START

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

0041602

95-PCA-384

JUN 28 1995

Mr. Moses N. Jaraysi
200 Area Unit Supervisor
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Mr. Joseph J. Witczak, Unit Supervisor
Regulatory and Technical Support Unit
Nuclear Waste Program
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Dear Messrs. Jaraysi and Witczak:

RESPONSE TO ECOLOGY COMMENTS ON THE DATA EVALUATION REPORTS FOR THE 300 AREA SOLVENT EVAPORATOR (T-3-1)

Enclosed are the U.S. Department of Energy, Richland Operations Office, (RL) and Westinghouse Hanford Company (WHC) responses to the State of Washington Department of Ecology (Ecology) comments on the data evaluation reports for the 300 Area Solvent Evaporator. The comments are on the Soil Characterization at the 300 Area Solvent Evaporator Closure Site, WHC-SD-EN-TI-273, and the Concrete Characterization for the 300 Area Solvent Evaporator Closure Site, WHC-SD-EN-TI-296. The responses have been discussed informally with the Ecology representative, Mr. R. E. Cordts.

JUN 28 1995

Should you have any questions or comments, please contact Ms. E. M. Mattlin of RL on (509) 376-2385 or Mr. F. A. Ruck III of WHC on (509) 376-9876.

Sincerely,

James E. Rasmussen

James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division

EAP:EMM

Enclosure:
Response to Ecology Comments on
the Data Evaluation Reports
for the 300 Area Solvent
Evaporator (T-3-1)

cc w/encl:
Administrative Record
EDMC, H6-08
R. Cordts, Ecology
D. Duncan, EPA
R. Jim, YIN
D. Lundstrom
D. Powaukee, NPT
S. Price, WHC
F. Ruck, III, WHC
D. Sherwood, EPA
J. Wilkinson, CTUIR

cc w/o encl:
W. Dixon, WHC

No.	Comment/Response	Ecology Concurrence

Following are the state's comments on WHC-SD-EN-TI-273 (Rev 0) the report *Soil Characterization at the 300 Area Solvent Evaporator Closure Site*, which was submitted on March 13, 1995. This is the final submission of data and analyses by which a decision is being made to clean close the 300 Area Solvent Evaporator Site.

1. Page 9, Table 1 - Soil Sample Locations and Description: For samples B090C8 and B090C9 (duplicate samples) at least three different soil layers were identified from which composite samples were collected in both cases. Ecology typically discourages composite samples in cases were distinct layers are found. What is the justification for composite sampling in this case?

   RL/WHC Response: The layers found were quite thin (approximately 1/2 inch). Due to the amount of cobble present there was insufficient sample material at the individual layers to take a complete sample.

2. Page 11, Lines 7-10: I am uncertain about the purpose of this paragraph.

   RL/WHC Response: This paragraph is meant to introduce the concept of using published values for naturally found concentrations of compounds for comparisons of analytes for which there is no health-based limit nor Hanford Site Background threshold. An example in the text is the discussion on page 18/line 14 concerning the uranium found in the soil. Dragun (1988) published a typical range of uranium concentrations in native soil of 0.9 to 9.0 ug/gram with an extreme limit of 250 ug/gram. A comparison is then made with the analytical results for this site.

No.	Comment/Response	Ecology Concurrence

3. Page 12, Table 2 - Results of Field Analyses: Note two at the bottom of the Table is confusing; the lowest counts should statistically be around 80 cpm since that is defined as background. It is highly unlikely to have all counts less than detection (background). This reported outcome (all results less than detection) is also surprising because the uranium levels are higher than average and there should be some radioactive response due to uranium.

   RL/WHC Response: This type of background radiological reading is site specific. The health physics technicians on site using field equipment determined that 80 counts per minute was average background at this site. Samples were then examined to determine if any showed a spike (high radiological reading). Higher concentrations of any material, such as uranium, at the site would be taken into account as part of the background. Individual samples were later tested, in a controlled laboratory counting room away from the site, for total activity. Total activity is used to determine if the samples can be considered non-radioactive for transportation and off-site laboratory acceptance criteria.

4. Page 13-14, Lines 53-3: Since this is a document intended for public consumption, please explain further what Level C data validation activities are, is Level A or B better? Why not use the more widely accepted EPA validation classification of 1-4?

