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Project Title/Work Order		EDT No.
200 Area TEDF Effluent Sampling And Analysis Plan		ECN No. 622237

Name	MSIN	Text With All Attach.	Text Only	Attach./Appendix Only	EDT/ECN Only
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Page 1 of 21. ECN **№ 622237**Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. M.J. Brown, 200 Area TEDF Env Eng, S6-71, 372-2972 5. Project Title/No./Work Order No. 200 Area TEDF Effluent Sampling and Analysis Plan 8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-LEF-PH-002 Rev 0	3a. USQ Required? ☐ Yes ☒ No 6. Bldg./Sys./Fac. No. 2025EA/200E 9. Related ECN No(s). N/A	4. Date 05/25/95 7. Approval Designator EQ 10. Related PO No. N/A
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12. Description of Change Revision 1 incorporates the Effluent Variability Study into the routine sampling. Supporting permit related information is also added.			
13a. Justification (mark one) Criteria Change ☒ Design Improvement ☐ Environmental ☒ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐			
13b. Justification Details Effluent Variability Study is required to be submitted to Ecology 60 days after issuance of State Waste Discharge Permit No. ST4502.			
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15. Design Verification Required [] Yes [X] No		16. Cost Impact ENGINEERING CONSTRUCTION Additional [] \$ Additional [] \$ Savings [] \$ Savings [] \$				17. Schedule Impact (days) Improvement [] Delay []			
18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.									
SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]				
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]				
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]				
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]				
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]				
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]				
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]				
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]				
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]				
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]				
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]				
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]				
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]				
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]				
Environmental Report	[]	Inspection Plan	[]		[]				
Environmental Permit	[]	Inventory Adjustment Request	[]		[]				
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QA	MJ Warn	<i>MJ Warn</i>	6/12/95	Safety					
Safety				Design					
Environ.				Environ.					
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RELEASE AUTHORIZATION

Document Number: WHC-SD-LEF-PLN-002, Rev. 1

Document Title: 200 Area TEDF Effluent Sampling and Analysis Plan

Release Date: 6/27/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

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7. Abstract

This sampling analysis sets forth the effluent sampling requirements, analytical methods, statistical analyses, and reporting requirements to satisfy the State Waste Discharge Permit No. ST4502 for the Treated Effluent Disposal Facility. These requirements are listed below:

- Determine the variability in the effluent of all constituents for which enforcement limits, early warning values and monitoring requirements;
- Demonstrate compliance with the permit; and
- Verify that BAT/AKART (Best Available Technology/All Known and Reasonable Treatment) source, treatment, and technology controls are being met.

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DATE **JUN 12 1995**

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CERTIFICATION

The following certification, required by Section G.18 of Washington State Waste Discharge Permit No. ST 4502, for all reports and information associated with permit compliance is hereby included:

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.

Owner/Operator

Date

James E. Rasmussen, Director

Environmental Assurance, Permits, and Policy Division

U.S. Department of Energy

Richland Operations Office

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METRIC CONVERSION

To Convert	Multiply By	To Convert	Multiply By
LINEAR MEASURE (LENGTH)			
inches to millimeters	25.4	millimeters to inches	0.0394
inches to centimeters	2.54	centimeters to inches	0.394
feet to meters	0.305	meters to feet	3.281
yards to meters	0.914	meters to yards	1.094
miles to kilometers	1.609	kilometers to miles	0.621
SQUARE MEASURE (AREA)			
square inches to square centimeters	6.452	square centimeters to square inches	0.155
square feet to square meters	0.0929	square meters to square feet	10.764
square yards to square meters	0.836	square meters to square yards	1.196
acres to hectares	0.405	hectares to acres	2.471
CUBIC MEASURE (VOLUME)			
cubic inches to cubic centimeters	16.387	cubic centimeters to cubic inches	0.0610
cubic feet to cubic meters	0.0283	cubic meters to cubic feet	35.315
cubic yards to cubic meters	0.765	cubic meters to cubic yards	1.308
LIQUID MEASURE (CAPACITY)			
fluid ounces to liters	0.0296	liters to fluid ounces	33.814
quarts to liters	0.946	liters to quarts	1.057
gallons to liters	3.785	liters to gallons	0.264
WEIGHTS (MASS)			
ounces avoirdupois to grams	28.35	grams to ounces avoirdupois	0.0353
pounds avoirdupois to kilograms	0.454	kilograms to pounds avoirdupois	2.205
tons to metric tons	0.907	metric tons to tons	1.102
TEMPERATURE			
32 °F (freezing point of water)		0 °C	
212 °F (boiling point of water)		100 °C	
98.6 °F (body temperature)		37 °C	
To find degrees Celsius, subtract 32 degrees Fahrenheit and divide by 1.8. To find degrees Fahrenheit, multiply degrees Celsius by 1.8 and add 32.			

1.0 INTRODUCTION

This Sampling and Analysis Plan has been developed to meet the requirements for effluent monitoring at the 200 Area Treated Effluent Disposal Facility (200 Area TEDF), as stated in Washington State Waste Discharge Permit No. ST 4502 (Ecology 1995). This plan addresses both the effluent variability study and statistical evaluation plan, and discharge monitoring to demonstrate permit compliance. Compliance with the groundwater monitoring requirements stated in the permit is addressed in the *Groundwater Screening Evaluation/Monitoring Plan - 200 Area Treated Effluent Disposal Facility* (WHC 1995a). This plan is submitted within 60 days of permit issuance, as required in Sections S.6 and S.9 of the permit (Ecology 1995).

1.1 PURPOSE AND OBJECTIVES

The purpose of this Sampling and Analysis Plan is to set forth the sampling requirements, analytical methods, statistical analyses, and reporting requirements to monitor the effluent quality in accordance with the conditions of the 200 Area TEDF state waste discharge permit. These conditions are as follows:

- To determine the variability in the effluent of all constituents for which enforcement limits, early warning values, and monitoring requirements are listed in the permit (Ecology 1995, Section S.6).
- To demonstrate compliance with the permit (Ecology 1995, Section S.9)
- To verify that BAT/AKART (best available technology and all known, available and reasonable methods of prevention, control, and treatment) source, treatment, and technology controls are being met (Ecology 1995, Section S.9).

This document is intended to complement the *Groundwater Screening Evaluation/Monitoring Plan* (WHC 1995a) and to be consistent and compatible with the *200 Area Liquid Effluent Facilities Quality Assurance Project Plan* (WHC 1995b).

