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Page 1 of 30
Permit No. ST 4500

Issuance Date: _____
Effective Date: _____
Expiration Date: _____

DRAFT
STATE WASTE DISCHARGE PERMIT

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
OLYMPIA, WA 98504-7775

In compliance with the provisions of
Chapter 90.48 RCW, as amended
authorizes

U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, WA 99352



to discharge in accordance with the special and general conditions which follow.

Plant Location:

200 Area Effluent Treatment Facility (ETF)
(Project C-018H)
200 East Area
Hanford Site, Richland, Washington

Discharge Location:

Infiltration gallery designated as the
State-Approved Land Disposal Site
(SALDS) is located at:

Latitude: 46° 34' 21" N
Longitude: 119° 38' 0" W

Industry Type: None

SIC Code: 9999

Mike Wilson
Program Manager
Nuclear Waste Program
Department of Ecology

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SUMMARY OF REQUIRED DOCUMENTS FOR SUBMITTAL

Permit Section	Submittal	Frequency	First Submittal Date
S1.C & G11.	Early Warning Report	Upon exceedance of an early warning value	Within 10 calendar days from detection of the Early Warning Value
S4.	BAT/AKART Evaluation Report	Upon Ecology request and voluntarily	Within 90 days of receiving written request from Ecology
S5.	LERF Sampling Plan	One time	Within 30 days of the effective date of the permit
S6.	LERF Sampling Report	As specified in LERF Sampling Plan	As specified in LERF Sampling Plan
S7.A.1.	Pre-Operational Groundwater Monitoring Report	One time	Within 60 days of ETF startup
S7.A.2.	Groundwater Monitoring Plan	One time	Within 60 days of ETF startup
S7.B.1.	Draft Tritium Tracking System Plan	One time	Within 90 days of permit effective date
S7.B.1.	Tritium Tracking System Final Plan	One time	Two weeks after Ecology comments
S7.B.2.	Tritium Tracking Reports	Quarterly	Per final plan
S8.	Solid Waste Control Plan	1/permit cycle	Available upon effective date of permit - updated annually. Revisions require prior approval from Ecology.

Permit Section	Submittal	Frequency	First Submittal Date
S9.	Spill Plan	1/permit cycle, updates should be submitted as necessary	References/plans are due within 60 days of permit effective date
S10.	Operation and Maintenance	1/permit cycle	Plans or plan references due 30 days prior to ETF startup
S11.	Draft Receptor Protection/Model Verification Plan	One time	90 days after permit effective date
S11.	Final Receptor Protection/Model Verification Plan	One time	Two weeks after Ecology comments
S12.	Receptor Protection/Model Verification Reports	Annually	Within 2 months of detection of the tritium plume by a tritium tracking system well
S13.	Tritium Treatment Technology Search Reports	Annually	Within 180 days of permit effective date
G10.	Application for permit renewal	1/permit cycle	At least 60 days before permit expiration
G11.	Discharge Monitoring Reports	Quarterly	60 days after each calendar quarter of ETF operations

PLANT LOCATION AND BACKGROUND

The U.S. Department of Energy (DOE) 200 Area Effluent Treatment Facility (a.k.a. the ETF or project C018H) is located near the 200 East Area of the Hanford Site, north of Richland, Washington. The effluent infiltration gallery, also known as the State Approved Land Disposal Site (SALDS) is located north of the 200 West Area of Hanford (see Fact Sheet Figures 1 and 3).

The ETF has been constructed pursuant to an agreement among DOE, U.S. EPA and Ecology, the Hanford Federal Facility Agreement and Consent Order (the Tri-Party Agreement), and specifically it is required via Ecology Consent Order No. DE-91NM-177. The 242-A Evaporator has been restarted and the ETF has been constructed to abate any release of hazardous and radioactive waste by leakage from the underground storage tanks.

The SALDS effluent infiltration gallery is a 116 foot by 200 foot rectangular drainfield with 4 inch diameter porous pipe laterals coming off an 8 inch diameter header at 6 foot intervals. The drainfield pipes are 6 inches below the surface of a 6 foot deep gravel basin. The gravel basin is covered by a minimum of 12 inches of natural, compacted cover soil.