   RL/WHC Response: The validation guidelines are described in the WHC document WHC-SD-EN-SPP-002, Data Validation Procedures for Chemical Analyses and are defined as follows:

   - **Level A (minimum requirements for all data) - This level of data validation will include the verification of required deliverables, requested versus reported analyses, and evaluation and qualification of results based on analytical holding times. No other validation, transcription or calculation checks will be performed.**

   - **Level B - This level of data validation will include level A requirements and additional qualification of results based on method blank results. No calculation checks will be performed.**

   - **Level C - This level of data validation will include level A and B validation and the additional evaluation and qualification of results based on matrix spike/matrix spike duplicate analysis, surrogate recoveries, duplicates and analytical method blanks.**

No.	Comment/Response	Ecology Concurrence

- Level D - This level of data validation will include level A, B, and C validation and the additional qualification of results based on the evaluation of initial and continuing instrument calibrations (standards and blanks), laboratory control samples, and where applicable to the particular method; instrument tuning, analytical sequence, internal standards performance, and other QC checks that are performed as required by the particular analytical method. Calculation checks of both sample and QC results will be performed at a frequency of 20% or at least one sample and QC group will be recalculated, whichever is greater. QC samples or a QC group will be defined as at least one of the following: method blank, matrix spike/matrix spike duplicate, surrogate, duplicate, laboratory control sample and internal standard.

- Level E - This level of data validation will be considered the highest level of validation intended to verify data that is intended to support verification of site clean-up actions. This level of data validation will include all level A, B, C and D validation and will also include calculation checks on 100% of all sample and QC results.

The Washington State Department of Ecology contact who reviewed the Validation Guidelines was Billie Mauss at the Kennewick Office. Billie Mauss is now with the Department of Energy, Richland Operations Office.

The EPA levels we're aware of deal with the analytical aspects, not the validation criteria. For the analytical classification levels, Level 5 is special analytical services (rad Chem), Level 4 is CLP defined, Level 3 is SW-846 defined, Level 2 is field analytical services defined and Level 1 is process knowledge defined.

5. Page 15, Table 3 - 300 Area Solvent Evaporator Soil Results of Organic Analyses: Values under the "Naphtha" column are confusing. First of all, as defined, the qualifiers for sample results for B090C5 indicate both that naphtha was detected (R) and not detected (U), which is correct? Second, Note b at the bottom of the Table states that qualifiers indicate naphtha was not detected; so, why is the estimated level set at the practical quantitation limit and not at the detection limit?

No.	Comment/Response	Ecology Concurrence

RL/WHC Response: The data was validated as "UR" indicating that the compound or analyte was analyzed for and not detected in the sample. Additionally, the datum is unusable due to an identified QC deficiency.

The second part of the comment concerns the definitions of the PQL and the DL. DL may refer to the Instrument Detection Limit (IDL) or the Method Detection Limit (MDL) term.

The MDL is determined by analyzing a low level standard(s) which has been processed (digested, distilled and/or extracted) in the same manner as the analytical samples. The IDL is determined by analyzing low level standard(s) without the processing step. Therefore, the MDL will be larger than the corresponding IDL, but the MDL will also contain valuable information regarding the effect of sample processing on the actual real world detection level. The IDL reflects only optimum reporting limit conditions which do not exist with Hanford samples. Although the MDL incorporates the processing conditions, commercial labs will not report down to the MDL in most cases. The common approach the labs take is to multiply the MDL by a factor of 3 to 10 and call this value the PQL. This is the lowest level to which analytical measurements should be considered quantitatively meaningful under most circumstances.

6. Page 17, Lines 6-13: While you state there is "no standard method that includes ethyl acetate as a target compound," the continuing explanation makes it sound as though it is relatively easy to detect and quantify. Please explain further.

RL/WHC Response: There is no standard EPA method which includes ethyl acetate as a target compound. If the compound was present in the soil samples it would be expected to be reported as a TIC in the analyses of volatile organic compounds using standard EPA methods (SW-846, method 8240). A TIC is reported if its concentration is greater than 10% of the nearest internal standard, which would make it about 10 ppb. Our action level for ethyl acetate is 72000 ppm (~7,000,000 times greater than 10 ppb), about 7 weight percent. At 10 ppb or greater the laboratory is obligated to perform a library search to identify the compound. The library search is performed using the results of mass spectroscopy, which looks at the structure of the compound. Ethyl acetate has a very simple structure and would be very easy to identify.

