Evaluation for closure

1. Remove all nuclear waste,
2. Do not allow anymore nuclear waste into the facility,
3. Replace all the single storage tanks,
4. Stop all the nuclear leakage entering the Columbia River

(b)(6) Redmond WA

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Wednesday, August 22, 2018 11:20 AM
To: ^WMACDRAFTWIR
Subject: My opposition to Hanford Highly Toxic Waste Reclassification by DOE - Draft WIR Evaluation

Please add my voice to the public comments opposing the reclassification of highly toxic waste as outlined in the "Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site." I strongly object and am completely opposed to any reclassification of highly toxic waste at Hanford. Based on the realities of the contamination threat this toxic waste poses - not only to the quality of life but all life in our region - I consider any action to downgrade perception of the scientific evidence for the purpose of deceiving the public is an abuse of trust.

The cost of correcting the horrendous contamination threat posed by Hanford's highly toxic waste - and the deteriorating containers and mismanagement of Hanford's toxic plume of contaminants - is a fiscal nightmare. The proposed solution and this latest bag of DOE tricks to avoid paying the bill, however, is a disgrace. DOE's intention to shirk its responsibility with a low-profile language change/PR is an attempt to deceive the public. The responsibility of the federal government to clean up the toxic mess it created has been adjudicated. The clean-up cost holds the Feds accountable to Americans for past errors of judgment when the Hanford nuclear waste site was created. The cost for these past actions and the level of disregard and ignorance - or intentional harm - the Federal government perpetrated is high, because their actions were callous if not criminal with the dumping of highly toxic waste - contained or otherwise - at Hanford.

Renaming highly toxic waste to avoid following the law that requires a full cleanup is beneath any acceptable standard for the actions of a public entity. This administration has made it clear that it prefers the more glamorous and popular military "purchase" rather than the penance of a military weapons cleanup budget line item, but the Hanford issue is not a partisan one. DOE concerns that the cleanup is too expensive are not a legal, rational or moral argument either. Stopping this highly toxic waste from further contaminating ground water - and its spread to the Columbia River which would destroy our region for thousands of years - legally is a federal responsibility. Again, this is not disaster relief for fallout from a forest fire or flood. Hanford is a problem intentionally created by our federal government - and perpetuated even after they knew how toxic these contaminants are - which is why the FULL cost of decontamination and cleanup is the FULL responsibility of the federal government.

I know the Hanford contamination is not news to anyone born after 1950 and some bureaucrats may think we are bored or perhaps numb to the whole thing. Let me assure you that we citizens are quite aware this plume will contaminate our region for 10,000 years if it is not cleaned up properly. We have been too patient, perhaps, but renaming "highly toxic waste" with a sleight of hand so that ineffective half-measures become the legal, though not scientifically sound or moral standard, is hypocritical and deceitful. My hope is that voices like mine will alert others to this PR campaign and its attempts to dumb down Northwesterners. We are well-schooled on the threat the Hanford Toxic Waste poses for our quality of life and for the hundreds of generations after us, not to mention the impact this is having on our Indigenous peoples of the area.

Again, I strongly oppose the DOE's attempts to reclassify highly toxic nuclear waste - knowing it is highly toxic nuclear waste rather than properly containing it - to avoid following the intent and the letter of the law. I am sickened by this transparent attempt to deprive the people of our region of the legally mandated, proper cleanup of the Hanford site. This flagrant abuse of federal power, if successful, will deprive Northwesterners of the

pursuit of happiness and other constitutionally guaranteed rights. It is beneath us as a people and as the resident caretakers of the earth. I care very deeply about our tribal people, our magnificent northwest, wild salmon, the Columbia river, ground water and not only my family but other people's families and I am boiling mad! The DOE has already contaminated our soil and our water. There is no argument that at some point the level of this contamination will not be containable once it has polluted the soil, ground water and entered the Columbia River in higher concentrations. Although there has been some progress, to ask our residents to pay the cost of this Federal blunder or accept a dubious half-measure - after the decades of military, highly toxic contamination dumped here and forced on our region - is more than a decent person should tolerate and certainly beneath us as a people.

Lastly, I must ask what kind of government continues to violate Treaty Rights, NHPA and cleanup standards and is willing to put all living things - human, flora and fauna - at extreme risk, open-eyed and with devious intent? I will not stand aside and sanction the DOE or any government agency to perform such duplicitous behavior and public scamming.

Sincerely,

(b)(6)

(b)(6) @gmail.com

(b)(6)

Ridgefield, WA 98642

Cell: 360 (b)(6)

Office: 360

Ask me about [Woman on the Good Side Consulting!](#)

Bovier, Jan B

From: Charles Divona <nuclearsystems@cox.net>
Sent: Wednesday, August 22, 2018 9:27 AM
To: ^WMACDRAFTWIR
Cc: Simon Russek
Subject: DOE/ORP-2018-01, Draft D
Attachments: RHO-C-43.pdf

Att: Jan Bovier, DOE Office of River Protection

My company, Nuclear Systems Associates, Inc (see nuclearsystems.com) has been very interested in the Hanford waste retrieval systems for many years. In 1980, we completed the conceptual design of a Prototype Waste Retrieval System (PWRS) for Rockwell International who was the DOE contractor for Hanford Operatons. Attached is a brief description of the work performed.

We reviewed the subject document and it appears that the design of the tank grouting system has not yet been performed. We were wondering if the DOE, or its subcontractor would be interested in a proposal for a pre-conceptual design of the tank grouting system for the Area-C tanks? The pre-conceptual design would include as a minimum, a rigorous Function Analysis and a supporting WITNESS analysis.

The most effective method for minimizing the likelihood of overlooking details is a rigorous Function Analysis (FA). This is a method that can identify and justify every step needed to effectively and safely complete the process. In this way all the details are evaluated to assure that the needed components are always available. The complete FA then becomes the basis for the system design and procedures development. It must be understood that for a system containing hazardous materials, where an accident can result in significant personal injury or radiation exposure, the FA must consider conditions during startup, maintenance, normal shutdown, and emergency shutdown. This way no potential problems go undetected and uncontrolled.

As part of the pre-conceptual design Nuclear Systems Associates will develop and execute a Discrete Event Simulation (DES) model of the procedures and equipment operation required to mix, pump and inject grout into the 12 large SST and associated tanks and piping. The DES model will be based on the operating procedures defined in the FA.

The model will use WITNESS, a proven commercial DES software package used to model complex manufacturing and logistic systems worldwide. The primary objective of the Model will be to predict the time required to complete the filling of all tanks and piping with grout. The Model will use defined grout mixing and pumping rates to determine how long the filling of each tank will require. As part of the procedure to fill each tank, the maximum quantity of each continuous grout pour will be simulated, thus requiring multiple grout pours for each tank with defined time intervals between each continuous pour.

A major feature of the DES model will be equipment failures and their impacts on the production schedule. The model will simulate failure of equipment components based on their expected failure rates and repair times. In some instances, based on results from the FA, a failed equipment component may be sacrificed into a tank and then replaced rather than attempting to retract and repair the equipment.

Let us know if this is something you would be interested in. We could then provide you with a priced proposal.

Thank you
Charles Divona
Nuclear Systems Associates, Inc.
949-(b)(6)

Bovier, Jan B

From: (b)(6)@comcast.net>
Sent: Monday, August 20, 2018 1:05 PM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: WIR comments

Comments on **Waste Incidental to Reprocessing (WIR)** decision at the Hanford Nuclear Reservation.

August 20, 2018

The proposal to reclassify high level nuclear wastes in the single shell tanks at Hanford so 4% of the waste can be capped and grouted should be rejected. Instead of continuing with this deceptive scheme, USDOE should clean up the spills around the tanks and extract the remaining residue for glassification and burial in deep underground storage, as required by federal law.

In DOE's own modeling assessment in the TCWMEIS, they admitted that if the waste remains in the tanks and the soil, it would continue to migrate and contaminate the groundwater to levels far above drinking water standards for thousands of years. To now try to reclassify the wastes to get around this responsibility is disingenuous and irresponsible. The state of Washington should insist on full cleanup, per the Tri-Party Agreement and their responsibility to the citizens of Washington and Oregon to leave this area inhabitable for future generations.

This ill-advised idea was proposed in 2004 and specifically prohibited in the 2005 NDAA and to keep bringing it up is a waste of taxpayers' resources and precious time to prevent accidents and contamination. Washington should fulfill its responsibility and reject this proposal, and DOE should tackle the immense job of removing, treating and disposing of this waste without further delay.

(b)(6)

Lake Oswego, OR

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Sunday, August 19, 2018 8:12 AM
To: ^WMACDRAFTWIR
Subject: I oppose re-classification of Hanford nuclear waste

- *This proposal would shatter the decades-long consensus that the path for Hanford's tank waste is vitrification - mixing the wastes with glass and disposition in a deep, geologic repository, which is the only effective way to treat radioactive waste.*
- *The proposal also violates the Nuclear Waste Policy Act. DOE does not have authority to re-label these wastes.*
- *Abandoning long-lived nuclear wastes in the tanks at the volumes and concentrations that DOE is proposing also violates other legal requirements for the disposal of plutonium.*
- *Hanford is not a qualified or appropriate place to dispose of high-level nuclear waste.*

Thank you for considering my comments.

(b)(6)

College Place WA 99324

Walla Walla County

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Wednesday, July 25, 2018 4:42 PM
To: ^WMACDRAFTWIR; Office at Heart of America; (b)(6)com
Subject: USDOE Hanford Cleanup Comments/ Regarding leaving high level radioactive waste @ C Tank farm

To USDOE,

Recently it has come to my attention that there is a proposal to leave high level radioactive waste at Hanford in the C Tank farms, by reclassifying it so that is acceptable to leave in place.

This is ridiculous! This cannot happen. Please do not do the disservice to this and coming generations in this way. Every effort must be taken to take this highly toxic poison away from the Columbia River. It must be removed to deep geological repository. This is necessary for the protection of all.

Reclassifying this as waste incidental to reprocessing and leaving it in place is not acceptable. This waste is poison for thousands of years. It must be moved away from the vital Columbia River, which is the source of Life for all generations.

Thank you,

(b)(6)

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Friday, July 20, 2018 9:30 PM
To: ^WMACDRAFTWIR
Subject: Hanford Nuclear Clean Up
Attachments: pc167 18-07 US DOE - Clean Up Hanford Nuclear.docx

Attached is the comment of the New Progressive Alliance concerning Hanford Nuclear Clean Up. If there are any questions, please let us know.

Sincerely,

Ed Griffith

New Progressive Alliance

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Thursday, July 19, 2018 7:50 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Don't rename Hi-Level Nuclear Waste

Renaming wastes doesn't change the need to remove tank wastes and contaminated soil. Please consider the cumulative impacts from all wastes that have leaked from tanks, were discharged into the soil from tanks, and that are left in the bottom of tanks in comparison to federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards.

(b)(6)

Bovier, Jan B

From: (b)(6)@gmail.com
Sent: Wednesday, July 18, 2018 9:30 PM
To: ^WMACDRAFTWIR
Subject: DO NOT RECLASSIFY WASTE AT HANFORD

Hello,

It has come to my attention the DOE is looking to reclassify the waste at the Hanford Site as "incidental". This is clearly an attempt to balk on obligations to effectively rid the site of nuclear waste. This will be detrimental to the region for years to come. Do the right thing and take the time needed to actually clean this nuclear waste site the right way.

Thanks

(b)(6)

Sent from my iPhone

Bovier, Jan B

From: (b)(6)@((b)(6))com>
Sent: Wednesday, July 18, 2018 9:16 AM
To: ^WMACDRAFTWIR
Subject: WIR for WMAC

Nobody should live in fear of what is in their backyard. The wastes at Area C threaten us, our children, and many generations down the line. They also are in violation of the legal treaty rights of nearby communities. Thus, this proposal is dangerous and short-sighted. We, the residents of the region, deserve a plan that will remove all dangerous wastes and restore the area as a safe place to live, farm, and fish. Leaving the waste in the ground and grouting it only pushes the can further down the road, and risks the health and livelihoods of the people in the Pacific Northwest. I absolutely oppose this plan and vow to fight it.

best,

(b)(6)
713 (b)(6)
(b)(6)
Portland OR 97213

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Monday, July 16, 2018 11:39 AM
To: ^WMACDRAFTWIR
Cc: Office at Heart of America
Subject: Hanford High Level Waste reclassification

To the USDOE:

Renaming wastes doesn't change the need to remove tank wastes and contaminated soil. If tank wastes remain in tanks and in the soil, they will migrate and contaminate the groundwater far above drinking water standards over and over again for ten thousand years. Renaming the wastes does not change the impact nor excuse the Federal government from a complete and safe cleanup and storage of nuclear wastes.

Cumulative impacts from all wastes which have leaked from tanks over decades, accidentally discharged into the soil from tanks, and which are left in the bottom of tanks must be cleaned up to the highest federal and state health risk based cleanup standards. Those cumulative impacts have already been projected to violate groundwater and cancer risk cleanup standards. Leaving high level wastes behind, no matter how difficult it is to remove, cannot make our long term environmental hazards go away by renaming waste as low level.

All current high level wastes must be stored securely using the highest level technology available. Federal law says High Level Nuclear Wastes should be permanently disposed in a deep underground repository.

Thank you

(b)(6)
Seattle, WA 98115

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Monday, July 16, 2018 8:38 AM
To: ^WMACDRAFTWIR
Subject: Renaming high level nuclear waste.

This is not acceptable. Hanford must be cleaned up. Single wall tanks are not enough. Nuclear waste will get into the groundwater and then on to the Columbia River.

(b)(6)
(b)(6) Olympia, WA 98506

Bovier, Jan B

From: (b)(6)@gmail.com>
Sent: Sunday, July 15, 2018 1:07 PM
To: ^WMACDRAFTWIR
Subject: Clean up the mess.

Nuclear fission has, from the get-go, been a horrific fiasco, based on the opposite of the truth.

Legal commitments for clean-ups go unfulfilled, while dangerous radioactive waste creeps into our environment.

Native American sensibility requires looking forward for 7 generations, but nuclear waste will continue to damage for 100 generations.

Governor Inslee, insist that Washington State DOE hold the line and require real clean-up, rather than spuriously avoiding it with dangerously negligent "re-categorizing."

Bovier, Jan B

From: Dan Serres <dan@columbiariverkeeper.org>
Sent: Thursday, July 12, 2018 3:46 PM
To: Vance, Brian T; ^WMACDRAFTWIR; Bohrmann, Dieter G
Subject: Letter Regarding Draft WIR Evaluation
Attachments: 2018 07.12 Hanford WIR Letter Final.pdf

Dear Mr. Vance and Mr. Bohrmann,

Please see the attached letter from Columbia Riverkeeper, Natural Resources Defense Council, Washington Physicians for Social Responsibility, Heart of America Northwest, and Hanford Challenge regarding the Draft WIR Evaluation.

Thank you,

Dan Serres,

Conservation Director
Columbia Riverkeeper

--

Dan Serres | Conservation Director
Columbia Riverkeeper | 1125 SE Madison Suite 103A Portland 97214
503.890.2441 | dan@columbiariverkeeper.org

[River Currents 2018 Issue 2 Newsletter—Read it Now](#)

The Climate Issue: Why Does Climate Change Matter to the Columbia?; How We Fight—and Win; Talking to Kids about Climate Change; and more

Bovier, Jan B

From: NILES Ken * ODOE <Ken.Niles@oregon.gov>
Sent: Monday, June 25, 2018 10:57 AM
To: ^WMACDRAFTWIR; Vance, Brian T
Cc: Call, Paula K
Subject: Comment Extension Request
Attachments: WIR Extension Request - Oregon.pdf

Hello Brian,

Attached is a request to extend the comment deadline for the Waste Management Area C WIR.



