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

APR 1 5 1996

96-EAP-050

Mr. David S. Dougherty, P.E.
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336-6018

Dear Mr. Dougherty:

PERMIT MODIFICATION REQUEST FOR EFFLUENT COMPLIANCE SAMPLING AT 200 AREA EFFLUENT TREATMENT FACILITY (STATE WASTE DISCHARGE PERMIT, NO. ST 4500) 41583

The U.S. Department of Energy, Richland Operations Office (RL) requests a modification to the State Waste Discharge Permit (discharge permit), No. ST 4500, for the 200 Area Effluent Treatment Facility (ETF) to allow an alternate location and method for collecting effluent samples as required for compliance with the discharge permit. Specifically, RL requests a change in language in Condition S.1.B and in Footnotes 6 and 8 of the table in Condition S.1.B of the discharge permit. The specific modifications and the justification for these modifications, including the required certification, are enclosed.

If you have any questions, please contact me or Randall Krekel of my staff at 376-4264, Roger Quintero of RL at 373-0421, or Don Flyckt of the Westinghouse Hanford Company at 372-3142.

Sincerely,

James E. Rasmussen

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

EAP:RNK

Enclosure

cc w/encls:
D. Flyckt, WHC
R. Jim, YIN
D. Powaukee, NPT
M. Selby, Ecology
J. Wilkinson, CTUIR

cc w/o encls:
W. Dixon, WHC

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Author	Addressee	Correspondence No.
J. E. Rasmussen, RL (N. A. Ballantyne, WHC)	D. S. Dougherty, Ecology	Incoming:9601128 Xref: 9651704D

Subject: PERMIT MODIFICATION REQUEST FOR EFFLUENT COMPLIANCE SAMPLING AT 200 AREA EFFLUENT TREATMENT FACILITY (STATE WASTE DISCHARGE PERMIT, NO. ST 4500)

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		W. T. Dixon	H6-21	x
		D. L. Flyckt	S6-71	x
		D. W. Lindsey	S6-71	x
		J. J. Luke	H6-21	x
		S. R. Moreno	B3-06	x
		P. M. Olson	S6-71	x
		B. D. Williamson	B3-15	x
		EDMC	H6-08	x

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200 Area Effluent Treatment Facility
State Waste Discharge Permit No. ST 4500
Permit Modification Request for Effluent Compliance Sampling
April 1996

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and/or imprisonment for knowing violations.

Elizabeth M. Bowers for 4-17-96
Thomas K. Teynor, Director Date
Waste Programs Division
U.S. Department of Energy
Richland Operations Office

200 Area Effluent Treatment Facility
State Waste Discharge Permit No. ST 4500
Permit Modification Request for Effluent Compliance Sampling
April 1996

Permit Modifications

1. Condition S.1.B, paragraph 1: Revise the first sentence to read, "ETF effluent (Discharge 001 Effluent) shall not exceed the following highest allowable concentrations."

2. Condition S.1.B, footnote 6: Revise the footnote to read, "As measured in the verification tank recycle line or in a composite sample prior to the verification tanks."

3. Condition S.1.B, footnote 8: Revise the second sentence to read, "This includes results from the verification tank."

Justification

Currently, Condition S.1 of the discharge permit indicates that RL will collect composite samples at a location prior to the verification tanks using a flow-proportional sampler. This sample location has proven to be subject to several operational limitations. These limitations occur in the following situations:

- The composite samplers are programmed to collect flow proportional samples during the filling of a verification tank. If an operation problem develops and a verification tank is not completely filled, an adequate sample volume may not be available for the laboratory to complete the analysis and quality assurance requirements.

- Operational problem may result in stopping the flow to the verification tanks, and samples may be stored in the composite samplers for an extended period of time. Good laboratory practices call for a limiting the sample storage time.

- If the laboratory results are questioned, it is not possible to resample the contents of a verification tank to confirm the results.

- If the sampler develops a mechanical problem, there will be inadequate sample, or the sample may not be representative of the verification tank.

Currently, the only viable solution to any of the above situations is to recycle the contents of the verification tank and collect a new sample. This is not an efficient or economical way to operate the ETF.

As an alternative to the composite sample, RL proposes to collect a grab sample from the verification tank recirculation line (Figure 1). This line draws 150 gallons per minute from the bottom of the tank and returns the flow back to the tank through two eductors. Though the wastewater sent to the verification tank has little variability, this mode of operating the verification tanks provides a final equalizing or mixing step.

Analytical data from grab samples collected from this location indicate that there is little variability in the treated wastewater sent to the verification tanks and that these samples are representative of the verification tank contents. These samples were collected within a 1-, 3-, and 24-hour interval from the recirculation line. The resulting data are very consistent and are in agreement with the composite sample results (Table 1).

Additionally, operating practices at the ETF and the Liquid Effluent Retention Facility (LERF) prevent variability in the wastewater. Before wastewater is treated in the ETF, it is allowed to equalize in the LERF basins. Once it is sent to the ETF for treatment, any major variability in the wastewater would likely be associated with a significant change (increase) in conductivity, which would cause the ETF to automatically go to a standby mode. The discharge to the verification tanks is continuously monitored for conductivity and the ETF automatically shuts down if the conductivity is above one microsiemen per centimeter (μS/cm). For comparison, laboratory distilled water generally has a conductivity of 0.5 to 3 μS/cm.