1.2 SCOPE

This document specifies the following elements of the 200 Area TEDF effluent sampling program:

- Organization responsible for collecting the samples

- What samples will be collected and what analyses will be performed
- When the samples will be collected
- Where the samples will be collected
- How the samples will be collected
- Where the samples will be analyzed
- How the resulting analytical data will be reported.

Figure 1 shows how this Sampling and Analysis Plan fits within the document hierarchy of the 200 Area TEFDF Compliance Monitoring Program. Groundwater sampling is not within the scope of this document. The groundwater sampling effort is described in the *Groundwater Screening Evaluation/Monitoring Plan - 200 Area Treated Effluent Disposal Facility* (WHC 1995a).

1.3 FACILITY DESCRIPTION

200 Area TEFDF is located about 4 kilometers east of the 200 East Area (Figure 2). The facility collects and disposes of treated, non-dangerous liquid effluent streams generated in the Hanford Site 200 East and 200 West Areas. 200 Area TEFDF consists of a 17.7-kilometer long pipeline which collects effluent from several individual generators and discharges the effluent to two adjacent rock-lined disposal ponds. Each disposal pond is approximately 2 hectares in size and provides for both effluent evaporation and infiltration through the soil.

200 Area TEFDF discharge consists of nondangerous wastewater from the following sources:

- Plutonium Finishing Plant wastewater
- 222-S Laboratory wastewater
- T Plant wastewater (including T Plant Laboratory wastewater)
- 284-W Powerplant wastewater
- B Plant chemical sewer
- PUREX chemical sewer
- 242-A-81 Water Services Building wastewater.

The generator waste streams are treated to meet BAT/AKART before discharge, as described in the *200 Area TEFDF Interface Control Document* (WHC 1995c). All of these waste streams are generated in processes that do not involve direct contact of the water with dangerous waste or radioactive processes, including the following:

- Building ventilation, heating, and cooling systems

- Steam condensate from heating potable water
- Condensate of pressurized potable water
- Rainwater from parking lot and exterior paved areas
- Potable (treated) water
- Untreated Columbia River water
- Boiler blowdown
- Floor drains with limited and strictly controlled usage.

A more complete description of the 200 Area TEDF and generator waste streams is provided in the *200 Area Treated Effluent Disposal Facility (Project W-049H) Wastewater Engineering Report* (WHC 1992) and *200 Area TEDF Interface Control Document* (WHC 1995c).

1.4 PERMIT REQUIREMENTS

Permit No. ST 4502 is a state waste discharge permit issued by the Washington State Department of Ecology (Ecology) under the authority of Chapter 90.48 Revised Code of Washington (RCW) and Washington Administrative Code (WAC) Chapter 173-216. The nine special conditions stated in the permit are satisfied by the procedures and methods described in several documents, as summarized in Table 1. The 23 general conditions established in the permit are satisfied by the documents, as applicable, noted in Table 2.

Figure 1. 200 Area Treated Effluent Facility Compliance Monitoring Program

Figure 2. 200 Area Treated Effluent Disposal Facility

29503026-1

Table 1. Compliance with Special Permit Conditions.

SPECIAL CONDITION	DESCRIPTION	IMPLEMENTING DOCUMENT
S.1 Enforcement Limitations in Groundwater	Highest allowable concentrations of 6 parameters measured quarterly in groundwater at two downgradient wells (699-40-36 and 699-41-35)	200 Area TEDF Groundwater Screening/Monitoring Plan (GMP) Groundwater Discharge Monitoring Report (DMR)
S.2 Effluent Quantity Limitations	Highest allowable total average monthly flow of wastewater from sources listed in permit, from future potential sources, and from the total of current and future sources	200 Area TEDF Effluent Sampling and Analysis Plan (SAP) Effluent DMR
S.3 Effluent Quality Limitations	Highest allowable average monthly and daily maximum concentrations of 12 parameters in the effluent	SAP Effluent DMR
S.4 Early Warning Values	Concentrations of one parameter in groundwater and 5 parameters in effluent which may trigger increased monitoring and/or other activities to ensure that effluent and/or groundwater enforcement limits are not exceeded	Groundwater - GMP Effluent - SAP DMR
S.5 Analytical Requirements	Practical quantification levels and required analytical methods for the parameters specified in S.1, S.3, and S.4	Groundwater - GMP Effluent - SAP 200 Area LEF Quality Assurance Project Plan (QAPjP)
S.6 Effluent Variability Study	Study to determine the variability in the effluent for which enforcement limits, early warning values, and monitoring requirements are stated in the permit	SAP Variability Study Report
S.7 Establish a Groundwater Evaluation Program	Groundwater monitoring program to determine background groundwater quality before discharge of effluent; and to provide early warning and permit compliance validation for effluent discharge	GMP
S.8 Determine Background Groundwater Quality	Groundwater screening evaluation for an exhaustive list of constituents and statistical evaluation of the data	GMP
S.9 Monitor to Demonstrate Permit Compliance	Program to monitor effluent and groundwater; may be combined with variability study	Groundwater - GMP Effluent - SAP

Table 2. Compliance with General Permit Conditions. (Sheet 1 of 2)

GENERAL CONDITION	DESCRIPTION	IMPLEMENTING DOCUMENT
G.1 Discharge Violations	Failure to comply with the terms and conditions of this permit constitutes a legal violation and may result in an enforcement action by Ecology.	DMR
G.2 Reduced Production for Compliance	Discharge must remain in compliance with the permit even in the event of power loss or other failure.	None required
G.3 Right of Entry	Representatives of Ecology have the right to enter the facility, to copy records relevant to the operation, and to sample the waste streams and discharge.	None required
G.4 Facility Change	New application or supplement and supporting reports must be submitted if new, increased, or changed discharge is anticipated.	None required
G.5 Plan Review Required	Before construction or modification of any wastewater control facilities, an engineering report, plans, and specifications must be submitted.	None required
G.6 Payment of Permit Fees	Required wastewater discharge permit fee must be paid to Ecology.	None required
G.7 Compliance with Other Laws and Statutes	Facility is required to comply with all applicable laws and regulations.	None required
G.8 Removed Substances	Substances removed from wastewater during treatment or control must not be reintroduced into the effluent.	None required
G.9 Permit Transfer	Conditions for transfer to new owner or operator.	None required
G.10 Duty to Reapply	Permit renewal must be submitted at least 60 days before May 1, 2000 (permit expiration date).	Revised permit application
G.11 Reporting Requirements	Reporting of monitoring results (S.9) to Ecology and submission of Early Warning Report if a parameter is detected at or above its early warning value	Groundwater - GMP Effluent - SAP
G.12 Record Keeping Requirements	Record maintenance for sampling and analytical activities	Effluent - SAP Groundwater - GMP