Please refer to the Fact Sheet for technical and historic details relating to ETF, SALDS, and other facilities covered by this permit.

SPECIAL CONDITIONS

S1. EFFLUENT/GROUNDWATER LIMITATIONS

Beginning on the effective date of this permit and lasting through the expiration date, the U.S. Department of Energy (Permittee) is authorized to discharge to ground via land application and infiltration, treated wastewater at the permitted location subject to the following limitations and monitoring requirements. No hazardous/dangerous waste designated pursuant to RCRA or to the Washington State Dangerous Waste Law and Regulations, Chapter 70.105 RCW and Chapter 173-303 WAC respectively, shall be discharged to ground, at the SALDS infiltration gallery (Discharge 001 groundwater), via this permit. See Fact Sheet Figure 3 for sampling point well locations.

A. Enforcement Limitations in Groundwater, Discharge 001 Groundwater**ENFORCEMENT LIMITS IN GROUNDWATER¹**

Constituent or Characteristic	Highest Allowable Concentration, PPB, Unless Noted Otherwise ^{2,3}
Acetone	160 ⁴
Ammonia	1,100 ⁴
Benzene	5
Cadmium, total	10
Chloroform	6.2 ⁴
Copper, total	70 ⁴
Lead, total	50
Mercury, total	2
pH, in pH units	6.5 - 8.5
Sulfate	30,000 ⁴
Tetrahydrofuran	100 ⁴
Total Dissolved Solids	500,000

Constituent or Characteristic	Highest Allowable Concentration, PPB, Unless Noted Otherwise ^{2,3}
Gross Alpha	(pCi/L) ³ Monitor Only ⁵
Gross Beta	(pCi/L) ³ Monitor Only ⁵
Strontium-90	(pCi/L) ³ Monitor Only ⁵
Tritium	(pCi/L) ³ Monitor Only ⁵
<p>¹ Enforcement limits shall be met in groundwaters collected from sampling point monitoring wells numbers 699-48-77C and 699-48-77D.</p> <p>² Defined as the average of all measurements from a well during a quarterly reporting period. The four quarters are defined as January through March, April through June, July through September, and October through December. At least one (1) sample shall be analyzed and reported for each of the above constituents during each quarter.</p> <p>³ Parts per billion (micrograms per liter). pCi/l (picoCurie per liter).</p> <p>⁴ Noncompliance with these permit limits, up to the water quality based limit per Chapter 173-200 WAC if one exists, are not subject to penalty but are subject to the requirements of Special Condition No. 4.</p> <p>⁵ Constituents which require "Monitoring Only" have not been assigned permit limits or early warning values but must be sampled, analyzed, and reported by the Permittee pursuant to this permit.</p>	

B. Effluent Quality Limitations, Discharge 001 Effluent

ETF effluent shall not exceed the following highest allowable concentrations, as measured at Discharge 001 Effluent, the sample port located just upstream of the verification tanks.

ENFORCEMENT LIMITS IN EFFLUENT⁶

Constituent Or Characteristic	Highest Allowable Concentration, PPB, Unless Noted Otherwise	Highest Allowable Concentration, PPB, Unless Noted Otherwise
	Average Monthly ⁷	Daily Maximum ⁸
Arsenic, total	15	30
Carbon Tetrachloride	5	10
Chromium, total	20 ⁴	--
Dimethylnitrosamine	20 ⁴	--
Nitrate	100	--
Specific Conductivity	Monitor Only ⁵	--
Tetrachloroethylene	5	10

⁴ Noncompliance with these permit limits, up to the water quality based limit per Chapter 173-200 WAC if one exists, are not subject to penalty but are subject to the requirements of Special Condition No. 4.

⁵ Constituents which require "Monitoring Only" have not been assigned permit limits or early warning values but must be sampled, analyzed, and reported by the Permittee pursuant to this permit.

⁶ As measured in total, composite effluent before discharge to verification tanks.

⁷ The average monthly effluent limitation or Early Warning Value is defined as the highest allowable average of individual discharges over a calendar month, calculated as the sum of all individual discharges measured during a calendar month divided by the number of individual discharges measured during that month. Three (3) monthly average values (one per month) are to be reported for each quarterly reporting period.