Ken Niles
Assistant Director for Nuclear Safety
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
Phone: 503-378-4906
Cell: 503-(b)(6)
ken.niles@oregon.gov
Oregon.gov/energy



OREGON
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Bovier, Jan B

From: (b)(6)@aol.com>
Sent: Friday, June 22, 2018 1:22 PM
To: ^WMACDRAFTWIR
Subject: Fwd: HANFORD LIQUID WASTE DISPOSAL

Hi WMACDRAFTWIR@rl.gov.

Wondering if you received my Email comments? Hope the length didn't spoil my concerns for liquid waste retrieval problems. I have lots of history on Hanford Tank Waste Retrieval. I was one of the first two engineers asked to empty 99.9% of a tank (mine SY101?, the other an AW). Please reply to me.

Thanks, (b)(6)

From: (b)(6)
To: WMACDRAFTWIR@rl.gov
Cc: dreeploeg@tridec.org, acary@tricityherald.com
Sent: 6/18/2018 12:47:08 AM Pacific Standard Time
Subject: HANFORD LIQUID WASTE DISPOSAL

To Groups Concerned With Hanford Liquid Waste Disposal,

The purpose of this Email is to respond to the request for Public comments in 6/12/18 Tri City Herald. The comments were to address the problem of disposing of radioactive liquid wastes now unsafely being stored at the Hanford Site.

My concerns now, after being retired from 31 years of working at the Hanford Site, pertain to the prolonged Site Cleanup effort. Although the easier, low level retrievals have progressed, the high level liquid waste removal attempts continue in a very high risk, very costly and long duration manner. Back in 1990, the request was crucial to expeditiously remove all liquid wastes from high risk tanks (some tanks leaking). One of these times during more decades of emptying tanks, radioactive waste will show up in our Groundwater or the Columbia River! -- Then What?

First attempts to retrieve liquid wastes from tanks, basins, cribs, etc. required that 99.9% of waste be removed. It was obvious that TPA requirement was not achievable, so engineers proposed an alternate approach using proven Hanford operational procedures, equipment and facilities. Those past methods had been used for several decades of successful production operations. Then it was guessed that all high risk liquid tank waste could be safely removed and disposed of at cost of \$10 M and within a 10 years period. Although generally accepted (Doc Hastings and federal DOE),

that approach was rejected since the solid waste left in tank would not meet the unreal 99.9% TPA requirement.

Excerpts from several of my past Budget comment transmittals follows. Notice how many years ago some of the comments have been expressed.

2017 BUDGET TO FINISH HANFORD CLEANUP

My concerns with continual increases in cost and schedule towards completion of Hanford Cleanup were renewed by the 6/14/15, TriCity Herald article, "Spending Proposal Lacking". Action on the FY 2017 Budget requires a realistic PLAN for completing Cleanup in a Safe, Timely and Cost Effective way. That PLAN will be the basis for preparing an optimum Spending Proposal that Congress can agree with, approve and fund. That Spending Proposal must be safe for workers, utilize proven methods and equipment, and meet realistic radiological levels.

The following scope of action is suggested to establish the basis for a realistic FY 2017 Budget.

1. An Organized "in the know" Group (Stakeholders) get together to review the Stringent Requirements of the Tri Party Agreement.
2. That Organized Group evaluates the TPA requirements against "lessons learned" from past 25 years of Cleanup.
3. Organized Group suggests updating existing requirements, and prepares realistic PLAN to show Time, Risk and Cost savings.
4. Organized Group recommends updated requirements to State and National Energy/Environment groups, and prepares Proposal.
5. Submit approved Spending Proposal for Congress approval and obtain required FY 2016-17 funding towards getting Cleanup Done!
6. Retrieve high risk liquid/slurry wastes from tanks, basins, cribs, etc. with past proven Hanford methods.
7. Clean Radioactivity from 324 Bldg. and other structures/non-retrievable solid wastes as required, then isolate and cocoon like reactors (as monuments?).
8. Complete Cleanup per realistic FY 2017 Spending Proposal using Cleanup Funding, separate from the Waste Vitrification Plant.

Congress and our Country wants HANFORD to get this Cleanup done, then help other nuclear sites cleanup in similar way. Maybe

then we can get new DOE contracts here to develop other types of clean energy at Hanford/PNNL, where nuclear work is welcomed!

Thank You for Listening, (b)(6) 509-(b)(6)

=====

Hi to Distribution,

I am sending my past concerns with the prolonged Hanford Cleanup in response to the Trench Contamination article in Sunday's Tri city Herald. That 5/6/18/ writeup gave an extensive description of the collapsing trenches problem. It seems that in-place isolation of high level waste as done with Reactor Cacooning is applicable. All waste forms need liquids removed, then remaining solids compacted and isolated. The Tri Party Agreement (TPA) must be revisited in trying to simplify the approach for large waste forms in facilities, basins, cribs, tanks,m etc,,.

This Email responds to the Tri City Herald (TCH) article of 2/3/2017, regarding Pres. Trump's EPA Official wanting faster Hanford Cleanup.

It also applies to TCH news articles about destruction of the radioactively contaminated Hanford Project 324 Bldg. My past Hanford Cleanup comments apply to isolation of similar large contaminated structures, and also to retrieval of radioactive solid and liquid volumes. Comments also cover possible Plan for completing Hanford Cleanup.

I am mainly concerned with completion of Hanford Cleanup, and specifically about retrieval of radioactive contents from Hanford's Waste Tanks. Risks with delaying retrieval of tank liquid waste, (some of which was already leaking), were identified back about 1990! Now that some of these same risks still exist concerns me, especially as years pass on. Currently, my main concern is for the health of tank waste retrieval workers, and the prolonged progress of Waste Treatment Plant/ New Facilities construction.

After 25+ years of Hanford Cleanup, we still have some of more difficult and higher risk radiological conditions to isolate. Originally we were told to get tank waste retrieved as high priority to assure no contamination to the Groundwater, Columbia River, and Environment. We also had to minimize risk to the Workers' Health, the Public and the Columbia Corridor. So far, we have been very fortunate to dodge most of the Risks.

For years I have sent comments to Hanford contractors, Local, State and Federal DOE and political organizations about getting this prolonged CLEANUP DONE! (maybe in more optimum way?). Those Thought you might be interested in my past Cleanup comments, and more recent concerns about what President Trump would think of our Hanford Cleanup effort? Probably a far cry compared to His way of getting things done. I get the feeling that our new President will not be too impressed with our overall cleanup progress, much more its economical and optimization aspects!

I think back over all the years of Time, Spending, Risk, and added Waste Generation during Hanford Cleanup. Wonder what Pres. Trump would think of the "Alternate Approach" features which have been suggested over the years? That cleanup approach has been repeatedly rejected by the authors of the Tri Party Agreement (TPA), which established very stringent requirements (now found to be unreasonable!).

The TPA should be revisited by an "in-the-know" group to arrive at a more realistic approach **to complete Cleanup**. President Trump would surely consider a simpler, more cost effective and quicker cleanup approach that's still within all acceptable risk limits. It could be that a simpler and more economical completion of construction/use of the Vitrification Plant would also result!

Anyway I'm sending one of my more recent comments for completing Hanford Cleanup as follows:

"My concerns with continual increases in cost and schedule towards completion of Hanford Cleanup are renewed with each annual Hanford Budget Meeting. Action on the FY 2018 Budget requires a Realistic PLAN for completing Cleanup in a Safe, Timely and Cost Effective way. That PLAN will be basis for an optimum Spending Proposal that Congress can approve/fund. The Spending Proposal must be safe for workers, utilize proven methods and equipment, and meet realistic radiological levels.

My recommended action for generating that Realistic PLAN is to:

1. Get all authors of the Tri Party Agreement (TPA) together and revisit, evaluate and update the existing very stringent TPA requirements

2. PLAN how to meet those updated and more realistic Requirements, sell the Proposal to Congress, and obtain Time/Funding to get the Hanford Cleanup Done! SAVE TIME, RISK, AND COST!
3. Retrieve high risk liquid wastes from tanks, basins, cribs, etc. with past proven Hanford methods, (i.e. sluicing and evaporating).
4. Dispose of structures/solid waste volumes in place – some might be Monuments for our Manhattan Nuclear Historical Park?
5. Clean the 324 Bldg. and non-retrievable solid waste storage sites of radioactivity as much as possible, then isolate and caccoon similar to reactors.
6. Complete Cleanup this way with funds separate from Waste Vitrification Plant, with its problems, and now two separate waste streams?

For years now, Hanford Cleanup has struggled to meet very stringent Tri Party Agreement (TPA) requirements, i.e. to restore the Site to its original natural state. A PLAN is now needed to **complete Cleanup in a realistic manner!** The present approach requires retrieval, handling, re-identification, and repackaging of previously disposed waste. These operations result in generating more waste while exposing workers to more danger, radiation and inhalation exposure.

Its time NOW, for all original authors of TPA to get together and revisit those tough requirements. Applying “lessons learned” and characterizing waste retrieved from original storage and disposal locations can show what true and realistic extent of Cleanup is required. **That would be a good unanimous basis for The PLAN!**

Congress and our Country wants HANFORD to get this Cleanup done in a safe, timely and cost effective way, then help other nuclear sites cleanup in similar ways. Surely we can get more new DOE contracts here to develop other types of clean energy at Hanford/PNNL, where nuclear work is welcomed!”

(b)(6) Ph: 509-(b)(6)

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From (b)(6)@aol.com
To: stephani.swanberg@tricityregional.chamber

Sent: 6/6/2018 4:19:14 PM Pacific Standard Time
Subject: (b)(6) LATE MYTRI FUTURE NEEDS

Hi
Stephanie,

May 22, 2018

Sorry I'm late with my comments on development needs/ideas for future growth of

Tri Cities and vicinity. The MyTri Group had asked for Public suggestions and mine mostly involve with completing Hanford Cleanup and getting some new Energy Development work!

Maybe you can use this as input in some way. My visions for our Tri Cities vicinity and future growth. We have lived here since 1948, hence seen it grow and experience what seems important to the Agricultural, Hanford Site, and Business folks.

At end of Long Term Stewardship article, I have added a couple of excerpts from my past comments on completing Hanford Cleanup so we can do bigger and better things at Hanford and PNNL.

1. The local Cities need to work together and share capabilities so not duplicating services and competing against each other.
2. Folks here come from all over and generally like it and stay, or come back to live in retirement.
3. Folks here are generally laid back, enjoy high class activities, but are not too uppity in their general style of living.
4. Get our Hanford Cleanup done to save lots of Cost, Time and Risk to rivers,
5. workers, and the environment. Use our workforce for DOE Development work.
6. DOE, Wash. State, and Hanford Contractors need to optimize approaches for Retrieving, Packaging, and Isolating radioactive waste.
7. The Cleaned Site needs to be used as our Nuclear Park, for Commercial Industry, and for Public use and Recreation.
8. DOE can work with PNNL to develop new Energy approaches and then manufacture them right on the Hanford Site..
9. Traffic Flow needs are especially important to laid-back communities which grow and change so fast.
10. The Tri Cities folks must be made to be very vigilant to minimize terrorism, and keep Our God's Country a healthy and safe place for raising families.

11. I have write-up about Long Term Use of Cleaned up Hanford Site which follows.

Feb 3, 2014

**HANFORD
LONG TERM
STEWARDSHIP**

Long term stewardship of the Hanford Site must ensure its overall Manhattan Project History is preserved as facilities are demolished, secured and further utilized.

Optimum use of this vast area must be accomplished without endangering our water, the public and the environment. Use of areas/ facilities needs planning to ensure beneficial for the Tri City Area, Columbia Basin, Washington State, and our National Government.

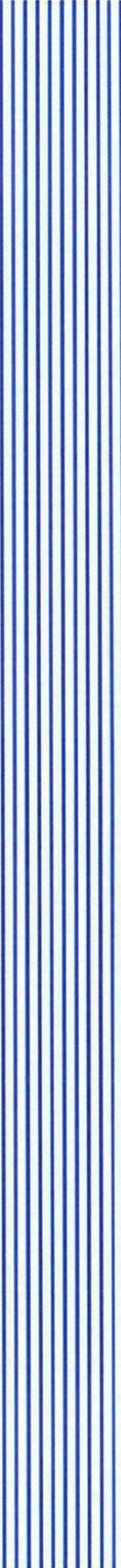
The total Cleaned-Up Hanford Site would consist of clean roads to make all lands freely accessible to the Public. The



B Reactor
Museum,
CREHST, the
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Monuments, FFTF
and other
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facilities could
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Park".

B Reactor
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for tourist
understanding
about the Hanford
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operation.
Historical remains
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display various
aspects of the
reactor's operation
and production of
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Excellent verbal
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The Reach
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surrounding areas. It is apparent there are little adverse affects on the vegetation and wildlife activity on this reserve-type area.

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provided materials
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around the world.

Cleanup

Monuments would
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stations providing
description and
history of that
particular site --
all sites combined
would help tell the
Hanford
Production Story
side of the
Manhattan
Project! The
preserved history
would span from
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to present power
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technology.

Tourists could
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Someday, combining the B Reactor Museum and Hanford Reach National Monument efforts, with CREHST and the upcoming "Hanford Cleanup Monuments" into one overall Hanford Nuclear National Park could result in great savings for DOE. Recreational areas could be established and clearly marked as bike paths, hiking trails, fishing, boating, etc. activities. Commercial businesses and fabricators could build facilities for ready access to roads, rail, and water transport needs. Even a public airstrip may be possible for commute/transport purposes. DOE may award new Nuclear Projects to construct at Hanford where readily accepted by Public, and near Battelle's very supportive Pacific Northwest

Labs. Almost any other applications could utilize the large cleaned-up site and still naturally clean areas of land.

Let's not lose this chance for a National Monument to preserve the atomic age history at Hanford.

Nuclear Energy is good – we just need to deal realistically with requirements for processing the radioactive waste products.

(b)(6)

Ph: (b)(6)

To Distribution,

In response to this morning's 6/14/15 Tri City Herald article, "Spending Proposal Lacking", my comments are as follows:

1. Get TPA authors to revisit and update the stringent requirements, PLAN how to meet more realistic Requirements, Sell it to Congress, and get the Hanford Cleanup Done! SAVE MUCH TIME, RISK, AND MONEY!

2. Clean the 324 Bldg of contamination and radiation as much as possible, caccoon it like reactors, and make it a monument of Hanford Historical Park. Special remote handling work was important in the development of nuclear reactor fuels and materials. (Radiometallurgy Facility Bldg 327 was also!).

3. Retrieve liquid wastes from tanks, basins, cribs, etc by old proven Hanford methods, and dispose of

structures and solid contents in place as Cleanup Monuments.

4. For Congress to BUY Our PLAN, it must be: practical to perform; timely; low risk; safe for workers; cost effective; proven methods; and meet realistic radiological environment and public safety levels.

5. Congress and our country wants HANFORD to get this Cleanup done, help other nuclear sites cleanup in same way, and get on to developing new types of clean energy here at our welcoming site.

My following correspondences show as recent Emails, although they contain comments and suggestions I have submitted over past 20 years. Distributions varied but included: Hanford Cleanup parties at Local, State, and National DOE levels; Hanford Contractors; Regional Development Groups; and local DOE RL/River Protection organizations.