In summary, RL proposes to collect grab samples from the verification tank recirculation line as an alternative and/or backup sample location to determine compliance with the limits contained in the discharge permit. This sample will be collected after the recycle line has been in operation for a minimum of one hour. RL considers a sample collected in this manner to be representative of the discharge that is monitored for compliance with Condition S.1. RL also considers these samples to be in compliance with the requirements of Condition G.11 of the discharge permit.

Upon approval, the proposed modifications to the discharge permit will be reflected in the next revision of the Waste Analysis Plan for the ETF and the Liquid Effluent Retention Facility. Also upon approval, these modifications will require a corresponding change in the Discharge Monitoring Report form which will indicate that the permit required type of sample may be either grab or composite.

Figure 1
Verification Tank Schematic

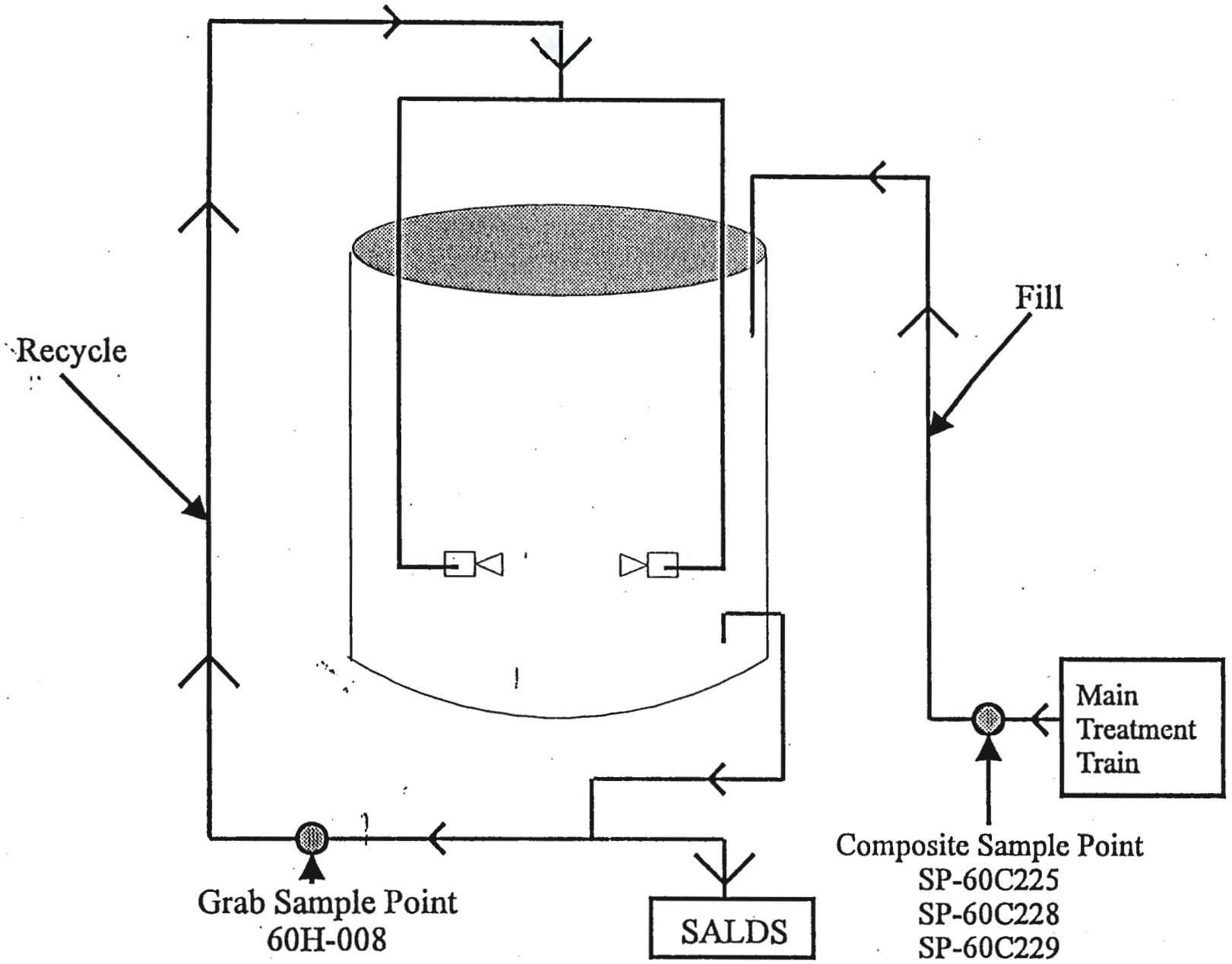

TABLE 1 COMPARISON BETWEEN COMPOSITE AND GRAB SAMPLING

PARAMETER[1]	Units	COMPOSITE SAMPLE[2]	GRAB SAMPLE		
			1-hr[3]	3-hr[4]	24-hr[5]
ANIONS BY ION CHROMATOGRAPHY					
Fluoride	mg/L	ND	ND	ND	ND
Nitrate	mg/L	0.07	ND	ND	0.044
Nitrite	mg/L	ND	ND	ND	ND
Sulfate	mg/L	0.54	ND	0.55	0.55
GAMMA ENERGY ANALYSIS-General					
CePr-144	pCi/L	ND	ND	ND	ND
Co-60	pCi/L	ND	ND	ND	ND
Cs-134	pCi/L	ND	ND	ND	ND
Cs-137	pCi/L	ND	ND	ND	ND
Eu-154	pCi/L	ND	ND	ND	19
Eu-155	pCi/L	ND	ND	ND	ND
Ru-106	pCi/L	ND	ND	ND	ND
Sn-113	pCi/L	ND	ND	ND	ND
GROSS ALPHA/GROSS BETA					
Gross Beta	pCi/L	ND	ND	ND	ND
Gross Alpha	pCi/L	ND	ND	ND	ND
ICP - All Possible Metals					
Antimony	µg/L	ND	ND	ND	ND
Barium	µg/L	ND	ND	ND	ND
Beryllium	µg/L	ND	ND	ND	ND
Cadmium	µg/L	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND
Copper	µg/L	ND	ND	ND	ND
Nickel	µg/L	ND	ND	ND	ND
Selenium	µg/L	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND
Vanadium	µg/L	ND	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND
SW-846 8260A Volatile Organic Compounds					
1,1,1-Trichloroethane	µg/L	ND	ND	ND	ND
1,1,2-Trichloroethane	µg/L	ND	ND	ND	ND
1,1-Dichloroethene	µg/L	ND	ND	ND	ND