No.	Comment/Response	Ecology Concurrence

7. Page A-I. Table - Maxima and 95/95 Reference Thresholds for Hanford Site Soil Background: There are no unit definitions under the "Limit of Detection" and "Limit of Quantitation" columns.

RL/WHC Response: Units are mg/kg.

8. Page B-1. Table - Model Toxics Control Act Cleanup Standards for Specific Analytes: There are apparently insignificant rounding differences on several values comparing the Table to CLARC II (Model Toxics Control Act Cleanup Levels and Risk Calculation Update, August 31, 1994) data. There are, however, significant incorrect values as follows: Trichloroethylene should be NA for the RFD and Cleanup levels; Cadmium 0.001 for RFD (correct as written) and 80m/kg for Cleanup level.

RL/WHC Response: Comparisons were made to a previous version (the March 1994 Update) of the CLARC II tables. The March 1994 Update uses the July 2, 1993 tables for CLARC II. (The August 28, 1994 Update was not available when the soil report was prepared in early August.)

For trichloroethylene no changes were noted to the values listed in the CLARC II tables between the March 1994 and August 1994 Updates. The carcinogen clean-up level, on which clean-up levels for this report were based, is in agreement with CLARC II. The MTCA Method B values for trichloroethylene are based on the Cancer Potency Factor (CPF), which is found on page 17 of the Cancer Potency Factor Information table of the August 28 1994 Update of CLARC II. The CPF is listed as 0.011 kg-day/mg, which is in agreement with the value listed in the report. The Clean-up level listed, on page 18 of the MTCA Method B Formula Table, is 90.9 mg/kg. This is rounded to 91 mg/kg in the report.

The noncarcinogen clean-up levels for trichloroethylene are not from IRIS or the CLARC tables. When no information is available in these two standard sources, other sources are checked for information. In this case, the RfD comes from the EPA's Superfund Technical Support Center. However, the more conservative carcinogenic clean-up value was used in data evaluation.

No.	Comment/Response	Ecology Concurrence
	For the cadmium value it is agreed that the clean-up level should be 80 mg/kg. as is noted in the August 1994 Update of CLARC II. The August 1994 Update differentiates between cadmium in soil and cadmium in water. The previous version of CLARC II, the March 1994 Update, did not differentiate between cadmium in soil and cadmium in water and listed in the "soil" column on page 3 of the July 1993 tables a cadmium clean-up value of 40 mg/kg. As the clean-up level used in the report is the more conservative value, this should not affect the conclusions reached in the report.	

No.	Comment/Response	Ecology Concurrence

Following are the state's comments on WHC-SD-EN-TI-296 (Rev 0) the report *"Concrete Characterization for the 300 Area Solvent Evaporator Closure Site"* which was submitted on March 13, 1995. This is the final submission of data and analyses by which a decision is being made to clean close the 300 Area Solvent Evaporator Site.

9. Page 4, Lines 35-43: I understand from this description that equipment blanks are exposed (contacted) with sampling equipment other than that actually used to collect the subject samples. Isn't the blank a clean, non-hazardous material the residue of which possibly remaining on equipment would not bias the results of that sample? It would seem most desirable to "contact" equipment blanks with the equipment which is being used to collect the samples in question. And, since you state above (page 4, lines 11-12) that there was no decontamination in the field, what was the process used to collect uncontaminated core samples.

RL/WHC Response: All equipment used for sampling was decontaminated in the 1706 KE Facility on the Hanford Site. At the 1706 KE Facility the equipment was individually wrapped, and then transported to the field. Separate decontaminated equipment was provided for each sample collected as part of this effort. Once any sampling equipment (drill bit, spoon, etc.) was used to collect a sample it was set aside for return to the 1706 KE Facility for decontamination. Freshly decontaminated (at the 1706 KE Facility) equipment was then used to collect the next sample. One set of freshly decontaminated equipment was used to prepare each equipment blank. The results of these equipment blanks were used to check the decontamination process used at the 1706 KE Facility.

10. Page 8, Lines 37-43: Please explain further what Level D data validation activities are. Why was Level D chosen for this validation set and Level C for the soil validation set'?

RL/WHC Response: The validation level (Level D) is defined in the response to comment 4. Level C is considered the minimum for RCRA closure projects. The WHC data validation coordinator for this project changed between the two sampling events. The new coordinator recommended Level D for this project, partly due to the complexity of sampling and analyzing concrete as opposed to soil.