Thank You, (b)(6) (b)(6) 509-(b)(6)

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12/23/2014

From: (b)(6)@aol.com

To: gpetersen@tridec.org, sherlyn.berger@mail.house.gov

Sent: 12/23/2014 12:20:50 A.M. Pacific Daylight Time

Subj: Fwd: Hanford Future Utilization

Hi to Doc and Gary, Just wanted you to know that I sent copy of this Email to Governor Inslee, Atty Gen Ferguson and Senator Cantwell. Also visited with Annette Cary on phone, then also sent her copy for information. Mainly pointing out authors of TPA must get together, revisit/revise the TPA requirements to simplify the tank waste removal requirements Then everyone work together and get the job done. There

are much better projects to start work on, rather than fooling around with this garbage detail for a decade or so! Lets have a safe, realstic agreed-on plan so Cleanup can be completed now! (b)(6)

(b)(6)

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10/11/

2014

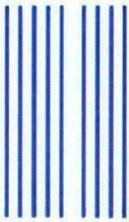
From: (b)(6)@aol.com
To: gpetersen@tridec.org, [sherlyn.be
rger@mail.house.gov](mailto:sherlyn.be
rger@mail.house.gov)
Sent: 10/11/2014 2:50:06 A.M.
Pacific Daylight Time
Subj: Fwd: Hanford Future Utilization

Hi Gary & Doc, Its time to resubmit my two following Emails transmitted 4/16/14 and 4/17/14, for serious consideration by DOE and Wash.St.DOE. From recent Tri City Herald articles, these two responsible Hanford Cleanup organizations can't figure out HOW TO or AGREE ON way to retrieve tank waste to meet Safety,

Cost and Schedule requirements of the TPA. **Lets do it like we've been telling them for last 15-20 years!**

Problems with decay heat, vapors, worker risk, technology development, etc. from retrieval of exposed solid waste can be resolved using the simpler Alternate Approach. Also, the disposal of tank waste slurries at Vitrification Plant would be greatly simplified if just the one single high level waste stream were accommodated.

Let's revisit and update the TPA requirements and schedule to safely get this cleanup done, **so Hanford can get on to some great new Reactor Projects!** Maybe with their backs to the wall, they will reconsider?



Thanks for your
consideration,

(b)(6)

(b)(6)

Bovier, Jan B

From: (b)(6)@charter.net>
Sent: Friday, June 22, 2018 10:37 AM
To: ^WMACDRAFTWIR
Cc: (b)(6)@charter.net
Subject: Questions on the WIR Process

Mr. Bovier,

Re: the "DRAFT WASTE INCIDENTAL TO REPROCESSING EVALUATION FOR CLOSURE OF C TANK FARM," could you please provide a response to the following questions:

1. Is the actual tank structure considered to be an integral requirement in maintaining long-term isolation of the wastes remaining in the tank, or is the grout that will be injected into the tank the primary component in assuring long-term waste isolation? This concerns the current and future state of degradation of these single-shell tanks, and the possibility of catastrophic damage to the tanks from future earthquakes/floods, etc.
2. Will the remaining wastes in the tanks to be grouted be mixed while being grouted so that a more homogeneous mix of waste and grout be assured, and no concentration of wastes immediately adjacent to the tank walls or tank bottom will occur that could cause further tank wall damage/breach?
3. Will groundwater sampling wells be positioned around the tanks and will they be frequently monitored to detect any waste leakage for long-term assurance of integrity of this solution to isolate these remaining wastes?

Thank you.

(b)(6)
Email: (b)(6)@charter.net

Bovier, Jan B

From: Gerry Pollet <gerry@hoanw.org>
Sent: Tuesday, June 19, 2018 1:56 PM
To: ^WMACDRAFTWIR
Cc: Lyon, Jeffery; Bradbury, Randy (ECY); Wireman, Ginger; Office at Heart of America; Derek Martin; Angelo Marchesini; Helen Wheatley; Office at Heart of America
Subject: Draft WIR: questions from 6-18 meeting and request for meetings
Attachments: HoANW request for meetings and submitted questions from 6-18-18.docx

TO: WMACDraftWIR@RL.gov

CC: Ecology

FR: Gerry Pollet, Heart of America Northwest

Gerry@hoanw.org; office@hoanw.org

RE: 1- Request for public meetings for comment on Draft WIR Evaluation and proposed decision
2- Questions requested to be submitted to USDOE at June 18, 2018 public meeting

1. Heart of America Northwest is the region's largest citizens group working to educate and involve the public in Hanford Cleanup decisions with thousands of members in Washington and Oregon. Hanford cleanup decisions, current contamination and future potential risks have serious potential impacts on our members and their interests, whether they live in Spokane, Seattle, downriver in Hood River or Vancouver, or Portland.

USDOE's proposed WIR decision and related decisions for Waste Management Area C are of the highest public interest and concern. The proposal to reclassify tank waste has previously been covered as front page and leading news stories in media across the region, as well as being of the utmost concern to the congressional delegations of Washington and Oregon.

The reclassification of C Farm Single Shell Tank residues (4% of prior tank volume) would clearly be a precedent for reclassifying soils and waste residues in other tank farms. Further, USDOE is clearly seeking to change the decision issued on the Tank Closure Waste Management EIS to adopt a preferred alternative (2B) which called for retrieval of 99% of tank wastes, prior to determining if USDOE has reached the limits of practical retrieval and determining how to "close" tank farms. Thousands of people attended hearings or submitted comments on the Tank Closure Waste Management EIS.

USDOE has held a single public workshop on the proposed WIR decision. This was held as a day time, workday meeting in Richland. It was not accessible for participation to either people outside Richland nor to the average concerned citizen. Furthermore, USDOE only issued notice via email a few days prior.

Heart of America Northwest therefore requests two public meetings in Seattle and Portland to be held with 30-45 days of notice after location and time are determined. We would collaborate in providing notice (if we have adequate notice) and with location, logistics and how to effectively plan to present essential information to the public in a compressed time. We believe the meetings should enable public comment to be taken following opening presentations on the proposal and questions, including a role for Washington Ecology and the State of Oregon.

2- Questions Regarding soil and a soil WIR which were not answered and which we were requested to submit in writing:

- What was reclassified in the soil decision? Please link the documents.
- Please identify other proposed related decisions involving reclassifying contaminated soils, residues in tanks, or closure with soils in place. Please link all documents related to such proposed or prior actions relating to C Farm in one location for C Farm decisions.
- If citation process was used, what is basis for citation since not equipment contaminated incidental to work?
- What rationale differentiates newly released tank wastes, e.g., during a transfer, from prior contamination in regard to utilizing a WIR determination by citation or otherwise?

Gerry Pollet, JD;
Executive Director,
Heart of America Northwest
"The Public's Voice for Hanford Clean-Up"
(206)382-1014
gerry@hoanw.org

Bovier, Jan B

From: (b)(6)@saol.us>
Sent: Tuesday, June 19, 2018 1:00 PM
To: ^WMACDRAFTWIR
Cc: info@hanfordchallenge.org
Subject: Please hold regional public meetings on the Draft WIR evaluation

To whom it may concern. Please hold regional public meetings on the Draft WIR evaluation.

This issue is far to serious to be made behind closed doors with no public input.

(b)(6)
Seattle, WA

Bovier, Jan B

From: (b)(6)@aol.com>
Sent: Monday, June 18, 2018 12:47 AM
To: ^WMACDRAFTWIR
Cc: dleeploeg@tridec.org; acary@tricityherald.com
Subject: HANFORD LIQUID WASTE DISPOSAL

To Groups Concerned With Hanford Liquid Waste Disposal,

The purpose of this Email is to respond to the request for Public comments in 6/12/18 Tri City Herald. The comments were to address the problem of disposing of radioactive liquid wastes now unsafely being stored at the Hanford Site.

My concerns now, after being retired from 31 years of working at the Hanford Site, pertain to the prolonged Site Cleanup effort. Although the easier, low level retrievals have progressed, the high level liquid waste removal attempts continue in a very high risk, very costly and long duration manner. Back in 1990, the request was crucial to expeditiously remove all liquid wastes from high risk tanks (some tanks leaking). One of these times during more decades of emptying tanks, radioactive waste will show up in our Groundwater or the Columbia River! -- Then What?

First attempts to retrieve liquid wastes from tanks, basins, cribs, etc. required that 99.9% of waste be removed. It was obvious that TPA requirement was not achievable, so engineers proposed an alternate approach using proven Hanford operational procedures, equipment and facilities. Those past methods had been used for several decades of successful production operations. Then it was guessed that all high risk liquid tank waste could be safely removed and disposed of at cost of \$10 M and within a 10 years period. Although generally accepted (Doc Hastings and federal DOE), that approach was rejected since the solid waste left in tank would not meet the unreal 99.9% TPA requirement.

Excerpts from several of my past Budget comment transmittals follows. Notice how many years ago some of the comments have been expressed.

2017 BUDGET TO FINISH HANFORD CLEANUP

My concerns with continual increases in cost and schedule towards completion of Hanford Cleanup were renewed by the 6/14/15, TriCity Herald article, "Spending Proposal Lacking". Action on the FY 2017 Budget requires a realistic PLAN for completing Cleanup in a Safe, Timely and Cost Effective way. That PLAN will be the basis for preparing an

optimum Spending Proposal that Congress can agree with, approve and fund. That Spending Proposal must be safe for workers, utilize proven methods and equipment, and meet realistic radiological levels.

The following scope of action is suggested to establish the basis for a realistic FY 2017 Budget.

1. An Organized "in the know" Group (Stakeholders) get together to review the Stringent Requirements of the Tri Party Agreement.
2. That Organized Group evaluates the TPA requirements against "lessons learned" from past 25 years of Cleanup.
3. Organized Group suggests updating existing requirements, and prepares realistic PLAN to show Time, Risk and Cost savings.
4. Organized Group recommends updated requirements to State and National Energy/Environment groups, and prepares Proposal.
5. Submit approved Spending Proposal for Congress approval and obtain required FY 2016-17 funding towards getting Cleanup Done!
6. Retrieve high risk liquid/slurry wastes from tanks, basins, cribs, etc. with past proven Hanford methods.
7. Clean Radioactivity from 324 Bldg. and other structures/non-retrievable solid wastes as required, then isolate and cocoon like reactors (as monuments?).
8. Complete Cleanup per realistic FY 2017 Spending Proposal using Cleanup Funding, separate from the Waste Vitrification Plant.

Congress and our Country wants HANFORD to get this Cleanup done, then help other nuclear sites cleanup in similar way. Maybe then we can get new DOE contracts here to develop other types of clean energy at Hanford/PNNL, where nuclear work is welcomed!

Thank You for Listening, (b)(6) 509-(b)(6)

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Hi to Distribution,

I am sending my past concerns with the prolonged Hanford Cleanup in response to the Trench Contamination article in Sunday's Tri city Herald. That 5/6/18/ writeup gave an extensive description of the collapsing trenches problem. It seems that in-place isolation of high level waste as done with Reactor Cacooning is applicable. All waste forms need liquids removed, then remaining solids compacted and isolated. The Tri Party Agreement (TPA) must be revisited in trying to simplify the approach for large waste forms in facilities, basins, cribs, tanks,m etc.,.

This Email responds to the Tri City Herald (TCH) article of 2/3/2017, regarding Pres. Trump's EPA Official wanting faster Hanford Cleanup.

It also applies to TCH news articles about destruction of the radioactively contaminated Hanford Project 324 Bldg. My past Hanford Cleanup comments apply to isolation of similar large contaminated structures, and also to retrieval of radioactive solid and liquid volumes. Comments also cover possible Plan for completing Hanford Cleanup.

I am mainly concerned with completion of Hanford Cleanup, and specifically about retrieval of radioactive contents from Hanford's Waste Tanks. Risks with delaying retrieval of tank liquid waste, (some of which was already leaking), were identified back about 1990! Now that some of these same risks still exist concerns me, especially as years pass on. Currently, my main concern is for the health of tank waste retrieval workers, and the prolonged progress of Waste Treatment Plant/ New Facilities construction.

After 25+ years of Hanford Cleanup, we still have some of more difficult and higher risk radiological conditions to isolate. Originally we were told to get tank waste retrieved as high priority to assure no contamination to the Groundwater, Columbia River, and Environment. We also had to minimize risk to the Workers' Health, the Public and the Columbia Corridor. So far, we have been very fortunate to dodge most of the Risks.

For years I have sent comments to Hanford contractors, Local, State and Federal DOE and political organizations about getting this prolonged CLEANUP DONE! (maybe in more optimum way?). Those Thought you might be interested in my past Cleanup comments, and more recent concerns about what President Trump would think of our Hanford Cleanup effort? Probably a far cry compared to His way of getting things done. I get the feeling that our new President will not be too impressed with our overall cleanup progress, much more its economical and optimization aspects!

I think back over all the years of Time, Spending, Risk, and added Waste Generation during Hanford Cleanup. Wonder what Pres. Trump would think of the "Alternate Approach" features which have been suggested over the years? That cleanup approach has been repeatedly rejected by the authors of the Tri Party Agreement (TPA), which established very stringent requirements (now found to be unreasonable!).

The TPA should be revisited by an "in-the-know" group to arrive at a more realistic approach **to complete**

Cleanup. President Trump would surely consider a simpler, more cost effective and quicker cleanup approach that's still within all acceptable risk limits. It could be that a simpler and more economical completion of construction/use of the Vitrification Plant would also result!

Anyway I'm sending one of my more recent comments for completing Hanford Cleanup as follows:

"My concerns with continual increases in cost and schedule towards completion of Hanford Cleanup are renewed with each annual Hanford Budget Meeting. Action on the FY 2018 Budget requires a Realistic PLAN for completing Cleanup in a Safe, Timely and Cost Effective way. That PLAN will be basis for an optimum Spending Proposal that Congress can approve/fund. The Spending Proposal must be safe for workers, utilize proven methods and equipment, and meet realistic radiological levels.

My recommended action for generating that Realistic PLAN is to:

1. Get all authors of the Tri Party Agreement (TPA) together and revisit, evaluate and update the existing very stringent TPA requirements
2. PLAN how to meet those updated and more realistic Requirements, sell the Proposal to Congress, and obtain Time/Funding to get the Hanford Cleanup Done! SAVE TIME, RISK, AND COST!
3. Retrieve high risk liquid wastes from tanks, basins, cribs, etc. with past proven Hanford methods, (i.e. sluicing and evaporating).
4. Dispose of structures/solid waste volumes in place – some might be Monuments for our Manhattan Nuclear Historical Park?
5. Clean the 324 Bldg. and non-retrievable solid waste storage sites of radioactivity as much as possible, then isolate and caccoon similar to reactors.
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(b)(6) Ph: 509-(b)(6)

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To: stephani.swanberg@tricityregional.chamber
Sent: 6/6/2018 4:19:14 PM Pacific Standard Time
Subject: (b)(6) LATE MYTRI FUTURE NEEDS

Hi
Stephanie,
May 22, 2018

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At end of Long Term Stewardship article, I have added a couple of excerpts from my past comments on completing Hanford Cleanup so we can do bigger and better things at Hanford and PNNL.

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3. Folks here are generally laid back, enjoy high class activities, but are not too uppity in their general style.of living.