Table 2. Compliance with General Permit Conditions. (Sheet 2 of 2)

GENERAL CONDITION	DESCRIPTION	IMPLEMENTING DOCUMENT
G.13 Representative Sampling	Samples and measurements are to be representative of actual conditions	QAPjP
G.14 Test Procedures	Sampling and analytical methods conform to requirements of 40 CFR 136	Effluent - SAP Groundwater - GMP QAPjP
G.15 Flow Measurement	Flow measurement devices, methods, and calibration requirements	Operations and Maintenance Matrix; Sampling Procedures QAPjP
G.16 Laboratory Accreditation	Requirement for analytical laboratory to be accredited under WAC 173-50	QAPjP
G.17 Additional Monitoring by the Permittee	If monitoring is conducted more frequently than required by the permit, using the test procedures specified in the permit, the results must be included in calculation and reporting of the data submitted by TEDF.	SAP GMP
G.18 Signatory Requirements	All reports required by the permit must be signed and certified by a principal executive officer of at least the level of vice president, or by an authorized representative who has responsibility for overall operation of the facility or environmental matters for the company.	None required
G.19 WAC 173-216-110 Permit Terms and Conditions	Requirements to comply with the engineering reports submitted in conjunction with the permit application and to have spill control plans.	Permit Application (DOE-RL 1994a) Emergency Plan for 200 Area LEF
G.20 Operations and Maintenance	Requirements regarding Operations and Maintenance (O&M) Manuals for facilities discharging to TEDF	Operations and Maintenance Matrix
G.21 Noncompliance Notification	Actions following discovery of inability to comply with any permit terms or conditions, excluding early warning values	Groundwater - GMP Effluent - SAP Noncompliance report
G.22 Permit Termination	Conditions under which Ecology may terminate the permit	None required
G.23 Permit Modification	Conditions under which Ecology may modify the permit	None required

2.0 200 AREA TEDF SAMPLING PROGRAM OVERVIEW

The 200 Area TEDF sampling program described in the following sections is under the authority of 200 Area Liquid Effluent Facilities (LEF). This plan describes the 200 Area TEDF sampling program, including both routine effluent monitoring and the variability study which will occur simultaneously during the first year or so of operation. At the conclusion of data collection for the variability study, sampling will no longer include the samples and analytes required solely for the variability study. At that time (July 1996), only routine monitoring to demonstrate compliance with the discharge limits will be continued. Furthermore, results of the variability study may be used to request a reduced monitoring program, which could commence after the conclusion of the variability study.

2.1 SAMPLING PROGRAM IMPLEMENTATION

Routine effluent monitoring in accordance with the permit requirements began in late April 1995 when the facility began operations. The variability study is scheduled to begin in July 1995. If modifications to the sampling program are requested by Ecology, these modifications will be incorporated into the sampling and monitoring regime as soon as practicable.

2.2 SAMPLING PROGRAM RESPONSIBILITIES

LEF Environmental Engineering provides detailed instructions to LEF Facility Operations for sampling to be conducted during the month. LEF sampling efforts are initiated by Timely Orders (refer to Figure 1), which are issued monthly by Facility Operations. These Timely Orders are adapted from Tables 4 and 5, presented in Section 4.0. These tables provide the following sampling criteria: sample type, sample frequency, analytical methods, sample containers and volumes, preservative methods, and holding times.

LEF Environmental Engineering is responsible for the following tasks:

- Entering Timely Order information into the Liquid Effluent Monitoring Information System (LEMIS)
- Recording pH, conductivity, and flow monitoring data into LEMIS
- Validating analytical results
- Reviewing analytical results to take appropriate action
- Managing LEMIS.

Samples are collected in the Disposal System Sample Building (Building 6653) located roughly 30 meters west of the infiltration ponds (Figure 2). Two flow proportional composite samplers are located in the Sample Building, and an additional sampling port has been installed for obtaining grab samples directly from the 200 Area TEDF transfer line. Vendor information, operating procedures, and maintenance procedures are maintained at 200 Area TEDF.

LEF Facility Operations is responsible for collecting samples from in-line samplers at the Disposal System Sample Building (Building 6653) in accordance with: Timely Orders, approved operating procedures, and *200 Area Liquid Effluent Facilities Quality Assurance Project Plan* (LEF QAPjP; WHC 1995b). The samples are packaged and transferred to an analytical laboratory by Facility Operations in accordance with approved procedures.

2.3 ANALYTICAL LABORATORY

The effluent samples obtained from 200 Area TEDF are typically analyzed at the Waste Sampling and Characterization Facility (WSCF), an onsite chemical laboratory dedicated to the analysis of environmental samples. This laboratory is accredited by the State of Washington. Samples can also be analyzed at an offsite laboratory, if accredited. WSCF is notified of upcoming analysis requests through the Timely Orders, and is responsible for conducting the analyses according to this Sample and Analysis Plan, the LEF QAPjP (WHC 1995b) and the WSCF quality assurance plan (WHC 1995d). Analytical results are transmitted as described in the following section. If WSCF returns any excess sample material to 200 Area TEDF for disposal, WSCF first neutralizes the wastewater.

2.4 DATA MANAGEMENT

WSCF will provide laboratory validation of the data at the bench before the data are input into the Laboratory Information Management System (LIMS) within 30 days of sampling. These results are normally transmitted to LEF via an electronic link between LIMS and LEMIS. However, a written report containing the information in the LEMIS data report can be used if either LIMS and/or LEMIS is not operational.

LEF Environmental Engineering will review the analytical results and take action as appropriate. The data validation provided by LEF Environmental Engineering is described in Appendix A. LEF will release the data for distribution after this review.

LEF Environmental Engineering will prepare the Discharge Monitoring Reports (DMRs) for submittal to DOE-RL from LEMIS data reports. DOE-RL will certify the DMRs and transmit them to Ecology according to Section G.11 of the permit. Information about record keeping and reports is provided in Section 5.0.

