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April 17, 1990

Mr. Steve Wisness
Hanford Project Manager
U.S. Department of Energy
P.O. Box 550
Richland, Washington 99352

Dear Mr. Wisness:

Re: Comments on the Simulated High-Level Waste Slurry Unit Closure Plan

This letter transmits Ecology's comments on the September 13, 1989 draft of the Closure Plan for the Simulated High-Level Waste Slurry Treatment and Storage (SHLWS T/S) Unit as revised by the March 2, 1990, response to Ecology's previous comments. The revised plan was reviewed for compliance with closure requirements of the state dangerous waste regulations, chapter 173-303 WAC.

Our comments are primarily concerned with the technical aspects of the sampling and analysis plan. Enclosure 1 lists the issues which have been resolved to Ecology's satisfaction, and enclosure 2 discusses the remaining deficiencies identified in the closure plan. Comments on the Quality Assurance Project Plan for the SHLWS Unit will be submitted to USDOE/PNL by April 20, 1990. Continuing negotiations at the unit manager level are expected to resolve the deficiencies identified herein without adversely affecting the proposed closure schedule for this unit.

Please extend my thanks to members of USDOE and PNL staff for their assistance in our review of the SHLWS Unit Closure Plan. Technical inquiries regarding this Notice of Deficiency should be directed to Mike Gordon at (206) 438-7024.

Sincerely,

Timothy L. Nord
Hanford Project Manager

Enclosures (2)

cc: Dan Duncan
Wayne Slater
[redacted]
Mike Gordon
Toby Michelena

Enclosure 1

DEPARTMENT OF ECOLOGY
CONCURRENCE WITH REVISIONS TO THE CLOSURE PLAN FOR THE
SIMULATED HIGH LEVEL WASTE SLURRY TREATMENT AND STORAGE UNIT
April 17, 1990

The Washington State Department of Ecology concurs with the following responses to our January 16, 1990 comments on the Simulated High-Level Waste Slurry (SHLWS) Treatment/Storage Unit closure plan. Concurrence is based on the responses as they appear in the SHLWS Closure Plan Response Table dated March 2, 1990.

1-7, 9-12, 14-20, 24-28, 30-33, 36-37, A-1 through A-5.

DEPARTMENT OF ECOLOGY
COMMENTS ON THE CLOSURE PLAN FOR THE
SIMULATED HIGH LEVEL WASTE SLURRY TREATMENT AND STORAGE UNIT
April 17, 1990

The following comments reference page and section numbers from the September 13, 1989 draft of the Simulated High-Level Waste Slurry Treatment and Storage (SHLWS T/S) Unit Closure Plan as revised by the March 2, 1990, response to Ecology's previous comments. Comment numbers are the same as those given in Ecology's January 16, 1990 Notice of Deficiency. .

#	Page	
8	4-6	USDOE/PNL Proposal: Two paragraphs will be added to section 3.2 to clarify the sampling strategy for the grouted drums. The last sentence states that "this sampling and analysis procedure provides a 95% confidence that at least 99% of the drums of grouted waste in each category are below designation limits for EP toxicity and corrosivity." Ecology Response: Unless additional data can be provided to confirm the statistical assumptions used in the design of this sampling plan (e.g., 5% drum-to-drum variability, normal distribution of waste constituents between drums), the last sentence of the second paragraph should be revised as follows: "The results of this sampling and analysis procedure indicate that the grouted wastes in each waste category are well below designation limits for EP toxicity and corrosivity." More precise statistical statements do not appear justified on the basis of only six samples from each waste category. In addition, the sentence "All samples were analyzed for both EP toxicity and pH," should be replaced with "All drums were analyzed..." These comments are meant to clarify the statistical significance of sampling results. Ecology does not intend that resampling of these drums should be undertaken.
13	6-11	USDOE/PNL Proposal: Sections 6.1.7, 6.1.8, 6.1.9, and 6.2, will be revised to state that closure cost estimates, financial assurance, and liability coverage are not be required because "the DOE-RL is exempt from [these requirements] under WAC 173-303-620(1)(c). Ecology Response: Section WAC 173-303-620(1)(c) states that "operators of facilities who are under contract with the state or federal government" are not exempt from the requirements of WAC 173-303-620. PNL is identified in the Part A for the SHLWS unit as an operator of the facility, and as such must submit documentation of closure cost estimates, financial assurance, and liability coverage. As discussed in the April 10, 1990 Project Managers meeting, detailed closure cost estimates for closure of the SHLWS unit must be provided in this closure plan. Specific requirements for financial assurance and liability coverage are under discussion at the Project Managers level. Pending resolution of this issue, information regarding financial assurance and liability coverage need not be included in the SHLWS closure plan.

21 A-6 **USDOE/PNL Proposal:** The cleanup levels for toxic waste constituents will be defined as 10% of the toxic criteria designation limit for single constituents. No more stringent cleanup levels were identified in the "How Clean is Clean" guidance document.

Ecology Response: As noted in the previous NOD, this list of cleanup levels should be expanded to include all wastes which may designate under WAC 173-303-084, -101, -102, and -103 (i.e., persistent and carcinogenic as well as toxic wastes). The designation limit for IARC positive (human or animal) carcinogens is .01%, so the maximum cleanup level would be 10 ppm. The designation limit for halogenated hydrocarbons (HH) or polycyclic aromatic hydrocarbons (PAH) is also .01%, so the maximum cleanup level would be 10 ppm.