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Feb 3,

2014

**HANFORD
LONG TERM
STEWARDSHIP**

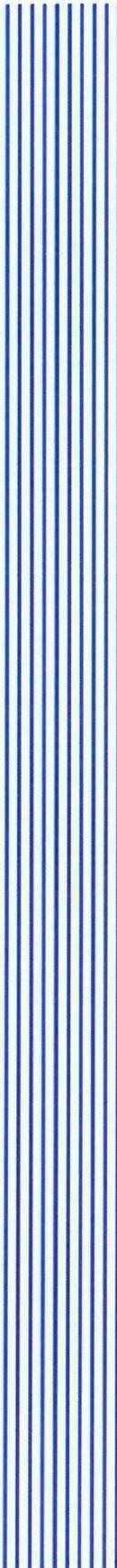
Long term stewardship of the Hanford Site must ensure its overall Manhattan Project History is preserved as facilities are demolished, secured and further utilized. Optimum use of this vast area must be accomplished without endangering our water, the public and the environment. Use of areas/ facilities needs planning to ensure beneficial for the Tri City Area, Columbia Basin, Washington State, and our National Government. The total Cleaned-Up Hanford Site would consist of clean roads to



make all lands freely accessible to the Public. The B Reactor Museum, CREHST, the Hanford Reach, Cleanup Monuments, FFTF and other remaining support facilities could combine to make up a Hanford's "Nuclear National Park". B Reactor Museum has already proved itself invaluable for tourist understanding about the Hanford Production Reactor's operation. Historical remains are preserved to display various aspects of the reactor's operation and production of the Plutonium. Excellent verbal descriptions are provided on walk-thru tours.

The Reach National Monument is unique part of the Hanford Site, still preserved as original condition of the Hanford town, White Bluffs, Columbia River and surrounding areas. It is apparent there are little adverse affects on the vegetation and wildlife activity on this reserve-type area.

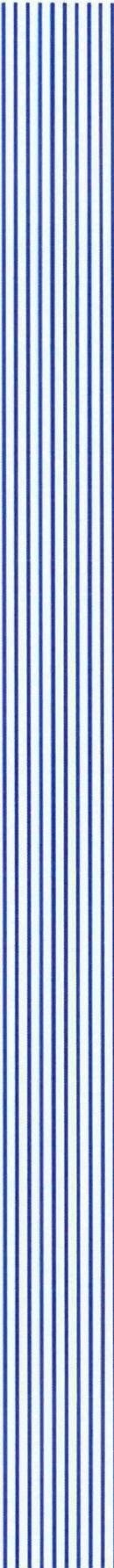
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Displays show and tell the detailed history of personnel, facilities and way of life at Hanford and communities.

FFTF (Fast Flux Test Facility) Project was successful from the first proposals thru design, research & development, construction, plant acceptance testing and initial operation. This facility was self sustaining as evidenced by its good operating record over its past 20 years of operation. The FFTF has already provided materials research to expedite improvement of reactor plants around the world.

Cleanup Monuments would have security fences installed around permanent cleaned-up waste areas and building sites to protect the Public. Each fenced site could have Tourist actuated audio stations providing description and history of that particular site -- all sites combined would help tell the Hanford Production Story side of the Manhattan Project! The preserved history would span from initial Hanford construction days to present power production and medical research technology.



Tourists could visit these Monuments and Museums to view and hear the overall Hanford Atomic History.

Someday, combining the B Reactor Museum and Hanford Reach National Monument efforts, with CREHST and the upcoming “Hanford Cleanup Monuments” into one overall Hanford Nuclear National Park could result in great savings for DOE. Recreational areas could be established and clearly marked as bike paths, hiking trails, fishing, boating, etc. activities. Commercial businesses and fabricators could build facilities for ready access to roads, rail, and water transport needs. Even a public airstrip may be possible for commute/transport purposes. DOE may award new Nuclear Projects to construct at Hanford where readily accepted by Public, and near Battelle’s very supportive Pacific Northwest Labs. Almost any other applications could utilize the large cleaned-up site and still naturally clean areas of land.

Let’s not lose this chance for a National Monument to preserve the

atomic age history at Hanford. Nuclear Energy is good – we just need to deal realistically with requirements for processing the radioactive waste products.

(b)(6) Ph: (b)(6)

(b)(6)

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To Distribution,

In response to this morning's 6/14/15 Tri City Herald article, "Spending Proposal Lacking", my comments are as follows:

1. Get TPA authors to revisit and update the stringent requirements, PLAN how to meet more realistic Requirements, Sell it to Congress, and get the Hanford Cleanup Done! SAVE MUCH TIME, RISK, AND MONEY!
2. Clean the 324 Bldg of contamination and radiation as much as possible, caccoon it like reactors, and make it a monument of Hanford Historical Park. Special remote handling work was important in the development of nuclear reactor fuels and materials. (Radiometallurgy Facility Bldg 327 was also!).
3. Retrieve liquid wastes from tanks, basins, cribs, etc by old proven Hanford methods, and dispose of structures and solid contents in place as Cleanup Monuments.
4. For Congress to BUY Our PLAN, it must be: practical to perform; timely; low risk; safe for workers; cost effective; proven methods; and meet realistic radiological environment and public safety levels.
5. Congress and our country wants HANFORD to get this Cleanup done, help other nuclear sites cleanup in same way, and get on to developing new types of clean energy here at our welcoming site.

My following correspondences show as recent Emails, although they contain comments and suggestions I have submitted over past 20 years. Distributions varied but included: Hanford Cleanup parties at Local, State, and National DOE levels; Hanford Contractors; Regional Development Groups; and local DOE RL/River Protection organizations.

Thank You, (b)(6) 509-(b)(6)

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12/23

/2014

From: (b)(6)@aol.com
To: gpetersen@tridec.org, sherlyn.berger@mail.house.gov
Sent: 12/23/2014 12:20:50 A.M. Pacific Daylight Time
Subj: Fwd: Hanford Future Utilization

Hi to Doc and Gary, Just wanted you to know that I sent copy of this Email to Governor Inslee, Atty Gen Ferguson and Senator Cantwell. Also visited with Annette Cary on phone, then also sent her copy for information. Mainly pointing out authors of TPA must get together, revisit/revise the TPA requirements to simplify the tank waste removal requirements Then everyone work together and get the job done. There are much better projects to start work on, rather than fooling around with this garbage detail for a decade or so! Lets have a safe, realstic agreed-on plan so Cleanup can be completed now! (b)(6)

(b)(6)

=====
=====

10/11/2014

From: (b)(6)
To: gpetersen@tridec.org, (b)(6)
[@mail.house.gov](mailto:sherlyn.berger@mail.house.gov)
Sent: 10/11/2014 2:50:06 A.M. Pacific Daylight Time
Subj: Fwd: Hanford Future Utilization

Hi Gary & Doc, Its time to resubmit my two following Emails transmitted 4/16/14 and 4/17/14, **for serious consideration** by DOE and Wash.St.DOE. From recent Tri City Herald articles, these two responsible Hanford Cleanup organizations can't figure out HOW TO or AGREE ON way to retrieve tank waste to meet Safety, Cost and Schedule requirements of the TPA. **Lets do it like we've been telling them for last 15-20 years!**

Problems with decay heat, vapors, worker risk, technology development, etc. from retrieval of exposed solid waste can be resolved using the simpler Alternate Approach. Also, the disposal of tank waste slurries at Vitrification Plant would be greatly simplified if just the one single high level waste stream were accommodated.

Let's revisit and update the TPA requirements and schedule to safely get this cleanup done, **so Hanford**

**can get on to some great
new Reactor**

Projects! Maybe with their
backs to the wall, they will
reconsider?

Thanks for your
consideration,

(b)(6)

(b)(6)

Bovier, Jan B

From: (b)(6)@hotmail.com>
Sent: Sunday, June 10, 2018 11:42 AM
To: ^WMACDRAFTWIR
Subject: re: Draft Waste Incidental to Reprocessing Evaluation

1. Remove all nuclear waste,
2. Do not allow anymore nuclear waste into the facility,
3. Replace all the single storage tanks,
4. Stop all the nuclear leakage entering the Columbia River

(b)(6) Redmond WA

Bovier, Jan B

From: Tom Carpenter <tomc@hanfordchallenge.org>
Sent: Thursday, June 7, 2018 3:17 PM
To: Vance, Brian T; ^WMACDRAFTWIR
Cc: Bohrmann, Dieter G
Subject: Request for Regional Mtgs and Deadline Extension for Public Comments

Brian Vance, Manager
Office of River Protection
Department of Energy
Richland, Washington 99352

Dear Mr. Vance,

I am writing to request that you take action to provide regional public meetings on the DOE's recently-announced "Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site." Additionally, I request that you extend the deadline for comments to incorporate the anticipated review by the Nuclear Regulatory Commission, in order that the public has the best information available on which to base their comments.

Specifically, the DOE has announced that it intends to hold a one-day informational meeting on June 18, 2018, during the day. This meeting will feature a set of presentations by various Departmental and contractor officials to explain the Draft WIR. However, we learned at the Hanford Advisory Board meetings this past week that DOE does not intend to take public comment at this meeting, and that there will be a five-minute Q&A period at the end of each presentation. The fact that the meeting is being held in the Tri-Cities during working hours means that most members of the interested public will not be able to attend.

The gravity of DOE's proposal to abandon untreated high-level nuclear waste in C Farm Tanks under hundreds of tons of grout is of immense public concern. As you may be aware, the use of the WIR process under DOE Order 435.1 was subject to a legal challenge in 2003, with various entities such as tribal nations and the States of Washington, Oregon, Idaho and New York all weighing in. An attempt to legitimize the WIR process in Congress for use at Hanford failed in 2005, when Congress specifically exempted the State of Washington from Section 3116 of the National Defense Authorization Act.

We therefore request that the DOE schedule a set of public meetings around the region, specifically including Seattle, Portland, the Tri-Cities and Spokane. The meetings should occur in the evenings, be widely publicized, and accept public comments. Good facilitation is a necessary requirement for successful meetings, as well as the use of plain language and plenty of opportunity for Q&A.

We also learned at the HAB meeting that the NRC has been asked to review the DOE's Draft WIR, and that such a review might take as long as nine months. It appears that the NRC review will not be available for review during the pendency of the public comment period, which ends on September 7, 2018. If this is true, then we respectfully request that the public comment period be extended to a point well-beyond the due date of the NRC review's availability.

Based on comments I heard during the HAB meetings, it is clear that other HAB members and organizations share my concern for a more robust and open process.

I look forward to your reply.

Respectfully,

Tom Carpenter, Executive Director
Hanford Challenge
2719 E. Madison Street, Suite 304
Seattle, WA 98112
(206) 292-2850
(206) (b)(6) cell

Bovier, Jan B

From: (b)(6)@yahoo.com>
Sent: Tuesday, June 5, 2018 5:00 PM
To: ^WMACDRAFTWIR
Subject: Comments

**To: Mr. Jay Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 540
MSIN H6-60
Richland, WA 99354**

**RE: Draft Waste Incidental to Reprocessing Evaluation for
Closure of Waste Management Area C at the Hanford Site
now available for review and comment**

The U.S. Department of Energy (DOE) is seeking [public comment](#) on the Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site ([Draft WIR Evaluation](#)).

Here are my comments: I just want to say that I am SO glad these single-wall tanks will finally be dealt with! I hope it is really TRUE! It has been a long time coming. I have been following this issue since the 1980s and have been amazed at how slowly things have progressed. It must be terribly difficult to deal with materials so toxic and long-lasting. And leaking tanks and burping toxic tanks are of concern to everyone! So, please inform me that this is nearing the end of this saga.

In Phoenix we depend almost 100% on nuclear energy for our power for air conditioners to keep us cool in this awful heat (107 degrees today). Hotter days are ahead. But, knowing that makes it all the more important for nuclear waste to be handled and put to bed for the long term and other toxics treated and/or stored safely. A utility in California might send us thousands of tons of nuclear waste to store here. Yikes! I truly hope that does not happen because I have seen how difficult it is for even top-notch industry scientists and engineers to deal with the wastes from so long ago.

I trust that the tanks will finally be dealt with. Sincerely, (b)(6)

P.S. I am not endorsing nuclear power. We have enough sun here to provide electricity for many states! If every home had solar panels we would only need storage during the night!

Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site

WRITTEN COMMENT

THE REDEFINITION OF HIGH LEVEL WASTE IS IRRESPONSIBLE.

Lined area for writing comments.

Name (please print):

(b)(6)

Email:

(b)(6)

@hotmail.com

Not ready to turn your comments in today? Send them to:
Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354
Email: WMACDRAFTWIR@rl.gov
Comments due by Nov. 7, 2018

Address (optional):

**Draft Waste Incidental to Reprocessing Evaluation for
Closure of Waste Management Area C at the Hanford Site**

WRITTEN COMMENT

What standards did you
use to assess whether
or not the sampling in
each tank was representative
of the actual working

Name (please print):

(b)(6)

Email:

(b)(6)

asecret.
com

Not ready to turn your comments in today? Send them to:

Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Email: WMACDRAFTWIR@rl.gov

Comments due by Nov. 7, 2018

Address (optional):

**Draft Waste Incidental to Reprocessing Evaluation for
Closure of Waste Management Area C at the Hanford Site**

WRITTEN COMMENT

10-18-18

NUCLEAR POWER PUSHERS HAVE PUSHED WEAPONS
WASTE UNDER THE FIG LEAF OF DOE TO HIDE
THE COSTS OUT OF THE DOD BUDGET WHICH
ALREADY TAKES ALL FEDERAL TAXES (700 B ANNUAL
BUDGET + 500 B DEBT SERVICE - ALL DUE TO UNCONSTITUTIONAL
WARS).

HIDING COSTS IS AS OBSCENE AS COVERING UP
WASTE WITH GROUT OR LIES ABOUT ITS IDENTITY
OR THE ULTIMATE COST OF SPENDING TRILLIONS MORE
ON NUCLEAR WEAPONS OR CLAIMING NUCLEAR
ENERGY IS CLEAN.

HAS ANY NUCLEAR WASTE SITE EVER BEEN
CLEANED UP ANYWHERE? AT WHAT COSTS? ??

Name (please print):

(b)(6)

Email:

Not ready to turn your comments in today? Send them to:

Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Email: WMACDRAFTWIR@rl.gov

Comments due by Nov. 7, 2018

Address (optional):

(b)(6)

SEATTLE WA 98102

Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site

WRITTEN COMMENT

I attended the public informational session 10-18-2018 in Seattle. My comment is that the US DOE order 435.1 is undemocratic, unwise, short-sighted and dangerous over time, not only for the 4% of high level waste (or waste including high levels, with long half lives, biologically hazardous), but including largely unknown amounts and levels of radioactive waste that has already leaked into the soil. We know that plumes of radioactivity ~~have~~ are leaking into the Columbia River already.

It is difficult for people from contemporary culture to consider beyond two or three generations, no less 2 or 3 hundred. Changing the classification of the waste remaining in the tanks and already in the ground does nothing to decrease their dangers. In fact, it misleads today's public and future generations as to our and their safety.

Finally, ^{please do not make it} ~~making it~~ more difficult to do ^{not-complete} cleanup that would best be accomplished by technologies not yet developed. Let not future generations look back on us as lacking in foresight.

Name (please print):

(b)(6)

Email:

(b)(6)

@gmail.com

Address (optional):

Seattle, WA

Not ready to turn your comments in today? Send them to:

Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Email: WMACDRAFTWIR@rl.gov

Comments due by Nov. 7, 2018

Mr. Jan Borier
US Dept. of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Aug. 23, 2018

Dear Mr. Borier

I am not surprised that USDOE wants to re-name high-level waste as "low-level waste," and then treat 66,000 gallons of it accordingly. Magical thinking of this sort has characterized the Trump administration from the start, and has made it the butt of many jokes. But given the 1.2 million curies of radiation in that waste, this proposed abandonment is NOT a joke. If it is accomplished, it will place an effectively permanent source of radiation (245,000

years is effectively permanent, in that it will likely outlast the human race) in a densely-populated part of America.

There are degrees of good and evil. This is not "regrettable," or "unfortunate," or the result of some mistake in judgment. This is an act of contempt for all of the millions of Americans who will be exposed to nuclear waste, not to mention the rest of humanity. I urge you to reconsider. The technology may soon be available by which that waste may be removed from the tanks and vitrified. Please allow that to happen.