3.0 EFFLUENT VARIABILITY STUDY

3.1 OBJECTIVES AND REQUIREMENTS

The discharge permit (Ecology 1995, Section S.6) requires that an effluent variability study plan be proposed and submitted to Ecology within 60 days after permit issuance. The purpose of the study is to determine the variability in the combined effluent of the constituents for which enforcement limits are listed, early warning values, or monitoring requirements. The study is to cover one year, and incorporate at least two seasonal phases (summer and winter) and the consideration of facility operational changes that might contribute to variability in the waste stream. In addition, results of the study will be used to verify the BAT/AKART values used in the development of permit enforcement limits, as discussed in Section 4.0.

The results of this study could be used by DOE-RL to support a request to Ecology for reducing the monitoring requirements stated in the permit. This request will include an analysis of the data which supports the use of a reduced monitoring regime, and a proposal for a new monitoring plan.

The variability study plan, Section 3.0, is being submitted to Ecology within 60 days after the effective date of the permit. Ecology has 30 days to approve, approve with modification, or disapprove the plan and respond in writing. The variability study results are to be submitted to Ecology within one year after approval of the study plan. These results will include analytical data from sampling conducted from July 1995 through April 1996. If DOE-RL submits a request to Ecology for a reduction in monitoring requirements, Ecology has 60 days to review the request, and approve, approve with modification, or disapprove the request, and respond in writing.

Section S.6 of the permit specifies that the following monitoring be conducted, at a minimum, for the variability study:

- 10 random grab samples per month -- analyzed for metals and volatile organics
- Weekly flow-composited samples -- analyzed for metals, anions, oil and grease, and semivolatile organics
- Continuous monitoring for pH, conductivity, and flow.

3.2 STUDY DESIGN AND RATIONALE

This variability study is designed to make use of the data collected to satisfy the routine monitoring requirements of the permit (Section S.9), and to provide data that can be statistically analyzed and interpreted to establish the variability of effluent composition. The study is proposed with two intense sampling phases: the first phase (summer) will cover July through September 1995; the second phase (winter) will extend from December 1995 through February 1996. During the other months of the study (fall: October-November 1995, spring: March-June 1996), sampling will be conducted at a lower frequency.

Table 3 summarizes the monitoring requirements specified in the permit for both routine permit compliance and the variability study. In order to avoid unnecessary duplication of sampling and analysis, combined routine and variability sampling are proposed during the term of the variability study. Furthermore, in order to provide optimum data sets for statistical evaluation, additional analyses of the random grab samples are proposed over the minimum requirements specified in the permit. These additional data are necessary to provide sufficient comparison of grab and composite sample results. Thus the 10 random grab samples per month will be analyzed for the following:

- volatile organic compounds (required)
- metals (required)
- anions (additional)
- semivolatile organic compounds (additional)

The weekly 24-hour composite samples will have the following analyses:

- metals (required)
- anions (required)
- oil and grease (required)
- semivolatile organic compounds (required)

The 10 random grab samples will be obtained at the same hour every third day during one calendar month; then at a different time of the day (or night), selected randomly, every third day for the subsequent month. This pattern will be repeated during the summer and winter phases of the 12-month variability study. In this way, the routine sampling requirement of one grab sample per week will be satisfied, and the data collected will provide information regarding temporal variation.

For the fall and spring phases of the study, random grab samples will be collected weekly, on the same day of the week at the same time for one month.

The following month, a new sampling day and time will each be selected at random. Thus, for one month in the spring or fall sampling periods, a grab sample might be collected every Tuesday at 10:00 a.m., for example, and the following month, the grab samples might be obtained at 3:00 p.m. every Saturday.

Likewise, the collection of the 24-hour composite samples will be varied over the days of the week. Because of the nature of composite sampling, varying the start time of sample collection is not likely to produce a different result than using a standard start time. Therefore, weekly 24-hour composite samples will be obtained on the same day of the week, each week for one month. The following month, the 24-hour composite samples will be collected each week on a different day of the week, selected at random. This will provide weekly composite samples presumably from each day of the week over the first year of operation.

Flow, specific conductivity, and pH will be monitored continuously using in-line instrumentation located in the Sample Building. Flow will be reported as the monthly average of daily discharges. Specific conductivity will be reported as the monthly average of daily means, or as the monthly average of all measurements taken over the month. Minimum and maximum values for pH will be reported for the month. Reporting and recordkeeping are further discussed in Section 5.0.

3.3 STATISTICAL EVALUATION

The purpose of statistical evaluation of the variability study data is to apply a rigorous, defensible examination of the data to form the basis for modifications to the permit enforcement limits and/or for the reduction of monitoring requirements. Specification of the statistical methods to be used will be determined by statisticians when the data sets to be analyzed are available. At a minimum, the statistical assessment will provide for the calculation of the following values using standard statistical formulas:

- Average mean concentrations
- Upper one-tailed 95% confidence intervals
- Standard deviations
- Coefficients of variation.

After 10 months of data have been generated from the combined variability study and routine monitoring (July 1995 through April 1996), a statistical evaluation will be conducted to determine the following:

1. Are the grab samples and weekly composite samples similar in their representation of the discharge composition?
2. What is the variability in the two sets of data (for the same analyses)?
3. Are trends discernible in the data?
4. Are any operational factors at the effluent sources significant in their influence on the discharge data? If so, what are the influences, and do/could they lead to exceedance of permit limit(s)?
5. Could a single type of data collection (i.e., either grab samples or weekly composites) suffice for the purposes of demonstrating compliance with the permit limits?
6. Do the data indicate a problem in achieving the permit limits or BAT/AKART requirements?
7. What is the correlation of specific conductivity and pH to the analytes of concern? Could specific conductivity or pH be used as a real-time indicator of effluent quality, and/or a trigger for effluent sampling?

The statistical evaluation will include comparison of the random grab sample and weekly composite sample results with the operation logs from the contributing wastewater sources if needed. Data from the summer months (July through September) will be compared to the data from the winter months (November through February) to determine the seasonal variability of discharge composition. The data will be examined to determine whether a reduction in monitoring frequency or modification of other permit conditions (e.g., discharge limits based on BAT/AKART levels) is appropriate.