1,2-Dichloroethane	µg/L	ND	ND	ND	ND
1-Butanol	µg/L	ND	ND	ND	ND
2-Butanone (methyl ethyl ketone)	µg/L	ND	ND	ND	ND
4-Methyl-2-pentanone (Hexone)(Methyl isobutyl ketone)	µg/L	ND	ND	ND	ND

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PARAMETER[1]	Units	COMPOSITE SAMPLE[2]	GRAB SAMPLE		
			1-hr[3]	3-hr[4]	24-hr[5]
Acetone	µg/L	11.0	6.0	6.0	6.0
Benzene	µg/L	ND	ND	ND	ND
Carbon tetrachloride	µg/L	ND	ND	ND	ND
Chlorobenzene	µg/L	ND	ND	ND	ND
Chloroform	µg/L	ND	ND	ND	ND
Tetrachloroethene	µg/L	ND	ND	ND	ND
Tetrahydrofuran	µg/L	ND	ND	ND	ND
Toluene	µg/L	0.6	ND	ND	ND
Trichloroethene	µg/L	ND	ND	ND	ND
Vinyl chloride	µg/L	ND	ND	ND	ND
SW-846 8270B Semi-Volatile Compounds					
1,4-Dichlorobenzene	µg/L	ND	ND	ND	ND
Total Cresol	µg/L	ND	ND	ND	ND
Acetophenone	µg/L	0.2	0.3	0.3	0.3
Benzyl alcohol	µg/L	ND	ND	ND	ND
Di-n-octyl phthalate	µg/L	ND	ND	ND	ND
Hexachloroethane	µg/L	ND	ND	ND	ND
N-Nitrosodimethylamine	µg/L	ND	ND	ND	ND
Naphthalene	µg/L	ND	ND	ND	ND
Tri-n-butylphosphate (Tributyl phosphate)	µg/L	ND	ND	ND	ND
STRONTIUM 90					
Sr-90	pCi/L	ND	0.58	ND	ND
TRITIUM by Liquid Scintillation					
H-3	pCi/L	20,000,000[6]	10,000,000	9,400,000	13,000,000
OTHER ANALYSES					
Ammonia	mg/L	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND
Conductivity	µmho/cm	2.0	1.4	1.5	1.6
Cyanide	mg/L	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND
Nb-94	pCi/L	ND	ND	ND	ND
Ru-103	pCi/L	ND	ND	ND	ND
Tot Dissolved Solids	mg/L	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	0.43	1.3	0.90	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND
Total Suspended Solids	mg/L	1.6	2.0	0.8	2.0

TABLE 1 COMPARISON BETWEEN COMPOSITE AND GRAB SAMPLING

PARAMETER[1]	Units	COMPOSITE SAMPLE[2]	GRAB SAMPLE		
			1-hr[3]	3-hr[4]	24-hr[5]

NOTES:

(1) Parameters from Ecology Permit No. ST 4500, dated 06/26/95 and EPA Delisting Approval, dated 06/07/95.
(2) LEF sample # L00341 & L00344 at SP 60C-229 & SP 60C-225
(3) LEF sample # L00371 at 60H-008
(4) LEF sample # L00372 at 60H-008
(5) LEF sample # L00373 at 60H-008
(6) The H-3 composite sample result is different from grab results because low spike recovery which was magnified by 1:1000 dilution.

ND = Non Detected