⁸ The daily maximum discharge limitation is defined as the highest allowable individual analytical result. This includes results from the verification tank composite sampler. The daily maximum value reported during each quarterly reporting period shall be the highest value recorded for the constituent in that calendar quarter.

C. Early Warning Values

The following constituents are also to be monitored in the effluent, along with the Enforcement Limits Constituents listed in S1.B. above, to provide an early warning that allowable limits in groundwater are being approached. Exceedance of an Early Warning Value does not constitute a violation of this permit. However, exceedance of an Early Warning Value requires the Permittee to submit an Early Warning Report per the reporting requirements of G11.

After evaluation of any Early Warning Report, Ecology will respond per the alternative provision of Chapter 173-200-070(6)(b). Specifically, if Early Warning Value(s) are exceeded, Ecology may require the Permittee to increase monitoring, modify the monitoring plan or evaluation procedures, develop a trend analysis, and/or prepare and submit a report that documents any changes to the groundwater regime and proposes alternative operational methods to reduce the potential impacts to the groundwater. Such modifications may include installation of additional monitoring wells or computer modeling of the groundwater regime in the vicinity of the infiltration gallery. Finally, per Chapter 173-200-070(6)(b)(vi), the Permittee must take such actions as Ecology deems necessary, if Ecology determines that there is a likelihood of exceeding an enforcement limit at the point of compliance. *sampling point wells*

EARLY WARNING VALUE(S) IN EFFLUENT

Constituent Or Characteristic	Average Monthly Concentration, PPB, Unless Noted Otherwise ⁷
Acetophenone	10
Ammonia	830
Benzene	5
Beryllium, total	40
Cadmium, total	7.5
Chloroform	5
Copper, total	70
Gross Alpha	Monitor Only
Gross Beta	Monitor Only
Lead, total	38

Constituent Or Characteristic	Average Monthly Concentration, PPB, Unless Noted Otherwise ⁷
Mercury, total	2
Nitrite	100
Nitrogen (TKN) ⁹	600
Strontium-90	Monitor Only
Sulfate	10,000
Tetrahydrofuran	100
Total Dissolved Solids	380,000
Total Organic Carbon	1,100
Total Suspended Solids	4,000
1,1,2 Trichloroethane	5
Tritium ¹⁰	Monitor Only
<p>⁷ The average monthly effluent limitation or Early Warning Value is defined as the highest allowable average of individual discharges over a calendar month, calculated as the sum of all individual discharges measured during a calendar month divided by the number of individual discharges measured during that month. Three (3) monthly average values (one per month) are to be reported for each quarterly reporting period.</p> <p>⁹ TKN (Total Kjeldahl Nitrogen)</p> <p>¹⁰ The total curies of tritium released to the ground per monthly reporting period as well as the running total curies released since the beginning of ETF operations shall be reported in each Discharge Monitoring Report per General Condition G11.</p>	

S2. ANALYTICAL REQUIREMENTS

Practical Quantification Level (PQL) means the lowest concentration of a substance that can be reliably measured, within specific limits of precision, during routine laboratory operating conditions. The Permittee is required to analyze all constituents and parameters specified as enforcement limits, early warning values, or other monitoring requirements so as to discern levels as low as the following PQL values. In addition, the required analytical method is indicated as follows. Another analytical method can be substituted by the Permittee provided the same PQL value(s) is achieved.

PRACTICAL QUANTIFICATION LEVELS AND REQUIRED ANALYTICAL METHODS

Constituent Or Characteristic ¹¹	PQL	Analytical Method
Acetone	40	8260
Acetophenone	10	8270
Ammonia	40	EPA 350.3, 350.1
Arsenic, total	15	7060 GFAA/200.8
Benzene	5	8260
Beryllium, total	40	6010/200.8
Cadmium, total	5	7131A, 200.8
Carbon Tetrachloride	5	8260
Chloroform	5	8260
Chromium, total	20	7191 GFAA, 200.8
Copper, total	70	6010 ICP, 200.7, 200.8
Dimethylnitrosamine	20	8270
Gross Alpha	3 pCi/l	Laboratory Specific
Gross Beta	4 pCi/l	Laboratory Specific
Lead, total	10	7421, 200.8
Mercury, total	2	7470/7471
Nitrate	100	300 IC, 9056