Table 3. Summary of Permit Requirements and Combined Monitoring Program. (Sheet 1 of 2)

Parameter	Permit Requirements		Combined Monitoring Program ¹	
	Routine	Variability Study	Summer-Winter ²	Fall-Spring ³
VOLATILE ORGANIC COMPOUNDS				
Carbon tetrachloride Methylene chloride 1,1,1-Trichloroethane Total trihalomethanes Bromoform Bromodichloromethane Chloroform Dibromochloromethane	Grab 4/month	Random grab 10/month	Random grab 1/3 days	Random grab 1/week
SEMIVOLATILE ORGANIC COMPOUNDS				
Bis(2-ethylhexyl)phthalate Phenol	Composite ⁴ 4/month	Composite 4/month	Random grab 1/3 days Composite 1/week	Random grab 1/week Composite 1/week
TOTAL METALS				
Arsenic Cadmium Chromium Lead Mercury	Composite 4/month	Random grab 10/month Composite 4/month	Random grab 1/3 days Composite 1/week	Random grab 1/week Composite 1/week
Iron Manganese	Composite 1/month	Composite 4/month	Random grab 1/3 days Composite 1/week	Random grab 1/week Composite 1/week
ANIONS				
Chloride Nitrate Sulfate	Composite 1/month	Composite 4/month	Random grab 1/3 days Composite 1/week	Random grab 1/week Composite 1/week
OTHER ANALYSES				
Cyanide	Grab 4/month	---	Random grab 1/week	Random grab 1/week
WTPH-G	Grab 1/month	---	Random grab 1/month	Random grab 1/month

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Table 3. Summary of Permit Requirements and First Year Monitoring Program. (Sheet 2 of 2)

Parameter	Permit Requirements		Combined Monitoring Program ¹	
	Routine	Variability Study	Summer-Winter ²	Fall-Spring ³
Oil and grease	Grab 1/month	Composite 4/month	Random grab 1/month Composite 1/week	Random grab 1/month
Total dissolved solids	Composite 1/month	---	Composite 1/month	Composite 1/month
Gross alpha Gross beta Total radium Radium - 226	Grab 1/month	---	Random grab 1/month	Random grab 1/ month
IN-LINE MONITORING				
Flow Specific conductivity pH	Continuous	Continuous	Continuous	Continuous

¹ Combined monitoring program includes both the variability study and routine monitoring.

² Summer = July through September 1995

Winter = December 1995 through February 1996

³ Fall - October through November 1995

Spring = March through June 1996

⁴ Composite = a flow proportional composite sample obtained over a 24-hour period.

4.0 EFFLUENT MONITORING

4.1 OBJECTIVES AND REQUIREMENTS

As discussed in Section 3.0, effluent monitoring during the first year of 200 Area TEDF operation will accomplish routine monitoring to demonstrate compliance with the discharge limits, the requirement to perform an effluent variability study, and provide data to verify the BAT/AKART values used in the development of permit enforcement limits. At the conclusion of the study, sampling will revert to the routine monitoring requirements stated in Section S.9 of the permit and summarized in Table 3. After the variability study is complete, LEF will have an opportunity to propose a reduced monitoring regime. The new regime might incorporate reduced frequency of grab and/or composite samples; reliance on grab or composite samples only (eliminating the use of one or the other type of sample); reduction in the number of analyses performed; or reduction in the number of constituents or characteristics analyzed and reported. The design of a proposed reduced sampling and analysis regime will depend on the results of the statistical evaluation conducted after collection of 12 months of data. Thus, description of effluent sampling and analysis beyond the first year of operation will be accomplished with the benefit of actual operational data, should LEF pursue a reduced monitoring program.

If LEF chooses not to request a reduction in sampling and monitoring requirements, the effluent sampling program after the first year of operation will consist of the elements stated in Section S.9 of the permit, summarized in Table 3.

In developing the discharge permit, proposed BAT/AKART values were used to establish the enforcement limits, early warning values, and monitoring requirements. These values were developed from a limited data set available at that time. The data were collected from individual generators' streams, and were "pooled" to estimate the expected concentrations of constituents in the combined 200 Area TEDF effluent.

The results of the one-year variability study will be evaluated against the BAT/AKART values used to develop the current permit requirements. The results of this study will be reviewed by Ecology and used in the consideration of modifying the enforcement limits and early warning values for waste stream constituents, and of adjusting the monitoring frequency or modifying other permit requirements.

4.2 SAMPLING PROTOCOL

All samples will be obtained from the Disposal System Sampling Building (Building 6653), located west of the infiltration ponds as depicted in Figure 2. Samples will be collected from a refrigerated flow proportional sampler which feeds off a submerged transfer line or from a manually operated sampling tap (for grab samples). In taking grab samples, the line will first be purged, then the sample containers will be filled. Vials for volatile organic analysis will be filled first. All composite samples will be flow proportional, collected on a 24-hour basis. All samples collected for metal analyses will be unfiltered.

The flow proportional sampler is configured to fill one single container or several sample containers that correspond to the analyses required. Details of these sampling activities are contained in approved operating procedures available at 200 Area TEDF for inspection. These procedures address operation and decontamination of sampling equipment, security and maintenance, sample identification and labeling procedures, chain of custody, sample preservation, sample packaging and shipping, personnel protection measures, and recordkeeping.

Each grab, composite, or quality control sample will be assigned a unique identification number. Sample labels will include the identification number and analyses to be performed. All samples will be stored and transferred to the laboratory in coolers maintained at 4°C. A chain of custody form will accompany each cooler from the sampling station to the laboratory.

Chain of custody forms will contain the name(s) of the person(s) collecting the samples, sample location, date and time of sampling, sampling equipment used and any equipment settings that are significant, collection of quality control (QC) samples, specific protocol documentation and deviations from standard procedures, and any unusual observations.

If a scheduled sample is missed, a similar sample will be taken as soon as possible as a substitute (composite substituted for composite, grab substituted for grab). The date and time of this sample and the fact that it is a substitute for a scheduled sample will be noted in the 200 Area TEDF sampling log.

4.3 ANALYTICAL PROTOCOL AND REVIEW OF RESULTS

Specific analytes, analytical methods, practical quantitation limits (PQLs), sample containers, preservative methods, and holding times, for the monitoring program are presented in Tables 4 and 5. The analyses and parameters listed represent the variability study and routine effluent monitoring combined.