RECEIVED

AUG 28 2018

DOE-ORP/ORPCC

(b)(6)

Seattle, WA 98144

August 30, 2018

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P O Box 340, MSIN H6-60
Richland, WA. 99354

RE: Draft WIR Determination for the Closure of Waste Management Area C

Dear Mr. Bovier,

I urge you to withdraw the U.S. Dept. of Energy's (DOE) Draft WIR Evaluation for the Closure of Waste Management Area C at the Hanford Nuclear Site and to abandon plans to reclassify the high-level wastes that remain in Hanford's C Farm tanks-located close to the Columbia River. The C Farm tank waste contains highly radioactive and chemically dangerous pollution. Some of that waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm tanks includes cesium-137, technetium-99, plutonium-239, strontium-90, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants.

This is NOT low-level waste in any way. Most of these poisons remain toxic for thousands of years, as you know. I ask that you use justification for DOE to classify tank waste based on **its dangerous nature-not because DOE has failed to develop plans appropriate to dispose of these types of wastes.**

My reasons for asking this are:

- 1) Changing a label will lead to cleanup shortcuts. For example, DOE will likely fill tanks with grout, with the result that long-lived, highly radioactive contamination left in Hanford's soil, will threaten current and future generations' health, safety, groundwater resources, as well as the Columbia River, and finally the Native Tribes who live in the area.
- 2) DOE has not met its burden to demonstrate with verifiable assurances that materials, currently classified as high-level waste, meets the criteria for being labelled as low-level waste.
- 3) DOE has failed to address how the waste reclassification will impact pollution that already exists in Hanford's soils and groundwater.

Like many citizens in the State of Washington, I am shocked and insulted by DOE's proposal to re-label this dangerous waste. Such a proposal ignores the facts of this kind of pollution or the health and safety of this region's general public.

The courts and State administration have already ruled that DOE must engage the public in a robust decision making process. To date, only one such meeting has been convened in Richland, WA. While that is understandable for the people who live near Hanford and who will face dangerous threats from the results of this Draft proposal. Yet, it is not adequate to the regions' needs. Public hearings must be conducted outside of the Tri-Cities area. You will find strong interest and concerns regarding this decision exist throughout the State. It is imperative the public have hearings throughout the Pacific NW.

Most important, DOE must abandon its plans to re-label dangerous pollution and present responsible cleanup solutions for such poisonous contaminates. The plan to re-label this pollution is simply irresponsible and it requires action that is based on scientific fact and public involvement – not money and politics. It is to no one's benefit to be short-sighted in the implementation of a plan that will allow safe storage of the highly toxic poisons detailed above.

I appreciate your response to this letter.

Sincerely,

(b)(6)

(b)(6)

Seattle, WA. 98127

(b)(6)@gmail.com

206 (b)(6)

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Re: Draft WIR Determination for the Closure of Waste Management Area C

Dear Mr. Bovier,

I urge you to withdraw the U.S. Department of Energy's (Energy) Draft WIR Evaluation for the Closure of Waste Management Area C at the Hanford Nuclear Site. Energy should abandon its plans to reclassify high-level waste left in Hanford's C Farm tanks—located close to the Columbia River—as “low-level” waste. C Farm tank waste contains highly radioactive, chemically dangerous pollution. Some waste in C Farm tanks is likely transuranic waste, with high concentrations of long-lived, heavy radionuclides. Waste in the C Farm tanks includes technecium-99, plutonium-239, strontium-90, cesium-137, iodine-129, multiple uranium isotopes, and many other toxic and radioactive contaminants. Energy must classify tank waste based on its dangerous nature—not Energy's failure to develop plans to dispose of the waste.

I urge Energy to abandon its short-sighted, dangerous proposal because:

- 1.) Changing a label will lead to cleanup shortcuts. For example, Energy will likely fill tanks with grout. The result: Energy will leave long-lived, highly radioactive contamination in Hanford's soil, threatening future generations' health, safety, groundwater resources, and the Columbia.
- 2.) Energy has not met its burden to demonstrate that material classified as high-level waste meets the criteria for low-level waste.
- 3.) Energy failed to address how the waste reclassification will impact pollution already in Hanford's soils and groundwater.

Like other members of the public, I am outraged by Energy's proposal to re-label dangerous waste near the Columbia. Energy must engage the public in a robust decision-making process. This starts with holding public hearings outside the Tri-Cities. To date, Energy has held one public meeting in Richland, WA. People live downstream from Hanford and face serious threats from Energy's proposal. Energy must schedule hearings throughout the Pacific Northwest. Most of all, Energy must abandon its plans to re-label dangerous pollution and invest in cleanup solutions.

Sincerely,

Name: (b)(6)
Email: (b)(6)@hotmail.com
Address: (b)(6) Vancouver, WA 98682
Phone: 360-(b)(6)

I would like to share these additional concerns as well:

The Cleanup of Hanford is vitally im-
portant to all Oregonians and
Washingtonians - for now and for
future generations.

August 23, 2018

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Mr. Bovier,
The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment. I am requesting that the D.O.E. hold regional public hearings in Seattle, Portland, Richland & Spokane. Hearings should be in the evenings & be well-publicized, should allow for Q & A and accept public comment. This is a critical issue for our state and the public should have opportunity for input.

Thank you,

(b)(6)

(b)(6)

Seattle, WA

RECEIVED
AUG 28 2018
DOE-ORP/ORPCC

(b)(6)

Mr. Jan Bouvier
U.S. Dept. of Energy, Office of
River Protection

P.O. Box 450, MSIN HG-60
Richland, WA 99354.

8-22-18

Seattle WA 98118

Dear Dept. of Energy,

I am writing about the reclassification of Hanford's high level nuclear waste. The effects of reclassification has potential for serious damage to the environment and the people of our State of WA. The waste is high-level and should not be reclassified as Low-level.

Putting the waste in legally-compliant containment which is protective into the future is crucial. We simply must not skimp on this step now & into the future. We need assurance that future residents & farmers will not be faced with radiation & chemical exposure beyond what is clearly determined as safe - using legal standards.

Thank you for your attention to my comments.

Sincerely,

(b)(6)

RECEIVED

AUG 28 2018

DOE-ORP/ORPCC

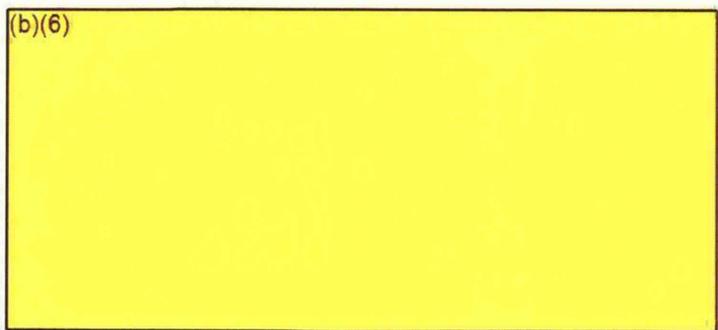
Mr. Jan Bovier
US DOE
Office of River Protection

Dear Mr. Bovier; DOE et al,

I am writing this note to request that DOE NOT reclassify Hanford's high level nuclear waste to low level waste. As a retired engineer, I find this cost saving shortcut to be remarkably short sighted. These high level nuclear wastes must be properly handled and sent to geologically stable long term storage (>100,000 years).

Furthermore, this action should not be taken without public hearings. I look forward to attending one in my area.

(b)(6)



Seattle WA 98118

RECEIVED

AUG 28 2018

DOE-ORP/ORPCC

September 19, 2018

Mr. Jan Bovier
U.S. Department of Energy, Office of River Protection
P.O. Box 450
MSIN H6-60
Richland, WA 99354

Subject: Comments on Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site

Dear Mr. Bovier:

Below are comments regarding the Closure of Waste Management Area C in response to the public comment period scheduled from June 4, 2018 to November 7, 2108.

I would appreciate if the Department of Energy will consider:

1. If you look at Figure ES-2 in the *Performance Assessment for Waste Management Area C* (RPP-ENV-58782) it is clear that WMA-C is a small postage stamp on the face of the Hanford 200 Areas (a few acres versus about 10 square miles. It seems wasteful to perform an assessment of such a small location given the rest of the contamination that already exists in the area and in the abandoned canyon buildings. Why not estimate performance for the whole 200 areas and not keep repeating this very expensive work for postage stamp after postage stamp? The contribution to overall Hanford performance from the empty (or even previously full) C-farm tanks probably doesn't change anything, if you spend money on water intrusion prevention instead of on WTP and instead of on production of the massive amounts of administrative paperwork (no value added) seen to date.
2. The Performance Assessment for Waste Management Area C (RPP-ENV-58782) appears to be silent on the impacts over time of Cs-135 (produced in the Hanford reactors), yet it would be present in spills beneath the tanks, and in planned and unplanned releases, having a much longer half-life than Cs-137.
3. Letter **18-ECD-0055**, *Request for Waiver to Hanford Federal Facility Agreement and Consent Order Waste Retrieval Criteria for Single Shell Tank 241-C-106*, August 15, 2018, indicates that the Washington State Department of Ecology has failed to reply to a request to

declare the tank empty to the best available technology since *October of 2004*. What benefit is there for Ecology to delay for *14 years* to agree? The tank contents have even been soaked in oxalic acid, creating a greater volume of waste that is now stored elsewhere in other tanks (contrary to waste minimization). Since Ecology hasn't answered the recent letter either, is the current public review period a waste of time and money? Concern was expressed for corrosion thinning of the tank walls in 2001, yet nothing has been done to fill the void spaces and stabilize the tank, while those-who-will-profit wait for the next crisis.

4. In an article in the September 6, 2018 Tri-City Herald¹, the comment was made that we should wait for 10 to 20 more *years* to see if we can better empty tank C-106 of the remaining insoluble material using some future unknown process. This appears to be an invitation to wait until the tank collapses, creating an airborne and industrial hazard, which will then drive further contributions of money to oversight groups. The single shell tanks, empty or full, should all be closed as rapidly as possible, using moisture infiltration prevention techniques. The single shell tanks can be safely filled to prevent subsidence, and then closed to prevent water intrusion and migration of contamination. This was envisioned before vitrification and "all glass" was proposed as the "better" (i.e. more profitable) technique. The Wyden Amendment made certain that all of the single shell tanks were evaluated for watch list safety hazards, so that work is done.

5. Why operate WTP at a cost of \$ billions and counting? A new alternatives analysis is needed. Letter 18-ORP-0025, *Recent Analyses of Hanford's Waste Treatment and Immobilization Plant*², August 13, 2018, indicates that to finish WTP will take \$1.2 to \$2.0 billion more per year for 13 more years! For \$26 Billion it is quite possible to provide robust water intrusion and barriers for all of the 200 Areas at Hanford and much more effectively protect the groundwater than is being done now or at any time during the life of the ORP "mission."

Of interest is the Tri-City Herald Article of August 21, 2018 indicating that a hole in the ground inside of 241-SX tank farm, *was created by water drainage!* This is exactly the mismanagement, occurring decades after single shell tank farms were supposed to be isolated, that allows leaked waste to spread. Barriers are needed for SX farm, which has a number of leakers. Take away the water, and the waste doesn't move. The "closure" answer should not be limited to C-Farm/WMA-C.

6. The impact of closure of WMA-C should be integrated with the fate of the waste that has been removed to other locations. What is the actual risk reduction if you include the

¹ *Controversial Hanford Cleanup Plan Needs More Hearings, say U.S. Senators*, Tri-City Herald, September 6, 2018.

² Available at: <https://pdw.hanford.gov/arpir/pdf.cfm?accession=0064936H>.

removed waste? Is there any? For example, in order to remove waste from tank 241-C-107, DOE added 2,530 lbs. of garnet particles (a very *aggressive* abrasive), in order to install a new and larger tank riser. The 2,530 lbs. of garnet were promptly transferred to a double shell tank, which will now feed waste to WTP. Garnet-laced waste will erode WTP pumps and seals, and enhance the erosion of pulse-jet mixed vessels. Garnet has not been accounted for in WTP erosion/corrosion technical issue resolution.

What else happens to the C farm and other tank farm waste? The whole 80 acres or so of WTP is subject to contamination, and generous amounts of contaminated liquid and air effluents will be produced.

What else happens? Cesium-137 removed from the retrieved SST waste is transferred to double shell tanks. The cesium-137 is then removed in the LAWPS and TSCR new-to-tank-farms systems and creates *120 or more new waste ion exchange columns* that are at present orphan waste that is not in an end state, is not covered by any environmental impact statement³, and represents new doses to workers associated with their surveillance and eventual disposal. The radioactivity is enormous, at 200,000-300,000 Curies of Cs-137 per Ion Exchange Column for TSCR and 1,100 Curies of Cs-137 per Ion Exchange Column for the 2,000-gallon test bed initiative. None of this is disposed or in an end state. The LAWPS facility now has a 25-foot tall stack design (shorter than in AP Farm) that *assumes no emissions monitoring* is needed (WRPS-1803460, August 21, 2018). How rational is that, given the experience with worker exposures to tank farms fugitive emissions?

What is the result? The result is, that as ORP plays with the waste and pushes it around the site, contamination continues to be spread and exposure is multiplied. Have you ever read the children's story *The Cat in the Hat Comes Back*⁴— where one pink spot on a single article becomes a giant pink spot all over everywhere?

“Oh, the things that they did! And they did them so hard, it was all one big spot now all over the yard!”

The big pink spot is just like the ORP/WTP mission. The “Waste Incidental to Reprocessing” process is a waste of time and does not reduce site risk.

I agree the prompt stabilization and closure of 241-C tank farm is needed. So is closure of everything else. Hanford needs an integrated stabilization effort maximizing in-place disposal and intrusion prevention, and should stop adding liquids to double shell tanks.

Letter **18-WSC-0059** documents the DOE assertion that ORP has complied with the Financial Integrity Act (FIA), which requires “reasonable assurance” that funds are protected from fraud,

³ This scope of work is not in any way covered by the Tank Closure and Waste Management EIS.

⁴ *The Cat in the Hat Comes Back*, Dr. Seuss, Random House, New York, 1958.

waste, loss, or unauthorized use. Contrary to the FIA, DOE's piecemeal and protracted approach to closure, DOE's payment of incentive fees for incomplete or shoddy work, and the Department of Ecology's exacerbation of the issues, is a waste of funds.

The 241-C-106 Example

An example of the gross mismanagement in the current approach can be seen in the 241-C-106 prolonged "review." This process has caused considerable waste and repetition of work. Objective evidence below indicates that there could be a greater volume of paper produced than waste removed. It is ridiculous to continue business as usual in this way. The costs of this work, per gallon of waste, over 16 years, have not been quantified, but are significant.

7G500-01-RPA-050, Interoffice Memo, *Wall Thinning of Tank 241-C-106 Bottom and Sidewall by General Corrosion*, **August 2, 2001**. 143 pages.

[Based on the report results, the wall thinning of tank 241 -C- 106 bottom is estimated to range from a low of 48 mils to a high of 146 mils. The results also indicate that the wall thinning of the tank wall ranges from 48-182 mils. Thermal ageing at a maximum temperature of 310 °F for 10 years is not expected to relieve the residual stresses or significantly decrease the room temperature elastic modulus. However, the tank steel is expected to lose some of its ductility due to strain age embrittlement.

02-EMD-186, *Approval of Radioactive Air Emissions Notice of Construction Modification for Liquid Pumping and Enhanced Sluicing on Tank 241-C-106*, **October 23, 2002**. 148 pages.