No.	Comment/Response	Ecology Concurrence

11. Page A-I, Table - Maxima and 95/95 Reference Thresholds for Hanford Site Soil Background: There are no unit definitions under the "Limit of Detection" and "Limit of columns.

RL/WHC Response: Units are mg/kg.

12. Page B-1, Table - Model Toxics Control Act Cleanup Standards for Specific Analytes: There are apparently insignificant rounding differences on several values comparing the Control Act Cleanup Levels and Risk Calculation Update, August 31, 1994) date. However, there are significant incorrect values as follows: 1,1,1 Trichloroethane should be 0.9 for the RfD and 72,000mg/kg for Cleanup level; Trichloroethylene should be NA for the RfD and Cleanup level; Cadmium values should be 0.001 for RfD (correct as written) and 80mg/kg fur Cleanup level.

RL/WHC Response: For 1,1,1-trichloroethane the values used agree with the March 1994 Update to CLARC. The new values (RfD = 0.9; clean-up level = 72000 mg/kg) are listed in the August 1994 Update (RfD change noted on page 9 of the Update; new clean-up level noted on page 18 of the MTCA Method B table). It is noted in the August 1994 Update that these were made on August 26, 1994. While this Update had been issued prior to issuing the concrete characterization report, the changes were not incorporated into the concrete characterization report, due to an oversight. However, the values used in the report are more conservative than the currently accepted values and therefore, should not affect the conclusions reached in the report.

For trichloroethylene and cadmium see response to comment 8 from the soil characterization report.

No.	Comment/Response	Ecology Concurrence

Comments relevant to the closure in general or to the content of both reports follow:

13. Please include with the response to this list of comments what the limits of quantitation and the contract limits were for each analyte requested in the Closure Plan?

RL/WHC Response: During the time period of the analysis of the 300 ASE samples, the labs generally utilized the CLP defined Contract Required Quantitation Limits.

This information is from the EPA's CLP Statement of Work:

- CLP TARGET ANALYTE LIST - ORGANICS

(Note: when the compound name used in the CLP Statement of Work is different from the compound name used in the closure plan, the name used in the closure plan is in parentheses.)

		Quantitation Limits		
	CAS Number	Water µg/L	Low Soil µg/Kg	Med. Soil µg/Kg
Tetrachloroethene (Perchloroethylene)	127-18-4	10	10	1200
1,1,1-Trichloroethane	71-55-6	10	10	1200
Trichloroethene	79-01-6	10	10	1200
2-Butanone (Methyl ethyl ketone)	78-93-3	10	10	1200
Methylene chloride (Dichloromethane)	75-09-2	10	10	1200
1,1-Dichloroethene (1,1-dichloroethylene)	75-35-4	10	10	1200
1,2-Dichloroethene (total) (1,2-dichloroethylene)	540-59-0	10	10	1200
1,1-Dichloroethane	75-34-3	10	10	1200
1,2-Dichloroethane	107-06-2	10	10	1200
Vinyl chloride	75-01-4	10	10	1200

No.	Comment/Response	Ecology Concurrence

- CLP TARGET ANALYTE LIST - INORGANICS

	CAS Number	RDL (CRDL) Reflux Digestion µg/L	mg/Kg
Beryllium	7440-41-7	5.0	1.0
Copper	7440-50-8	25	5.0
Barium	7440-39-3	200	40
Cadmium	7440-43-9	5.0	1.0
Lead	7439-92-1	3.0	0.6
Silver	7440-22-4	10	2.0

- For the non-CLP analytes, the labs commonly report their PQL which is defined as 3 to 10 times the MDL. The MDL is determined by the guidelines set forth in SW-846.

14. I believe that there are forms specific for each analytical request which accompanied samples. Please assure that copies of these are placed with the Administrative Record.

RL/WHC Response: These Sample Analyses Forms (SAFs) are included in the two characterization reports. For soil, SAF 93-222 is on page 8 of the report; for concrete, SAF 94-126, is on page F4 of the report.

15. Do field log books exist which relate to the decommissioning which has occurred so far at the site? If so, please assure that copies of these are placed with the Administrative Record.

RL/WHC Response: Field logbooks covering the sampling events do exist and have been placed into the Administrative Record.