Analytical methods specified in the permit are EPA-approved methods from SW-846 (EPA 1992) and established under the Clean Water Act (40 CFR 136.3). Equivalent methods may also be used, provided that the specified practical quantitation limits (PQLs) can be met. PQLs are those specified in the discharge permit and reflected in the LEF QAPjP (WHC 1995b). The methods used for the analysis of gross alpha, gross beta, total radium, and radium-226 are laboratory specific, and procedures are available at the laboratory.

WSCF will transmit the analytical results to LIMS within 30 days of sample collection. LEF will obtain results from LIMS. Average values will be calculated assuming zero for measurements below the PQL, as specified in permit condition S.5. The results will be compared with the permit enforcement limits and the early warning values (Appendix B). Should one or more parameters exceed the respective enforcement limits, a noncompliance notification will be sent to Ecology as described in Section 5.5. Should the early warning value be exceeded, an early warning report will be submitted to Ecology as described in Section 5.4.

The "daily maximum" concentrations stated as enforcement limits represent the weekly 24-hour flow proportional composite sample measurements. Should the concentration of an analyte in the weekly composite sample exceed the "daily maximum," this will be reported to Ecology in a notification of noncompliance (Section 5.5; permit Section G.21). Similarly, the "average monthly" enforcement limits represent the sum of all the weekly 24-hour composite sample concentrations divided by the number of composite samples completed within the calendar month. This interpretation of the effluent enforcement limits is reflected in the notes associated with the enforcement limits tables in Appendix B.

4.4 QUALITY CONTROL

Both field and laboratory measures are used to ensure quality control (QC) in the sampling and analysis of 200 Area TEF effluent. These measures are discussed in detail in the LEF QAPjP (WHC 1995b), which is based upon the requirements addressed in Chapter One, "Quality Control," of SW-846 (EPA, 1992).

4.4.1 Field Quality Control Measures

QC samples to be obtained in the field in conjunction with the samples required for the variability study and routine monitoring include the following:

- Duplicates - independent samples collected from the same source, obtained in separate containers, as close as possible to the same location (within the wastestream) and the same point in time. The samples are analyzed separately, providing information regarding the precision of the sampling process.
- Trip blank - a sample of reagent grade water taken from the laboratory (e.g., Sample Mobile Lab) to the sampling site and returned to the laboratory unopened, usually analyzed for volatile organics only. The purpose of the trip blank is to identify contamination from shipping and field handling procedures.
- Field Blank - (also known as transfer blank) - a sample of reagent grade water transferred from one container to another at the field sampling location. The field blank is usually analyzed for the same suite of parameters as the field samples. The purpose of the field blank is to identify contamination from the ambient environment and field handling procedures.

Field QC samples will be obtained according to the regime outlined in Table 6.

4.4.2 Laboratory Quality Control Measures

Laboratory quality assurance requirements will comply with the *Hanford Analytical Services Quality Assurance Plan* (DOE-RL 1994b). Laboratory quality control measures are described in the 200 Area TEF QAPJP (WHC 1995b) and in the *WSCF Quality Assurance Program Plan* (WHC 1995d). These include the means of demonstrating method proficiency, establishing control limits, description of laboratory control procedures, data management, and laboratory recordkeeping.

The laboratory will analyze check standards at concentrations equal to the PQLs alongside all compliance monitoring samples. The precision goal for check standard recovery data and duplicate measurements is $\pm 20\%$.

Sufficient sample volume will be obtained for the laboratory to analyze one matrix spike/matrix spike duplicate for every 20 field samples. Matrix spike and matrix spike duplicates are defined as follows:

- Matrix spike - a sample (or aliquot) collected in the field which is spiked in the laboratory with a known concentration of a specific analyte before analysis. The analytical result helps to determine the bias of an analytical method in a given sample matrix.
- Matrix spike duplicate - a split of the matrix spike sample or duplicate matrix, spiked with identical concentration(s) of known analytes in the lab before analysis. Matrix spike duplicate analysis is used to determine the precision and bias of an analytical method in a specific sample matrix.

Table 4. Combined Monitoring Grab Sample Criteria (Sheet 1 of 2)

PARAMETER	FREQUENCY SUMMER- WINTER.	FREQUENCY FALL- SPRING	ANALYTICAL METHOD ¹	PQLs ²	SAMPLE CONTAINER ³	PRESERVATIVE	HOLDING TIME ⁴
VOLATILE ORGANIC COMPOUNDS							
Carbon tetrachloride Methylene chloride 1,1,1-Trichloroethane Total trihalomethanes Bromoform Bromodichloromethane Chloroform Dibromochloromethane	1/3 days	1/week	8260A	5 5 5 20	3 x 40-mL aGs	1:1 HCl to pH<2; 4°C	14 days
SEMIVOLATILE ORGANIC COMPOUNDS							
Bis(2-ethylhexyl)phthalate Phenol	1/3 days	1/week	8270B	10 10	4 x 1-LaG	4°C	7 days for extraction 40 days after extraction
TOTAL METALS							
Arsenic Cadmium Chromium Iron Lead Manganese Mercury	1/3 days	1/week	7060A 7131A 7191/EPA 200.8 6010A 7421 6010A 7470A	15 5 20 100 10 50 2	1 x 1-L G	1:1 HNO ₃ to pH<2	180 days
ANIONS							
Chloride Nitrate Sulfate	1/3 days	1/week	9056/EPA 300.0	1,000 100 10,000	1 x 1-L G or P	4°C	28 days

Table 4. Combined Monitoring Grab Sample Criteria. (Sheet 2 of 2)

PARAMETER	FREQUENCY SUMMER- WINTER	FREQUENCY FALL- SPRING	ANALYTICAL METHOD ¹	PQLs ²	SAMPLE CONTAINER ³	PRESERVATIVE	HOLDING TIME ⁴
OTHER ANALYSES							
Cyanide	1/week	1/week	EPA 335.3	50	1 x 250-mL P	6m NaOH to pH > 12	14 days
WTPH-G ⁵	1/month	1/month	Modified 8015	1,000	3 x 40-mL aGs	1:1 HCl to pH < 2; 4°C	14 days
Oil and grease	1/month	1/month	9070	10,000	2 x 1-L aG	1:1 HCl or H ₂ SO ₄ to pH < 2; 4°C	28 days
Gross alpha Gross beta	1/month	1/month	GADGPC GBDPC (proportional counter)	3 pCi/L 4 pCi/L	2 x 1-L G	1:1 HNO ₃ to pH < 2	180 days
Total radium Radium - 226	1/month	1/month	RAAEAGFC RA226AEAA (alpha spectroscopy/ proportional counter)	5 pCi/L 1 pCi/L	4 x 1-L G	1:1 HNO ₃ 6 pH < 2	180 days

G = glass

P = polyethylene

a = amber

s = septum cap

L = liter

mL = milliliter

pCi/L = picoCurie per liter

¹ Analytical methods are SW-846 (EPA 1992) unless otherwise noted. Other methods that meet the permit-specified PQLs may be substituted.