02-ED-023, *Submittal of Minor Permit Modification Request and Notification of Permit Modification Request to the U.S. Environmental Protection Agency (EPA), Region 10, the Tribes, and Affected States for Modification of Liquid Pumping and Enhanced Sluicing on Tank 241-C-106*, **December 12, 2002**.

02-ED-034, *Completion of Hanford Federal Facility Agreement and Consent Order (HFFACO) Proposed Milestone M-045-06A, Submittal of Single-Shell Tank System Closure Plan, Rev. 0*, **December 17, 2002**. 31 pages.

03-TPD-045, *Transmittal of Deliverable for Milestone M-45-05J-T01, Complete Tank 241-C-106 Design*, **April 30, 2003**. 38 pages.

RPP-13707, Revision 0, *Process Control Plan for Tank 241-C-106 Closure*, **April 30, 2003**. 97 pages.

RPP-16782, *Waste Compatibility Assessment of Tank 241-C-106 Oxalic Acid Retrieval Waste (SST-R-03-10) with Tank 241 -AN-106 Waste*, **July 23, 2003**. 1,065 pages.

04-TPD-030, Completion of Tank 241-C-106 Waste Retrieval, March 11, 2004.

TPA Admin Record Ecology Letter 0061463 to ORP, Re: Letter from Roy Schepens to Michael Wilson, dated February 6, 2004, "*Submittal of RPP-19659, Revision 0, Site Specific Treatability Variance Petition for Tank C-106*," with attachment 14-TPD-018, "RPP-

19659, Revision 0, *Site Specific Treatability Variance Petition for Tank C-106*, [Comment period Extended to May 30 due to incomplete information], **March 16, 2004**.

Ecology Letter, 0401068, to ORP, "*Re: Single-Shell Tank 241-C-106*," **April 5, 2004**.

[The Washington State Department of Ecology (Ecology) appreciates your letter dated March 11, 2004, informing us that the United States Department of Energy (USDOE) is reconsidering its earlier volume estimates of waste retrieved from Single-Shell Tank (SST) 241-C-106. We agree that the residual volume in that tank exceeds the Hanford Federal Facility Agreement and Consent Order (HFFACO) criteria that appear in Milestone M-45-00. As may be appropriate, Ecology will consider USDOE proposals for determining and reporting tank volume measurements when you submit them to us.]

TPA Admin Record Ecology Letter 0061551 to ORP, "*Re: Single-Shell Tank 241-C-106*", **April 5, 2004**, [Based on our reviews, Ecology has determined that grout addition does not meet the criteria necessary to be undertaken for the purposes of a demonstration.]

RPP-20658, Revision 0, *Basis for Exception to the Hanford Federal Facility Agreement and Consent Order Waste Retrieval Criteria for Single-Shell Tank 241-C-106*, Revision 0, **May 2004**. 69 pages.

04-TPD-059, *Request for Exception to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria, Retrieval Data Reports for Single-Shell Tank (SST) 241-C-106; HFFACO Milestones M-45-00 and M-45-05H, and Target Dates M-045-05L-T01 and M-45-05M-T01*, **June 3, 2004**.

RPP-20577, Revision 0, Stage II Retrieval Data Report for Single-Shell Tank 241-C-106, **June 8, 2004**. 185 pages.

RPP-20110, Revision 1, *Stage I Retrieval Data Report for Single-Shell Tank 241-C-106*, **June 23, 2004**. 32 pages.

RPP-20658, *Basis for Exception to the Hanford Federal Facility Agreement and Consent Order Waste Retrieval Criteria for Single-Shell Tank 241-C-106*, Revision 1, **June 24, 2004**. 65 pages.

TPA Admin Record Ecology Letter 0062299 to ORP, "*Re: Letter from R. Schepens USDOE to M. Wilson, Ecology, dated June 3, 2004, 'Request for Exception to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria, Retrieval Data Reports for Single-Shell Tank (SST) 241-C-106; HFFACO Milestones M-45-00 and H-45-05H, and Target dates M-45-05L-T01 and M-45-05M-T01*," **August 2, 2004**.
[Ten more days are needed by Ecology to respond to the request.]

TPA Admin Record Ecology Letter 0062542 to ORP, "*Re: Letter from R. Schepens, USDOE, to M. Wilson, Ecology, dated June 3, 2004, 'Request for Exception to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria, Retrieval Data Reports for Single-Shell Tank (SST) 241-C-106; HFFACO Milestones M-45-00 and M-45-05H, and Target Dates M-45-05L-T01 and M-45-05M-T01*", with 4 attachments

Letter to R. Schepens, USDOE, from J. Lyon, Ecology, dated February 12, 2004, in response to letter from USDOE "Results of the Video Camera/CAD Model System Test, RPP-18744, Rev. 0", dated December 17, 2003," August 10, 2014.

[In this letter, Ecology commends DOE, but cannot approve the current exception request.]

- 04-TPD-086, *Request for Exception to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria for Single-Shell Tank (SST) 241-C-106, August 27, 2004.*
- RPP-20658, Revision 3, *Basis for Exception to the Hanford Federal Facility Agreement and Consent Order Waste Retrieval Criteria for Single-Shell Tank 241-C-106, April 8, 2008. 73 pages.*
- 08-TPD-017, *Update to the Basis for Exception to the to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria for Single-Shell Tank (SST) 241-C-106, Request for Nuclear Regulatory Commission (NRC) Review, April 18, 2008.*
- 08-TPD-019, *Update to the Basis for Exception to the to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria for Single-Shell Tank (SST) 241-C-106, April 18, 2008. 256 pages.*
- US Nuclear Regulatory Commission Letter to ORP, "*Request for Additional Information on Update to the Basis for Exception to the Hanford Federal Facility Agreement and Consent Order Retrieval Criteria for Single-Shell Tank 241-C-106, Request for U.S. Nuclear Regulatory Commission Review,*" **January 30, 2009.** 24 pages.
- 09-TPD-015, *Request for Additional Information on Update to the Basis for Exception to the to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria for Single-Shell Tank (SST) 241-C-106, March 16, 2009.*
- 18-ECD-0009, *Request the U.S. Nuclear Energy Commission Close its Review of U.S. Department of Energy Exception Request for Tank 241-C-106 under Appendix H of the Hanford Federal Facility Agreement and Consent Order, February 27, 2017.*
- 18-ECD-0055, *Request for Waiver to Hanford Federal Facility Agreement and Consent Order Waste Retrieval Criteria for Single-Shell Tank 241-C-106, August 15, 2018.*

And for Reference:

Documents provided for public review were:

*The WIR Process Time Line*⁵, 1 page

Public Meeting Presentations⁶, 147 pages

Federal Register Notice of June 4, 2018⁷, 2 pages

Federal Register Notice of August 16, 2018⁸, 2 pages

Draft Waste Incidental to Reprocessing Evaluation for Closure of Waste Management Area C at the Hanford Site (Draft D),⁹ 312 pages

*Performance Assessment of Waste Management Area C, Hanford Site, Richland, Washington*¹⁰,
1,023 [more!] pages, and

Fact Sheet, Draft Waste Incidental to Reprocessing Evaluation for Closure of C Tank Farm¹¹,
2 pages

⁵ <https://www.hanford.gov/files.cfm/ProcessGraphic-0821181.pdf>

⁶ https://www.hanford.gov/files.cfm/WMA_C_WIR_public.pdf

⁷ <https://www.federalregister.gov/documents/2018/06/04/2018-11736/notice-of-availability-of-draft-waste-incident-to-reprocessing-evaluation-for-closure-of-waste>

⁸ <https://www.federalregister.gov/documents/2018/08/16/2018-17687/extension-of-comment-period-draft-waste-incident-to-reprocessing-evaluation-for-closure-of-waste>

⁹ <https://www.hanford.gov/files.cfm/DOE-ORP-2018Draft.WIR.Evaluation.pdf>

¹⁰ <https://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0065503H>

¹¹ https://www.hanford.gov/files.cfm/WMA-C_Draft_WIR_Evaluation_Fact_Sheet.pdf

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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I feel very strongly about this!

Sincerely,

(b)(6)
Name: _____
Email: _____ (b)(6) TO CONTACT ME
Address: _____ (b)(6) _____ (b)(6) _____ (b)(6) - Portland
Phone: _____ (b)(6) _____

October 30, 2018

Mr. Jan Bovier
U.S. Department of Energy
PO Box 450, MSIN H6-60
Richland, WA 99354

Dear Mr. Bovier,

I have lived in Vancouver, WA and Portland, OR for over 30 years and have watched the cleanup of Hanford very closely. I was thrilled with the Tri-Party Agreement and have accepted the bumps along the road. Massive projects have delays which are acceptable.

However, altering a project by redefining the offending element (e.g. high-level nuclear waste) is totally unacceptable. Although we live 170 miles from the Hanford reservation, our water and air are starting to be contaminated by the tank leakage. Over a million people will soon be affected if DOE doesn't continue to deal with the waste. We have been told "most" of the waste has been disposed of. By volume that is a true statement. However, DOE has not publicly admitted that the remaining "small" amount is extremely concentrated and therefore much more toxic than the original waste. Further, the caulking/cementing will NOT last for the hundreds of years much less the reality of thousands of years that is needed. DOE is trying to pull a fast one on all of us down water people.

Do NOT allow the renaming of the waste to low-level nuclear waste. DOE says it doesn't know how to deal with the remaining high-level waste and it is too expensive to hold it until something is devised. The making of bombs and the melt-down of nuclear power plants is hugely more expensive than taking care of the mess.

Do you have any friends, relatives...or grand-children in the area at risk? If not, think of the rest of the world, people who will ultimately suffer from the leakage of these tanks which will have a bandage on them.

(b)(6)

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awm@tri-cities.com

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Sincerely, (b)(6)

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97239

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U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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Richland WA 98642

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BANKS, ORS 206

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4

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Sincerely,

(b)(6)
Name: _____
Email: _____
Address: (b)(6) _____
Phone: 503 - (b)(6) _____

Mr. Jan Bovier
U.S. Department of Energy Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Re: Draft WIR Determination for the Closure of Waste Management Area C

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(b)(6)
Name: _____
Email: (b)(6) @yahoo.com
Address: (b)(6) Portland OR 97213
Phone: (b)(6) 503 (b)(6)

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(b)(6)
(b)(6)
Name: (b)(6)
Email: (b)(6) @va1000.com
Address: (b)(6) Portland OR 97206
Phone: 503-(b)(6)

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(b)(6)
Name: _____
Email: (b)(6) @curriculum
Address: (b)(6) Portland, OR 97202
Phone: 541-(b)(6) _____

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Address: (b)(6) Lake Oswego OR 97034
Phone: 503 (b)(6)

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Email: _____
Address: (b)(6) PortL 99213
Phone: _____

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Sincerely,

(b)(6)
Name: _____
Email: (b)(6) @easystreet.net
Address: (b)(6) Portland, OR 97213
Phone: 503-(b)(6)

Please Listen!

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Name: _____
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Phone: _____

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

02 AUG 2018 PM 4 L

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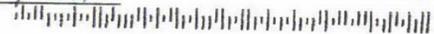
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED
AUG 08 2018
DOE-ORP/ORPCC

(b)(6)

Full Name
City, State Seattle, WA

9352-045050



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SEATTLE WA 980



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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Seattle WA 98105

9352-045050

grew up in Richland, Richland Bomber, Class of 1965

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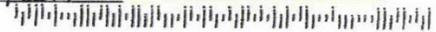


Mr. Jan Bovier
U.S. Department of Energy
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Richland, WA 99354

Full Name (b)(6)

City, State Seattle, WA (b)(6)

9352-045050



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AUG 02 2018

DOE-ORP/ORPCC

Full Name (b)(6)

City, State SEATTLE WA

9352-045050



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Full Name (b)(6)

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City, State SEATTLE WA
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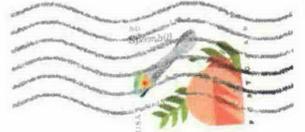
City, State Snohomish WA

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Full Name (b)(6)

City, State Seattle WA

99352-045050



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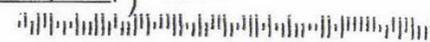
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City, State SAO HOMISH, WA

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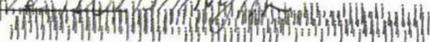
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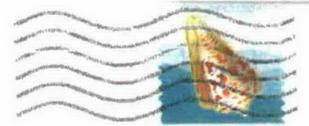


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AUG 12 2018

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We need to be listened to!

Dear Department of Energy,

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

SEATTLE

AUG 22 2018



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

AUG 22 2018

DOE-ORP/ORPCC

(b)(6)

Full Name

City, State Seattle, WA

99352-045050

Dear Department of Energy,

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

SEATTLE

WA 990

AUG 22 2018



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

AUG 22 2018

DOE-ORP/ORPCC

(b)(6)

Full Name

City, State Spokane, WA

99352-045050

Dear Department of Energy, **SEATTLE WA 980**

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Full Name **(b)(6)**

City, State Seattle, WA

9352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

AUG 01 2018

09E-08P102P00

Dear Department of Energy, **SEATTLE WA 980**

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Full Name **(b)(6)**

City, State Spokane, WA

9352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

AUG 01 2018

09E-08P102P00

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Thank you for considering this request.



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

NOV 02 2018

DOE-ORP/ORPCC

(b)(6)

Full Name

City, State Seattle WA

9352-045050



Dear Department of Energy,

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

NOV 12 2018

DOE-ORP/ORPCC

(b)(6)

Full Name

City, State Seattle WA

9352-045050



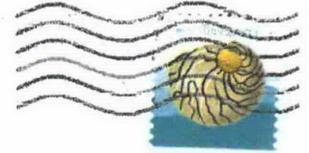
Dear Department of Energy,

SEATTLE WA 980

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Thank you for considering this request.



NOV 01 2018 PM 3 L

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

NOV 01 2018

NOE-ORR-ORPCC

(b)(6)

Full Name

City, State Seattle, WA 98134

99352-045050



Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.



NOV 01 2018

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

NOV 01 2018

NOE-ORR-ORPCC

(b)(6)

Full Name

City, State Seattle, WA

99352-045050



Dear Department of Energy, SEATTLE

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Full Name

(b)(6)

City, State

EDMONDS WA
99352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

2018 JUL 27

DOE-ORP/ORPCC

Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Full Name

(b)(6)

City, State

Seattle WA
99352-045050

PM 3 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

2018 JUL 27

DOE-ORP/ORPCC

Dear Department of Energy,

PORTLAND

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED
AUG 30 2018

DOE-ORP/ORPCC

Full Name (b)(6)

City, State Portland, WA

Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

*What happens in
Richland affects the
whole state.*

Full Name (b)(6)

City, State Seattle, WA

9352-045050

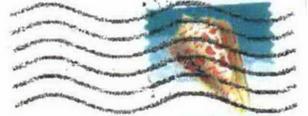


Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

TF

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

27 AUG 2018 PM 6 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

AUG 30 2018

DOE-ORP/ORPCC

(b)(6)

Full Name

City, State SEATTLE WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

27 AUG 2018 PM 7 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

AUG 30 2018

DOE-ORP/ORPCC

(b)(6)

Full Name

City, State SEATTLE WA

9352-045050

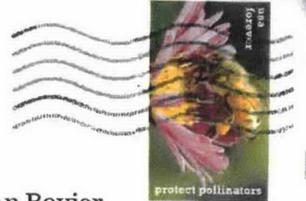


Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

APR 15 2018 PM 7 L



I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Thank you for considering this request.

(b)(6)

Full Name

City, State

Seattle, WA 98117

99352-045050



Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

APR 15 2018 PM 5 L



I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Thank you for considering this request.