Ecology reiterates that the proposed list of cleanup levels (10% of the designation limit) is appropriate only for those constituents for which no other relevant cleanup level exists. For example, under the proposed approach, the cleanup level for $NaNO_3$ (toxic category D) would be 10000 ppm. However, according to the "How Clean is Clean" guidance, the standard soil cleanup level for nitrate (as N) is 100 ppm (10 times the national drinking water standard in 40 CFR Part 141). Closure activities at SHLWS must ensure the following:

A. For constituents listed in 173-303-081, -082, and -090 WAC, the closure performance standard is background.

B. For constituents with specified soil cleanup levels in the "How Clean is Clean" guidance, the closure performance standard is the specified level or background.

C. For those toxic, carcinogenic, and persistent constituents not otherwise designated as characteristic or listed wastes, and for which there are not more stringent soil cleanup standards established, the following closure performance standards apply after final approval by Ecology:

CATEGORY	MAXIMUM ALLOWED CONCENTRATION
Toxic-X	1 ppm
Toxic-A	10 ppm
Toxic-B	100 ppm
Toxic-C	1000 ppm
Toxic-D	10000 ppm
Carcinogen	10 ppm
PAH	10 ppm
HH	10 ppm

22 A-9 USDOE/PNL Proposal: All soil samples (from background areas and waste management areas) will be analyzed for metals (including arsenic, lead, and selenium), semivolatile organics, and pH. Table 4 will not be modified.

Ecology Response: Tables 4 and 5 seem to contradict Table 7, stating that analysis of background soils for arsenic, cobalt, iron, lead, mercury, molybdenum, nickel, nitrate, potassium, selenium, sodium, strontium, and zirconium is not required. Tables 4 and 5 should be revised to clearly show all analyses that will be performed on background samples, waste management area soil samples, and decontamination waste samples.

23 A-9 USDOE/PNL Proposal: The Sampling Plan will be revised to indicate the use of X-Ray Fluorescence (XRF) as the primary method for analysis of metals in soils. To verify XRF results, duplicates from 20% of the samples will be digested according to SW-846 methods and analyzed by ICP using EPA Method 6010.

Ecology Response: Data from XRF may only be used to demonstrate background cleanup in the waste management areas if the XRF detection limit is less than the mean background concentration (or the detection limit for ICP) for the primary metals associated with simulated high-level slurry (e.g., cerium, dysprosium, iron, potassium, lanthanum, molybdenum, sodium, neodymium, zirconium). If any metals are found at concentrations greater than two standard deviations above mean background, then the soil from that location should be removed and analyzed by ICP or AA, and the soil below should then be analyzed using ICP or AA. XRF may be shown to be an acceptable method for metals analysis at the simulated high-level waste slurry site if the ICP duplicates reveal that XRF consistently measures concentrations at or above those measured by ICP.

29 A-14 USDOE/PNL Proposal: 1) Soil samples will consist of the top foot of the soil profile. 2) Detection of narrow bands of contamination will be achieved by visual inspection of the soil profile for obvious signs of contamination. 3) Volatile organics will be sampled by soil gas analysis.

Ecology Response: 1) Sampling at a single depth will be accepted for all waste management areas except the less-than-90-day dangerous waste storage area. In this area, because organic solvents have been stored there, soil samples will consist of samples from 3-9 inches deep and from 18-24 inches deep. Single depth samples from the remaining waste management areas shall be taken from 3-9 inches below the surface. 2) Visual inspection of soil profiles is not known to be a reliable indicator of contamination at concentrations near the proposed cleanup levels (two standard deviations above mean background). To improve the

likelihood of detecting narrow bands of contamination near the surface, the closure plan must call for taking soil samples from 3-9 inches below the surface. 3) Volatile organics may be sampled by soil gas analysis in all waste management areas except the less-than-90-day dangerous waste storage area. In this area, because the occurrence of volatiles is more likely, soil gas analysis should be used to supplement soil sampling for volatile organics. Detection of organics at concentrations above the cleanup levels will necessitate soil removal, additional sampling, and revision of the closure plan.

34 A-16 **USDOE/PNL Proposal:** If it appears that local background for man-made hazardous constituents at the SHLWS T/S unit is much greater than for other areas of the Hanford Site, it may be necessary to amend the closure plan.

Ecology Response: If Ecology determines that local background for any hazardous constituent at the SHLWS T/S unit is much greater than for other areas of the Hanford Site, it will be necessary to amend the closure plan and to choose another area for background soil sampling. In addition, the closure plan should be revised to state that if the seven background samples have more than a 20% relative standard deviation in more than two constituents, then additional background samples will be taken.

35 A-18 **USDOE/PNL Proposal:** If the results from sampling suggest variability between the three waste management areas, resampling using a stratified random sampling approach will be considered.

Ecology Response: If, after removal of visible contamination, elevated levels (two standard variations above background) of any SHLWS metals or EP toxic metals are found in soils from the waste management areas, then additional sampling using a stratified random sampling approach will be required. Detection of these elevated levels in a waste management area would indicate that the assumption of equivalent variances between the two populations is incorrect. The closure plan must be revised to state that "if the results from sampling suggest that the variances of the two populations are not equal, resampling using a stratified random sampling approach will be required.

37 A-23 **USDOE/PNL Proposal:** Same as #29.

Ecology Response: Same as #29.

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Subject: Comments on the Simulated High-Level Waste Slurry Unit Closure Plan

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(Note: Add to AR TS-3-4)