Constituent Or Characteristic ¹¹	PQL	Analytical Method
Nitrite	100	300 IC, 9056
Nitrogen (TKN)	600	TKN ⁹ , 351.1, 351.2
pH	Sensitivity .1 pH units	150.1 (in lab.), 9040A
Specific Conductivity	10 umho/cm ¹²	120.1 (in lab.)/ 9050
Strontium-90	5 pCi/ℓ (72 hour)	Laboratory Specific
Sulfate	10,000	300 IC, 9056
Tetrachloroethylene	5	8260
Tetrahydrofuran	100	8260
Total Dissolved Solids	10,000 ¹²	160.1
Total Organic Carbon	1,000 ¹²	9060A
Total Suspended Solids	4,000 ¹²	160.2
1,1,2 Trichloroethane	5	8260
Tritium	460 pCi/ℓ	Laboratory Specific
¹¹ Units are in ppb (parts per billion or microgram per liter) unless otherwise noted. pCi/ℓ (pico Curie per liter) ¹² These constituents have no PQL. The values listed in this table are reporting limits.		

Check standards at concentrations equal to the PQL shall be analyzed alongside all compliance monitoring samples. Check standards shall be produced independently of calibration standards and maintained as a part of the Permittee's records. All check standard recovery data and duplicate measurements shall be available to Ecology. Ecology's precision goal is +/- 20%. The quality control/quality assurance (QA/QC) requirements of "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Supplement 1990," EPA-600/4-79-019 U.S. EPA, shall be followed during all analytical procedures.

If the measured effluent concentration is below the PQL, the Permittee shall report NQ for non-quantifiable. Average values shall be calculated as follows: measurements below the PQL equal the Method Detection Limit (MDL); measurements equal to or greater than the PQL equal the measurement.

Field sampling procedures (such as sample collection, field handling/preservation, holding requirements) shall follow the requirements found in the "Manchester Environmental Laboratory, Lab Users Manual, Washington State Department of Ecology, 4th Edition, January 1994." For field QA/QC measures, the procedures of SW 846, volume 2, Section 1.2, "Field Manual for Physical and Chemical Methods" is to be followed. All samples collected for metal analyses shall be unfiltered.

S3. ETF INFLUENT RESTRICTIONS

Discharge of ETF effluent is permitted for discharge to the SALDS infiltration gallery only for ETF treatment of 242-A Evaporator process condensate.

The discharge of ETF effluent to SALDS for any other ETF influent stream is prohibited unless Ecology has provided the Permittee with written approval to allow an alternative ETF influent source(s).

If the Permittee proposes to run a different influent source(s) (other than 242-A evaporator condensate) through ETF, a characterization study must be sent to Ecology for approval, which includes:

1. A listing of all chemical constituents of concern which exist in the proposed influent source(s), along with the expected range of concentration of each constituent.
2. Engineering study results which show that ETF can adequately process the proposed influent source(s) such that violation of this permit will not occur and water quality violations related to any constituents not listed in the original permit will not occur.
3. Information regarding RCRA and State Hazardous Waste Law and all other applicable authorities' acceptance of the proposed source(s).
4. A demonstration that the ETF treatment process constitutes BAT/AKART for the proposed influent source(s).

Upon receipt of the above characterizations study, Ecology will decide whether a permit modification, with public review and comment, is appropriate. Ecology will attempt to render its decision regarding the need for permit modification and regarding written approval of the proposed source(s) within 60 days of receipt of a complete characterization study.

A permit modification may be required if the proposed influent will result in ETF effluent which contains significant concentrations of additional constituents of concern or significantly higher concentrations of constituents of concern already listed in this permit.