(b)(6)

Full Name

City, State

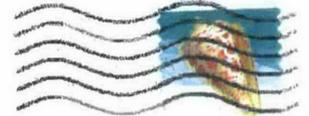
Seattle, WA

99352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

02 APR 2018 PM 3 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State *Seattle, WA*
99352-0450

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

02 APR 2018 PM 3 L

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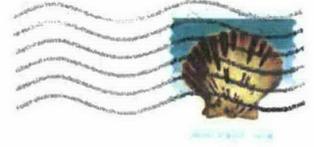
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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State *Seattle, WA*
99352-0450

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

22 AUG 2018 PM 3 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

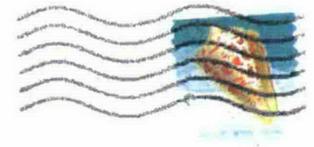
Full Name (b)(6)

City, State Kirkland, WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980



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22 AUG 2018 PM 3 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State SEATTLE, WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

12 AUG 2018 PM 3 L



I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

*Please hold public hearings.
Thank you!*

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA

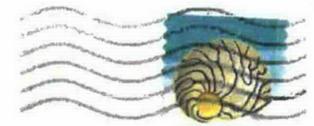
99352-045050

Dear Department of Energy,

SEATTLE WA 980

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980



12 APR 2018 PM 7 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA

39352-045050



Dear Department of Energy,

SEATTLE WA 980



12 APR 2018 PM 5 L

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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA

39352-045050



Dear Department of Energy.

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant implications for future generations and the environment.

AUG 2018 PM 5 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Edmonds WA

39352-045050



Dear Department of Energy.

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant implications for future generations and the environment.

AUG 2018 PM 4 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle WA

98122



Dear Department of Energy,

SEATTLE WA 98101



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

PAID 2018 PM 6 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

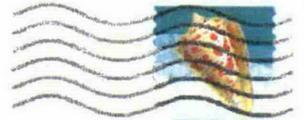
City, State

Seattle, WA



Dear Department of Energy,

SEATTLE WA 98101



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PAID 2018 PM 4 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

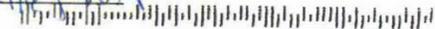
(b)(6)

Full Name

City, State

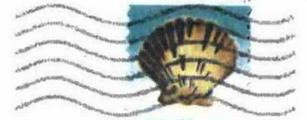
Seattle, WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980



CR AUF 2018 PM 3 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980



CR AUF 2018 PM 3 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980



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02 AUG 2018 PM 3 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Thank you for considering this request.

(b)(6)

Full Name

(b)(6)

City, State

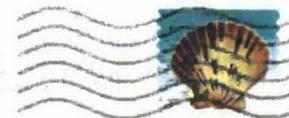
Seattle, WA

99352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

02 AUG 2018 PM 4 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Thank you for considering this request.

(b)(6)

Full Name

City, State

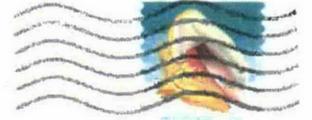
Upper Marlboro, MD

19352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

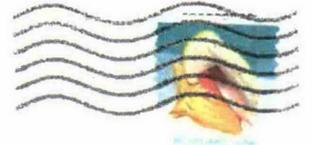
Full Name

City, State Woodinville, WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Tacoma WA

99352-045050

Dear Department of Energy,

SEATTLE WA 980



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02 AUG 2018 PM 4 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980



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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name (b)(6)

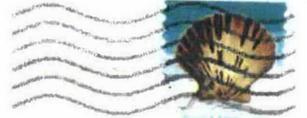
City, State Seattle, WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant implications for future generations and the environment.

AUG 2018 PM 4 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

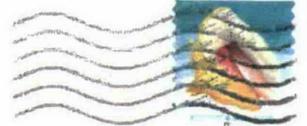
City, State Seattle, WA 98103

19352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant implications for future generations and the environment.

AUG 2018 PM 4 L

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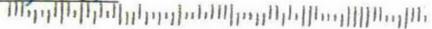
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA

19352-045050



Dear Department of Energy,

SEATTLE WA 980

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02 AUG 2013 PM 4 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle WA

9352-045050

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SEATTLE WA 980

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02 AUG 2013 PM 4 L



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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle WA

9352-045050

THANK YOU

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Richland, WA 99354

Full Name (b)(6)
City, State Seattle WA
9352-045050



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Office of River Protection
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Richland, WA 99354

Full Name (b)(6)
City, State CAMANO ISLAND
9352-045050

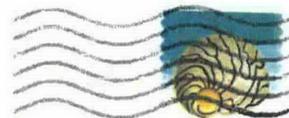


Dear Department of Energy,

SEATTLE WA 980

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Richland, WA 99354

(b)(6)

Full Name

City, State SEATTLE, WA

9352-045050



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SEATTLE WA 980

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Richland, WA 99354

(b)(6)

Full Name

City, State SEATTLE WA

9352-045050



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City, State

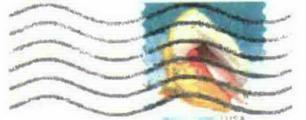
Seattle, WA

9352-045050



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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle WA

9352-045050



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Richland, WA 99354

Full Name

(b)(6)

City, State

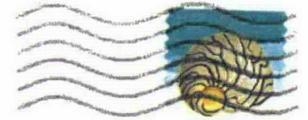
Bethell, WA

19352-045050



Dear Department of Energy,

SEATTLE WA 980



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(b)(6)

City, State

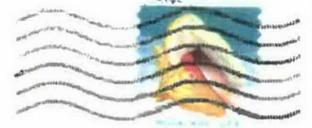
Seattle, WA

19352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

02 AUG 2018 PM 4 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

(b)(6)

SEA, WA
98121

Full Name

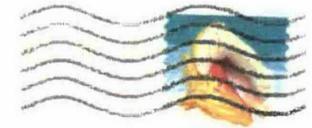
City, State

9352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

02 AUG 2018 PM 3 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

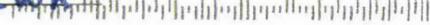
(b)(6)

Full Name

City, State

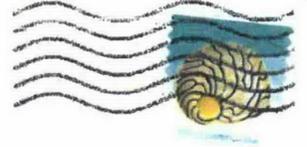
99352-045050

Seattle WA



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

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(b)(6)

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle WA

99352-045050

Dear Department of Energy,

SEATTLE

WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

03 AUG 18

PM 5 L

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Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

As a Hanford down-winder, I feel this is a critical issue. Please!

Full Name (b)(6)

City, State Seattle, WA 98122

99352-045050

Dear Department of Energy,

SEATTLE WA 980



29 AUG 2018 PM 7 L

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

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(b)(6)

(b)(6)

Full Name

City, State Seattle, WA

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

SEP 05 2018

DOE-ORP/ORPCC

Dear Department of Energy,

SEATTLE WA 980



29 AUG 2018 PM 3 L

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(b)(6)

Full Name

City, State Seattle WA

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

SEP 05 2018

DOE-ORP/ORPCC

Dear Department of Energy,

SEATTLE WA 980



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20 AUG 2018 PM 7 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

SEP 03 2018

DOE-ORP/ORPCC

Full Name

(b)(6)

City, State

Seattle WA

3352-045050



Dear Department of Energy,

SEATTLE WA 980



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20 AUG 2018 PM 6 L

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

SEP 05 2018

DOE-ORP/ORPCC

Full Name

(b)(6)

City, State

Seattle WA

352-045050



Dear Department of Energy,

SEATTLE WA 980



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23 AUG 2018 PM 7 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED
SEP 05 2018
DOE-ORP/ORPCO

Full Name (b)(6)
City, State SEATTLE, WA
9352-045050

SEATTLE

Dear Department of Energy WA 980

23 AUG '18
PM 7 L

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Thank you for considering this request.

FIRST-CLASS



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State SEATTLE WA 98122

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford high-level nuclear waste has significant ramifications for future generations and the environment.

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(b)(6)

Full Name (b)(6)

City, State Seattle, WA

352-045050

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE
WA, 980

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Full Name (b)(6)

City, State SEATTLE, WA

352-045050



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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

25 AUG 2018 PM 6 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

(b)(6)
Full Name

City, State Seattle, WA

9352-045050

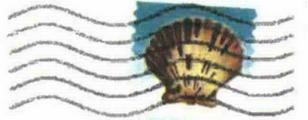


D/23/18

SEATTLE WA 980

Dear Dept. of Energy,

25 AUG 2018 PM 6 L



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations + the environment.

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

I am writing to request that the DOE NOT classify Hanford's high-level waste to low-level waste + not bury tank waste under cement.

Full Name (b)(6)

City, State Seattle, WA 98101

9352-045050

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

8/23/2018

Dear Ms. Bovier,

SEATTLE WA 980

I understand there's a proposal to re-classify high-level waste in Hanford tanks as low-level waste.

Bad idea! Clean it up properly, not by changing words.

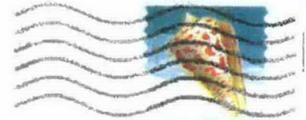
Also, it would be good to have a public hearing on this in western Washington. Thanks.

Full Name (b)(6)

City, State Seattle, WA

9352-045050

AUG 2018 PM 5 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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SEATTLE WA 980

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9352-045050

AUG 2018 PM 6 L



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U.S. Department of Energy
Office of River Protection
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Richland, WA 99354

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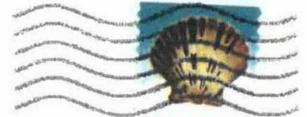
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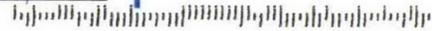
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SEATTLE WA 980
25 AUG 2018 PM 6 L



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Richland, WA 99354

Full Name (b)(6)
City, State Seattle, WA
9352-045050



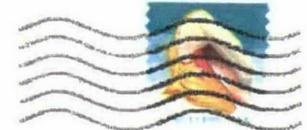
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SEATTLE WA 980
25 AUG 2018 PM 6 L



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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Seattle, WA
9352-045050



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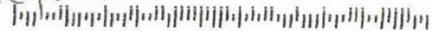
Full Name

(b)(6)

City, State

Seattle, WA

9352-045050



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SEATTLE WA 980

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA 98119

92-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

(b)(6)

Full Name (b)(6)

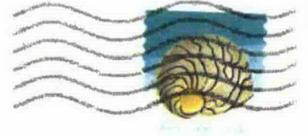
City, State *Port Hedland, WA*

9352-045050

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



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Full Name

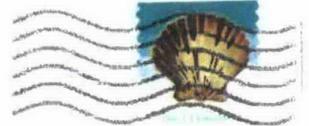
City, State *SEATTLE, WA*

9352-045050

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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SEATTLE WA 980



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(b)(6)

Full Name

(b)(6)

City, State

Seattle, WA

9352-045050

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear DOE,

SEATTLE WA 980



Please hold
public meetings
on this logic!
Thank you.

25 AUG 2018 PM 5 L

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Duvall, WA

9352-045050

Dear Department of Energy.

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

24 AUG 2018 PM 3 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Seattle, WA

99352-045050



Dear Department of Energy.

SEATTLE WA 980

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25 AUG 2018 PM 6 L



I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Normandy Park, WA

99352-045050



Dear Department of Energy.

SEATTLE WA 980

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AUG 2018 PM 6 L



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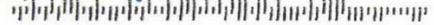
Thank you for considering this comment.

(b)(6)

Full Name (b)(6)

City, State Richland, WA

9352-045050



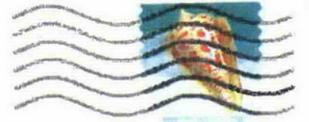
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy.

SEATTLE WA 980

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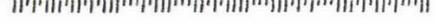
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(b)(6)

Full Name (b)(6)

City, State Seattle, WA

9352-045050



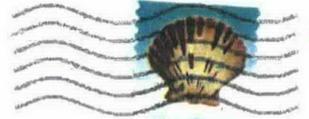
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 981

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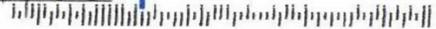
Thank you for considering this comment.

(b)(6)

Full Name (b)(6)

City, State Richland WA

9352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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Thank you for considering this comment.

Full Name (b)(6)

City, State Seattle, WA 98160

9352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



25 AUG 2018 PM 6 L

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(b)(6)

Full Name (b)(6)

City, State Seattle WA

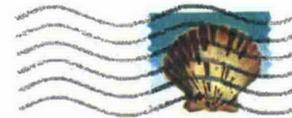
9352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



25 AUG 2018 PM 6 L

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

(b)(6)

Full Name (b)(6)

City, State Seattle WA

9352-045050



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980

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25 AUG 2018 PM 2 L



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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Chicago IL

9352-045050



Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

25 AUG 2018 PM 5 L



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U.S. Department of Energy
Office of River Protection
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Richland, WA 99354

(b)(6)

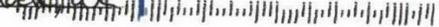
Full Name

(b)(6)

City, State

Port Hadlock WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant implications for future generations and the environment.

AUG 20 18 PM 5 L



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Office of River Protection
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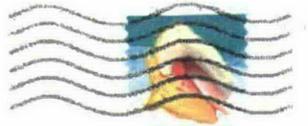
Full Name (b)(6)

City, State Seattle WA
19352-045050

SEATTLE WA 980

DEAR DEPT. OF ENERGY
25 AUG 2018 PM 5 L

I'M VERY CONCERNED ABOUT THE PROPOSED RECLASSIFICATION OF HANFORD'S HIGH LEVEL NUCLEAR WASTE. IT MAY HAVE SERIOUS IMPACTS ON FUTURE GENERATIONS AND THE ENVIRONMENT! REQUESTING DOE NOT RECLASS HIGH LEVEL WASTE



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State SEATTLE WA
19352-045050

TO LOW LEVEL WASTE AND TO NOT BUAY TANIZ WASTE UNDER CEMENT - WHICH IS POROUS.

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

25 AUG 2018 PM 5 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

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(b)(6)

Full Name (b)(6)

City, State Seattle, WA

9352-045050

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



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(b)(6)

Full Name (b)(6)

City, State Richland, WA

9352-045050

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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

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SEATTLE WA 980



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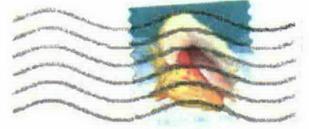
City, State Richland WA

9352-045050

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear DOE,

SEATTLE WA 980



Please hold public meetings on leaving waste in Hanford's High Level Waste Tanks. The public wants to be engaged.

25 AUG 2018 PM 5 L

(b)(6)

Full Name

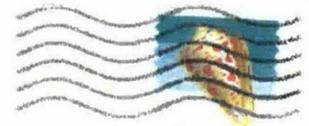
City, State Boring WA

9352-045050

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



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23 AUG 2018 PM 2 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle WA

3352-045050

(b)(6)

Dear Department of Energy,

SEATTLE WA 980



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Office of River Protection
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Richland, WA 99354

(b)(6)

Full Name

City, State Seattle WA

3352-045050

(b)(6)

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SEATTLE WA 980



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Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Seattle, WA
99352-045050



Dear Department of Energy.