² PQL = practical quantitation limit.

³ Sample volumes may be adjusted according to laboratory directives.

⁴ Holding time = maximum time between sampling and analysis.

⁵ WTPH-G = Washington total petroleum hydrocarbons - gasoline.

Table 5. Combined Monitoring Composite Sample Criteria

PARAMETER	FREQUENCY SUMMER- WINTER	FREQUENCY FALL-SPRING	ANALYTICAL METHOD ¹	PQL ²	SAMPLE CONTAINER ³	PRESERVATIVE	HOLDING TIME ⁴
SEMIVOLATILE ORGANIC COMPOUNDS							
Bis(2-ethylhexyl)phthalate Phenol	1/week	1/week	8270B	10 10	4 x 1-L aG	4°C	7 days to extract; 40 days after ext.
TOTAL METALS							
Arsenic Cadmium Chromium Iron Lead Manganese Mercury	1/week	1/week	7060A 7131A 7191/EPA 200.8 6010A 7421 6010A 7470A	15 5 20 100 10 50 2	1 x 1-L G	1:1 HNO ₃ to pH < 2	180 days
ANIONS AND TOTAL DISSOLVED SOLIDS							
Chloride Nitrate Sulfate Total dissolved solids	1/week 1/month	1/week 1/month	9056/ EPA 300.0 EPA 160.1	1,000 100 10,000 —	1 x 1-L G or P 1	4°C	28 days 7 days TDS
OTHER ANALYSES							
Oil and grease	1/week	1/month	9070	10,000	2 x 1-L aG	HCl or H ₂ SO ₄ to pH < 2; 4°C	28 days
IN-LINE MONITORING							
Flow Specific conductivity pH	Continuous	Continuous	In-line instrumentation	— — —	—	None	—

G = glass; P = polyethylene; a = amber; s = septum cap; L = liter; mL = milliliter.

¹ Analytical methods are SW-846 (EPA 1992) unless otherwise noted. Other methods that meet permit-specified PQLs may be substituted.

² PQL = practical quantitation limit.

³ Sample volumes may be adjusted according to laboratory directions.

⁴ Holding time = maximum time between sampling and analysis.

Table 6. Field Quality Control Samples.

Field QC Sample	Combined Monitoring Program and Routine Monitoring (after first year
	FREQUENCY
Field duplicates	1 for every 20 samples (5%)
Trip blanks (VOA and WTPH-G)	1 for every 20 samples (5%)
Field blanks (transfer blank)	1 for every 20 samples (5%)

5.0 RECORD KEEPING AND REPORTING

5.1 CERTIFICATION

All reports or information submitted to Ecology in compliance with Permit 4502 and any permit modification requests will be certified in accordance with the provisions of Section G.18. This includes but is not limited to the following documents:

- Discharge monitoring reports (DMRs)
- Effluent variability study report
- Early warning report
- Noncompliance notification report.

5.2 MAINTENANCE OF RECORDS

All sampling and analytical records, operations logs, upset reports, DMRs, reports and plans required by the permit, and other information generated in the operation of the 200 Area TEF will be retained onsite. All records will be retained onsite for at least three years; for a longer period in the event of an unresolved dispute regarding the discharge of pollutants at 200 Area TEF, or as requested by Ecology.

200 Area LEF will maintain LEMIS in which all effluent analytical data will be recorded. WSCF will also maintain the analytical results, instrument calibration data, laboratory QA/QC information, and raw analytical data.

200 Area LEF will maintain this Sample and Analysis Plan. Changes to the plan will be documented in Engineering Change Notices (ECNs). Any ECNs affecting the variability study will be submitted to Ecology.

5.3 DISCHARGE MONITORING REPORTS

The required analytical data will be summarized and the DMR form (EPA 3320-1) prepared for Department of Energy-Richland Operations (DOE-RL). DOE-RL will submit the report to Ecology according to the following schedule:

<u>Due date</u>	<u>Period Covered</u>
May 30	January through March
August 30	April through June

November 30
February 28

July through September
October through December

This reporting schedule is based on a proposal to submit the DMR by the 30th day of the second month following the completed reporting period. The permit requirement (Section G.11) states: "monitoring results obtained during the previous three months shall be... submitted no later than the 30th day of the month following the completed reporting period." However, the 30-day turnaround time for data from the laboratory and the multiple-day counts required for radium analyses will make meeting the permit schedule nearly impossible. Thus, the Sampling and Analysis Plan proposes an alternate schedule, providing 60 days between the completion of the reporting period and the DMR due date.

The discharge permit (Section G.17) requires that all monitoring conducted by 200 Area LEF using test procedures specified in the permit be reported in the DMRs. Thus, during the first year of operation while variability study data are being collected, all analytical results will be reported, not just those required under routine effluent monitoring.

Continuously monitored parameters (flow, specific conductivity, and pH) will be reported as follows:

- Flow -- Monthly average of daily discharge
- Specific conductivity -- Monthly average of daily means, or monthly average of all measurements obtained over the month
- pH -- Monthly minimum and maximum values.

5.4 EARLY WARNING REPORT

If the analytical results indicate that one or more analytes is at or above the early warning value, Effluent Monitoring LEF will prepare a written report for DOE-RL. The report will be submitted to Ecology by DOE-RL within 10 calendar days of the receipt by LEF of analytical results from the laboratory. The report will include the following information, at a minimum:

- Date, location, and type of sample
- Identification and concentration of analyte(s) at or above the early warning value(s)

- Concentrations of other parameters analyzed
- Concentrations of contaminants from previous sampling events.