The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

S4. BAT/AKART DETERMINATION(S), BASED ON OPERATING DATA

Best Available Technology (BAT) and All Known Available and Reasonable Treatment (AKART) effluent concentrations for the ETF have thus far been established mathematically from constituent removal efficiencies. Please refer to the Fact Sheet Section 14, which lists constituents which have limits based on BAT/AKART. These constituents also have the Footnote 4 in Special Condition No. 1 of this permit. Constituent removal efficiencies (based on pilot scale treatment of simulated/surrogate influent water) have been applied to typical constituent concentrations found in several batches of 242-A Evaporator Process Condensate to calculate a theoretical BAT/AKART level for constituents for which such data were available prior to permit issuance.

Within 90 days of receiving a written request by Ecology (at Ecology's discretion), or voluntarily at any time, the Permittee shall submit to Ecology a report which reviews, calculates or recalculates BAT/AKART effluent concentrations for specified ETF effluent constituents.

If calculated/recalculated BAT/AKART values are approved by Ecology then a major permit modification, including public comment, may be needed to amend the permit to include these values as effluent limits if the revised limit is less restrictive than the original.

S5. LIQUID EFFLUENT RETENTION FACILITY (LERF) SAMPLING PLAN

Within 30 days of permit effective date, the Permittee shall submit a draft plan to Ecology to sample LERF for:

Strontium 90
Iodine 129
Ammonia
Total Kjeldahl Nitrogen (TKN)

The intent of the plan is to determine if Strontium 90 and Iodine 129 are present in detectable concentrations in the range of LERF contents likely to be processed through ETF. Also the intent of the plan is to assess the range of ammonia concentrations likely to be present in LERF and processed through ETF.

The plan shall specify the frequency of samples to be taken and the timing of the samples. In general, the sampling shall begin as soon as possible and shall continue until a sufficient amount of data has been gathered to adequately

assess the variability of the above-referenced constituents in LERF. Ecology shall provide written comments, if any, to the Permittee within 30 days of receipt of the draft plan. The Permittee shall submit a final plan within 30 days after receiving written resolution of comments from Ecology.

The plan shall include submission of reports to Ecology which present the results of the approved LERF sampling effort. Reports shall also include the ten tentatively identified compounds (TICs) of highest concentrations. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

S6. LERF SAMPLING REPORTS

These reports shall be submitted to Ecology per the Ecology-approved LERF sampling plan (S.5). The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

S7. GROUNDWATER MONITORING

A. Groundwater Sampling System

This system will consist of monitoring wells adjacent to and surrounding the infiltration gallery, screened in the top 20 feet of the saturated zone or upper aquifer. Initially these wells are used to determine pre-operational groundwater quality, flow direction and, as needed, placement of additional or replacement upgradient and groundwater sampling wells. These wells are to be monitored prior to, during, and some time after ETF operations to ensure that permit limitations are maintained for parameters listed in S1.A. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

The following submissions are required:

1. Pre-Operational Groundwater Monitoring Report

The Permittee must submit a report listing analytical results of previously agreed sampling done prior to ETF startup at Ecology approved wells. This report shall be submitted within 60 days of ETF startup.

2. Groundwater Monitoring Plan

The Permittee shall submit to Ecology a plan detailing the locations and construction of wells to be used as the groundwater sampling system, including the approved upgradient well and the two downgradient sampling point wells. The approved wells are numbered: 699-48-77A (upgradient well), 699-48-77C, and 699-48-77D (downgradient sampling point wells). The plan shall be due within 60 days of ETF startup. See Fact Sheet Figure 3 for well locations.

3. Groundwater Compliance Monitoring Reporting

The Permittee shall sample once per calendar quarter at each of the two downgradient sampling point wells and from the upgradient well for constituents listed in Section S1.A. of this permit. Sample results shall be reported in the quarterly discharge monitoring reports per the requirements of General Condition 11.

B. Tritium Tracking System

This system consists of monitoring wells, screened in the top of the saturated zone or upper aquifer, both up and downgradient and spanning the subsurface from the infiltration gallery to the predicted point of discharge of the groundwater tritium plume into the Columbia River. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition. The following submissions are required:

1. Draft Tritium Tracking System Plan

Within 90 days of permit effective date, the Permittee shall submit a plan for Ecology approval for a draft design (including well locations and construction details) of a tritium tracking system. Existing wells of proper construction at proper locations may be included in this system. The placement of wells in this system must be sufficient to ensure the plume of tritium may be tracked in all horizontal directions and that the boundaries of the plume may also be known. New wells may be installed sequentially, but the first sample reported from each well must be unaffected by the plume. The Permittee shall submit a final plan two weeks after issuance of Ecology comments. This plan shall include a proposal for measurement and regular reporting to Ecology (via quarterly discharge monitoring reports) of the total curies of

tritium discharged to ground during the previous quarterly reporting period.