SEATTLE WA 980



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24 AUG 2018 PM 4 L

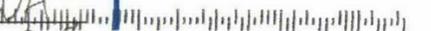
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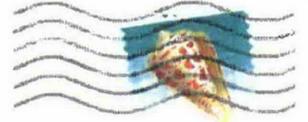
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Seattle WA
9352-045050
98118



Dear Department of Energy,

SEATTLE WA 980



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27 AUG 2018 PM 4 L

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U.S. Department of Energy
Office of River Protection
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Richland, WA 99354

(b)(6)

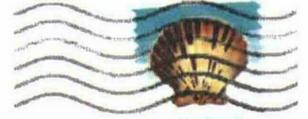
Full Name

City, State henton, WA

39352-045050

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SEATTLE WA 980



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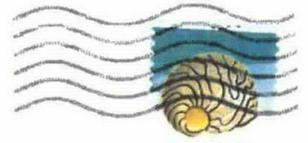
Full Name

City, State Seattle WA

39352-045050

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Richland, WA 99354

(b)(6)

Full Name

City, State

Seattle, WA

9352-045055

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SEATTLE WA 980



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Office of River Protection
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Richland, WA 99354

(b)(6)

Full Name

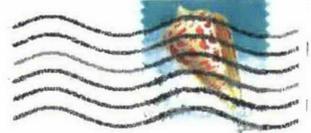
City, State

Seattle, WA

9352-045055

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24 AUG 2018 PM 7 L

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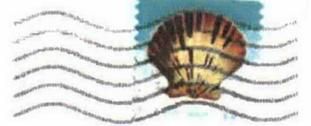
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle WA
2-045050

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SEATTLE WA 980



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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State SEATTLE WA
99352-045050

Dear Department of Energy,

SEATTLE WA 980



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U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Seattle WA

9352-045050

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

24 AUG 2018 PM 5 L

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Seattle WA

9352-045050

8/21/18

Newground Social Investment

Dear Department of Energy,

SEATTLE WA 98103



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

25 AUG 2018 PM 5 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

19352-045050

SEATTLE

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FIRST-CLASS



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

19352-045050

SEATTLE, WA

Dear Department of Energy,

SEATTLE WA 980

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21 AUG 2018 PM 6 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

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Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Belton, WA

Dear Department of Energy,

SEATTLE WA 980

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08 SEP 2018 PM 4 L



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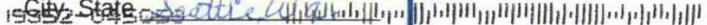
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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA



I am against the proposal to reclassify the high-level tanks at Hanford.

I urge for the continuation of efforts to get the glassification process up and running.

Glassification is the safest treatment method to ensure future generations avoid a radioactive catastrophe.

Full Name (b)(6)
City, State Seattle, WA

SEATTLE WA 980
28 AUG 2018 PM 5 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED
SEP 13 2018

DOE-ORP/ORPCC

Please protect the ground water around Hanford! For the sake of our grand children, this current proposal is not good enough. Thank ya.

Full Name (b)(6)
City, State Seattle, WA

SEATTLE WA 980
28 AUG 2018 PM 5 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

9352-045050

SEATTLE

Dear Department of Energy WA 980

28 AUG '18

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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA

It's not a great decision to go ahead with pouring cement over high-level nuclear (toxic) waste. Why do we think that shortcuts work well for future. We want more public meetings, more technical & scientific analysis and a very 'SAFE' clean-up.

(b)(6)

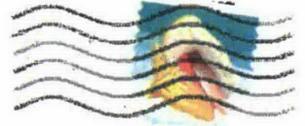
Full Name

City, State Seattle, WA 98136

19352-045050

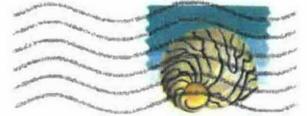


Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354



Dear Dept of Energy

SEATTLE WA 980



Thank you for considering my comments. The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations + the environment. I am writing to request that the DOE not reclassify Hanford's high-level waste to low level waste and not bury tank waste

25 AUG 2018 PM 5 L

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle, WA

9352-045050

No to this proposal. For the sake of future generations (our off spring) we need this site cleaned up well! Thank you.

SEATTLE WA 980



25 AUG 2018 PM 5 L

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA

9352-045050

Dear Mr. Bovier:
I am strongly
opposed to DOE's
proposal to reclassify
the nuclear waste on
the Hanford Reserva-
tion. I believe
reclassifying high-level
nuclear waste as low-
level waste would endan-
ger the environment and
Hanford workers. Sincerely

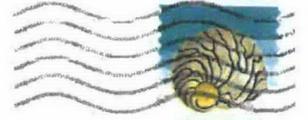
Full Name (b)(6)

City, State Seattle WA

9352-045050

SEATTLE WA 980

05 OCT 2018 PM 4 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

OCT 10 2018

DOE-ORP/ORPCO

9/27/18
Dear Dept of Energy
Attempting to re-label nuclear
waste is contrary to existing law
as codified by the Nuclear Waste
Policy Act. This action diverts
valuable resources from more
pressing risks to the public and
environment. These include:
Emptying single shell tanks
Building new double shell tanks
Fast-tracking remediation of the
strontium and cesium capsules in
the Waste Encapsulation and Storage
Facility by moving them to Dry Storage
and addressing the various site
risks on the Central Plateau including
PUREX tunnel collapse including stabilizing
and/or removing dangerous nuclear
facilities at risk of collapse

Full Name (b)(6)

City, State Seattle, WA 98178

9352-045050

SEATTLE WA 980

05 OCT 2018 PM 5 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED

OCT 10 2018

DOE-ORP/ORPCO

I oppose DOE's
Draft WIR Evaluation
Relabeling high level
Nuclear waste at
Hanford should not
be done as it is
not supported by
science and is a
danger to health
& safety. Please
withdraw the
proposal to recommit
to original treatment
into deep disposal.

Full Name (b)(6)
City, State See it to kill

39352-045050

SEATTLE WA 980
OCT 13 2018 PM 4 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

RECEIVED
OCT 13 2018
DOE-ORP/ORPCC

Dear Department of Energy,

SEATTLE WA 980
OCT 13 2018 PM 5 L



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Full Name (b)(6)

City, State Lake Forest Park WA

39352-045050

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State *Seattle, WA*

2-045050

Dear Mr Bovier

SEATTLE WA 980



PLEASE do not reclassify Hanford's high-level nuclear waste as low-level waste or abandon Hanford's high level waste and not treat it appropriately.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State *Seattle WA 98105*

99352-045050

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

25 OCT 2018 PM 7 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Edmonds, WA

3352-045050

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

26 OCT 2018 PM 5 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Shoreline, WA

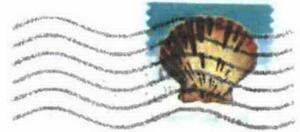
3352-045050

Hello,

10/19/2018

SEATTLE WA 980

20 OCT 2018 PM 5 L



I don't think it makes sense to fill the tanks at Tank Farm C with grout, which is not a good long-term solution. Better to treat all the remaining high-level waste as high-level waste and dispose of accordingly.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

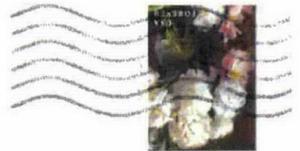
Seattle, WA

99352-045050

Dear Sir,

SEATTLE WA 980

20 OCT 2018 PM 4 L



I attended the DOE presentation in Seattle.

The waste in the C Farm tanks is high level and remains high level and should be treated at such a facility that requires. The Russians proved question of inadequate.

We should dedicate resources to cleanup on a scale of the resources dedicated

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA

to operation, the department

(b)(6)

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

25 OCT 2018 PM 7 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

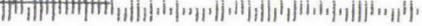
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

- City, State Shoreline, WA

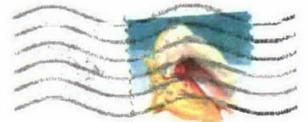
3352-045050



Mr. Bovier,

10/20/18

SEATTLE WA 980



20 OCT 2018 PM 4 L

Please don't fill the tanks at Tank Farm C with grout. Please treat all the remaining high-level waste as high-level waste & treat accordingly.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State Seattle, WA

3352-045050



Nov. 3, 2018

Dear US DOE,

Re: reclassifying Hanford's high-level waste, USDOE has a long legacy of deception and is not trusted by most of the public. The DNFSB must be involved in proposing an open and science-based process to determine a defensible set of criteria to replace the HLLW definition.

Full Name (b)(6)
City, State

Seattle, WA 98177-5112

SEATTLE WA 980

US NOV 2018 PM 7 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Nov. 3, 2018

Dear USDOE,

There may be adequate foundation for reclassifying Hanford tank waste, but there must be a public process to determine the alternative. Everyone in the three-state area (WA-ID-OR) must be given an opportunity to meaningfully participate.

Full Name (b)(6)
City, State

Seattle, WA 98177-5112

SEATTLE WA 980

US NOV 2018 PM 3 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

NOV 2018 PM 7 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

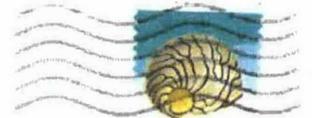
City, State Seattle WA

99352-045050

Nov. 3, 2018

Dear USDOE,

SEATTLE WA 980



It is in the interests of the Northwest population to have a successful Hanford cleanup. But the entire contracting system and oversight functions must be reconstituted. The public cannot trust that tax funds are spent at Hanford. The HLW issue is only a small part.

NOV 2018 PM 6 L

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle, WA

99352-045050

Seattle, WA 99177-5112

Dear Mr. Bovier
It is simply
dishonest, ~~it is~~ not in
the best interest
of this or the next
generation, to
change the classifica-
tion of Hanford's
high level radioactive
waste. Please do
not do it.
Sincerely,

Full Name (b)(6)

City, State Portland, OR

9352-045050

PORTLAND OR 972

03 NOV 2018 PM 5 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

The proposed reclassification of Hanford's high level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Full Name (b)(6)

City, State Seattle, WA

9352-045050

SEATTLE WA 980

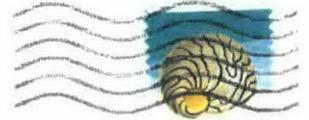
03 NOV 2018 PM 4 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

NOV 2018 PM 4 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

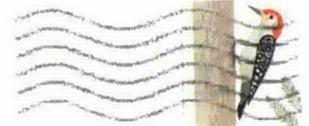
(b)(6)

City, State

Seattle, WA

Dear Department of Energy,

PORTLAND OR 972



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

NOV 2018 PM 1 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State



(b)(6)

352-04505

Salem, OR 97311

How people can be so
uncaring about scrub
like this. But up in
arms about building
modern breeder reactors
to generate power
and process this waste
I will never understand.

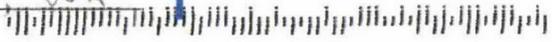
SEATTLE WA 98101
30 OCT 2018 PM 6 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name
City, State Seattle WA
3352-045050

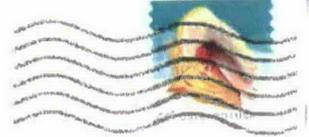


Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 5 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

CA, US 90M EMS

9352-045050



Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 4 L



I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 7 L

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

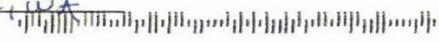
Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle, WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 4 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Synnwood, WA

9352-045050

WA



SAVE
THE
LAND!

SEATTLE WA 980

05 NOV 2018 PM 6 L



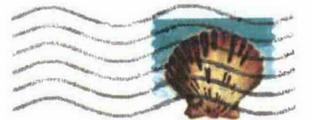
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State SEATTLE WA
9352-0450

SEATTLE WA 980

05 NOV 2018 PM 1 L



Dear Department of Energy,

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

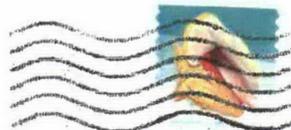
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Washington, D.C.
9352-0450

Dear Department of Energy,

SEATTLE WA 980

05 NOV 2013 PM 6 L



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Seattle WA

Dear Department of Energy,

SEATTLE WA 980

05 NOV 2013 PM 6 L



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name

City, State

Seattle WA

Dear Department of Energy,

SEATTLE WA 98101

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 6 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Seattle, WA

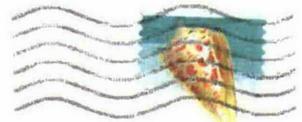
9352-045050

Dear Department of Energy,

SEATTLE WA 98101

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 4 L



I am writing to request that the Department of Energy hold regional public hearings in Seattle, Portland, Richland and Spokane. Hearings should occur in the evenings, be well-publicized, have opportunities for questions and answers, and accept public comments.

Thank you for considering this request.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name

(b)(6)

City, State

Suffield, CT

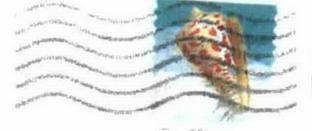
9352-045050

Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 6 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State SEATTLE WA
39352-045050

Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 7 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State KEVIL, WY
39352-045050

Please protect
our groundwater
and the Columbia
River. Take
responsibility
and do the right
thing - do not
bury tank waste
under cement.

SEATTLE WA 980

05 NOV 2018 PM 7 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)

City, State Seattle WA

9352-045050



Dear Department of Energy,

SEATTLE WA 980

The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 7 L



I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

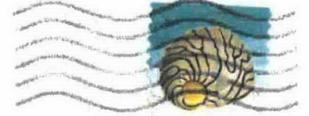
Full Name (b)(6)

City, State Kennewick, WA

9352-045050



SEATTLE WA 98101
05 NOV 2018 PM 4 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

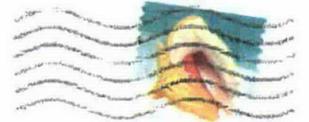
(b)(6)

Full Name

City, State *Snohomish WA*

Dear Department of Energy,

SEATTLE WA 98101
05 NOV 2018 PM 2 L



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

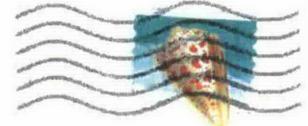
Full Name

City, State *Tinley Park IL*

9352-045050

Dear Department of Energy,

SEATTLE WA 980



The proposed reclassification of Hanford's high-level nuclear waste has significant ramifications for future generations and the environment.

05 NOV 2018 PM 3 L

I am writing to request that the Department of Energy not reclassify Hanford's high-level nuclear waste to low-level waste and not bury tank waste under cement.

Please protect our groundwater and the Columbia River from this dangerous nuclear waste.

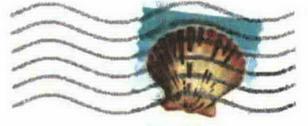
Thank you for considering this comment.

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Seattle, WA
99352-045050

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SEATTLE WA 980



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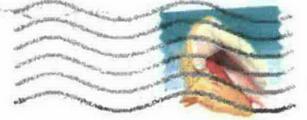
Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State Kennewick, WA
99352-045050

No
Means No
because
Stupid
is Stupid
and
Future is
not ours.

SEATTLE WA 980

05 NOV 2018 PM 7 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

Full Name
City, State Seattle WA
99352-045050

SEATTLE WA 980

05 NOV 2018 PM 7 L



Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

(b)(6)

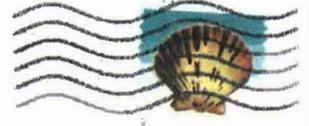
Full Name
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99352-045050

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☺

Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State KENT, WA
99352-045050

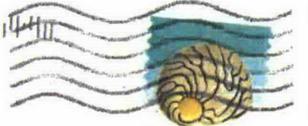


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Mr. Jan Bovier
U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, WA 99354

Full Name (b)(6)
City, State SEATTLE, WA
98102-045050



to take comments, concerns +
questions. Does it Doe want
to engage the public on the
tank clean up?

The tribal people are worried
about the plane that has
reached the Columbia River.
because of our diet. Salmon

(b)(6)

YAKAMA
"

Doe-Hanford is in Yaltona
Nation's ancestral lands,
Why isn't a public
hearing in Yaltona County,
to take public concerns,
questions & comments on
the WIR?

I want DOE to fulfill
tonight's statement "it is
to engage & ~~really~~ engage
the public, why isn't DOE
having more public hearings