5.5 NONCOMPLIANCE NOTIFICATION

The permit requires DOE-RL to notify Ecology immediately (by telephone) upon discovery of noncompliance with any of the permit terms and conditions. In addition, actions will be taken to stop, contain, and clean up any unauthorized discharges and to take such actions necessary to correct the problem and prevent a repeat violation. Within 30 days, a detailed written report will be submitted to Ecology describing the noncompliant situation, corrective actions taken and planned, planned actions to prevent a recurrence, and any other information relevant to the violation.

6.0 REFERENCES

- DOE-RL 1994a. *State Waste Discharge Permit Application, 200 Area Treated Effluent Disposal Facility (Project W-049H)*, DOE/RL-94-29, prepared by Westinghouse Hanford Company for U.S. Department of Energy-Richland Operations, Richland, Washington, August 1994.
- DOE-RL 1994b. *Hanford Analytical Services Quality Assurance Plan*, DOE/RL-94-55, U.S. Department of Energy - Richland Operations, Richland, Washington, May 1994.
- Ecology 1995. *State Waste Discharge Permit No. ST 4502*, U.S. Department of Energy, Richland Operations Office, Washington Department of Ecology, Olympia, Washington, April 18, 1995.
- EPA 1992. *Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods*, EPA-SW-846, Third Edition, U.S. Environmental Protection Agency, Washington, D.C.
- WHC 1992. *200 Area Treated Effluent Disposal Facility (Project W-049H) Wastewater Engineering Report*, WHC-SD-W-49H-ER-003, Westinghouse Hanford Company, Richland, Washington, March 1995.
- WHC 1995a. *Groundwater Screening Evaluation/Monitoring Plan - 200 Area Treated Effluent Disposal Facility*, WHC-SD-EN-WP-012, Westinghouse Hanford Company, Richland, Washington.
- WHC 1995b. *200 Area Liquid Effluent Facilities Quality Assurance Project Plan*, WHC-SD-LEF-QPP-002, Westinghouse Hanford Company, Richland, Washington.
- WHC 1995c. *200 Area Treated Effluent Disposal Facility Interface Control Document*, WHC-SD-W049H-ICD-001, Westinghouse Hanford Company, Richland, Washington, March 1995.
- WHC 1995d. *Quality Assurance Program Plan for the Waste Sampling and Characterization Facility*, WHC-SD-CP-QAPP-017, Westinghouse Hanford Company.

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APPENDIX A

LIQUID EFFLUENT FACILITIES DATA VALIDATION

LIQUID EFFLUENT FACILITIES DATA VALIDATION

I. LEVEL A

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. This level of validation will be applied to all 200 Area TEDF sample analytical results.

For every sample, the following will be verified:

- Chain of custody (COC) -- Verify that the correct samples were collected by comparing the COC to the corresponding sample authorization form (SAF). Check "Special Instruction" block of COC for comments entered by samplers. The project scientist must determine if samples may have been affected by the conditions noted by the sampler on the SAF, and to ensure that the data are flagged appropriately.
- Compare requested data to reported data -- Review the data to determine if requested samples were collected and whether all requested analyses were performed.
- Holding times -- If holding time (the time between sample collection and date and time of analysis) exceeds the analytical requirement, flag the affected data with an "H."

II. LEVEL B

This level of data validation will include Level A validation and evaluation and qualification of results based on analysis of blanks. This validation will be conducted on one of every 20 200 Area TEDF samples.

- Blank evaluation -- Results of trip, field, laboratory, and equipment blanks will be examined to evaluate potential contamination during transfer of the samples, laboratory handling, or sampling. If blank contamination is found, sample analytical results will be flagged with a "B."
- QAPjP requirements -- Verify that sampling procedures met the field QC requirements specified in the Sampling and Analysis Plan and the LEF QAPjP.

III. LEVEL C

This level of data validation will include Levels A and B in addition to the evaluation and qualification of sample results based on matrix spikes, laboratory control samples, laboratory duplicates, and chemical and tracer recoveries. This validation will be conducted on selected data once per quarter.

- Duplicates -- Evaluate results of field and laboratory duplicates, matrix spikes, and laboratory control sample analyses and compare with laboratory and LEF QAPjP requirements. Flag data which are affected by QC analyses outside the required ranges.
- Practical quantitation limit (PQL) -- Verify that PQLs for analytes of concern are within +/-20% of standards.

APPENDIX B

EFFLUENT ENFORCEMENT LIMITS AND EARLY WARNING VALUES

Table B-1. Effluent Quality and Quantity Enforcement Limits/
and Early Warning Values.

Early warning values and effluent quality enforcement limits relate to flow proportional composite sample¹ concentrations.

Analyte	Early Warning Value - Monthly Average (ppb) ¹	Maximum Monthly Average (ppb) ²	Daily Maximum (ppb) ³
VOLATILE ORGANIC COMPOUNDS			
Carbon tetrachloride	---	5	---
Methylene chloride	---	5	---
1,1,1-Trichloroethane	5	---	---
Total trihalomethanes: bromoform, bromodichloro- methane, chloroform, dibromochloromethane	66	---	---
SEMIVOLATILE ORGANIC COMPOUNDS			
Bis(2-ethylhexyl)phthalate	---	10	---
Phenol	---	10	---
TOTAL METALS			
Arsenic	---	15	---
Cadmium	5	---	---
Chromium	---	20	---
Iron	---	258	---
Lead	10	---	---
Manganese	---	50	---
Mercury	---	2	---
ANIONS			
Chloride	---	58,000	116,000
Nitrate	---	620	1,240
OTHER ANALYSES			
Cyanide	50	---	---
Total dissolved solids	---	250,000	---

- ¹ Flow proportional composite sample = a composite sample obtained over a period of 24 hours, at an aliquot frequency that reflects the flow rate of the discharge.
- ² Early warning value = highest constituent concentration which indicates that limits in groundwater are being approached, calculated as the average of flow proportional composite sample concentrations in a calendar month. Effluent concentration at or above this value does not constitute a violation of the permit, but will trigger an early warning report.
- ³ Maximum monthly average = highest allowable concentration, calculated as the average of all flow proportional composite sample concentrations measured during a calendar month.
- ⁴ Daily maximum = highest allowable concentration in a flow proportional composite sample.
- ⁵ Flow is regulated as "average monthly flow," which means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month, divided by the number of daily discharges measured during that month. Listed sources are those mentioned in Section 1.3. The flow may be increased to 750 gpm to include additional (future) wastestreams if approved for discharge.

ppb = parts per billion.

gpm = gallons per minute.