2. Tritium Tracking Reports

The Permittee shall sample each of the active tritium plume tracking wells for tritium once per calendar quarter. Sample results shall be reported to Ecology on the 30th day of the month following each calendar quarter (i.e., April 30, July 30, October 30, and January 30). Each quarterly report shall include a mapping of the tritium plume which shows the plume boundary and computer generated tritium concentration contours. The report shall include the total curies of tritium discharged to ground in the previous quarterly reporting period.

If other constituents are shown to be present in groundwater in concentrations which chronically and significantly exceed Section S1.A. permit limits at the Discharge 001 sample point wells then Ecology may inform the Permittee in writing that these constituents must also be monitored at some or all of the tritium tracking wells.

S8. SOLID WASTE DISPOSAL

The Permittee shall develop a plan to handle and dispose of all solid waste materials in such a manner as to prevent their entry into state ground or surface waters. This plan includes all solid waste generated at the facility with the exception of those solid wastes regulated by Chapter 173-303 WAC (Dangerous Waste Regulations). The plan includes at a minimum a description, source, generation rate, and disposal methods for said included solid wastes. This plan shall not differ from any approved local solid waste management plan. The plan shall be available at the facility upon the effective date of the permit and shall be updated annually as needed. Any proposed revision or modification of the solid waste control plan must be submitted to Ecology for prior approval. The Permittee shall comply with the solid waste control plan and any modifications thereof. The Permittee shall make available an update of the solid waste control plan with the application for permit renewal at least 60 days prior to the expiration date of the permit. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

S9. SPILL PLAN

The Permittee shall provide for Ecology approval a spill plan for the ETF facility and effluent piping systems, including:

- Spill or leak detection equipment and alarms.
- Spill or leak detection/prevention inspections; frequency of inspections, what will be inspected, what inspectors will look for, inspector responses, and maintenance procedures.
- A list of responsible officials, cleanup contractors, emergency responders including contact names and telephone numbers.
- An analysis of the types of leaks or spills which may be expected from the ETF and effluent pipelines along with corresponding prevention and response systems and procedures.
- A description of the reporting system which will be used to alert responsible managers, Ecology, and legal authorities in the event of a spill.

For the purpose of meeting this requirement, plans and manuals required by 40 CFR Part 112, and contingency plans required by Chapter 173-303 WAC may be submitted. Applicable existing plans may be referenced and kept on file at the facility. The Permittee shall submit to Ecology a reference of existing plans and any additional plans (including plans relating to the effluent pipeline) within 60 days of the permit effective date. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

S10. OPERATIONS AND MAINTENANCE

The Permittee shall at all times be responsible for the proper operations and maintenance of the equipment and systems of control installed by them to achieve compliance with the terms and conditions of this permit. Where design criteria have been established, the Permittee shall not permit flows or waste loadings to exceed approved design criteria. The ETF's Operations and Maintenance Manuals shall be listed in a matrix and reported to Ecology within 30 days prior to ETF startup. The Operations and Maintenance Manuals applicable to the permitted facility include those listed in a letter from June M. Henning, U.S. DOE, to Melodie Selby, Washington Department of Ecology, of December 19, 1994 (94-LWB-077). These Operation and Maintenance Manuals shall be reviewed and updated by the Permittee at least annually. The Permittee shall confirm the review by letter to Ecology. All manuals and

manual updates shall be available to Ecology for review. The manuals shall include the following:

- Emergency procedures for effluent rerouting, storage, and subsequent treatment and disposal in the event of system upset or failure.
- All effluent-associated treatment equipment, including: tanks', pipelines', sampling and monitoring stations', and pump stations' routine and emergency operational and maintenance requirements.

The Operations and Maintenance Manual for ETF shall also define discharge levels expected to be maintained in order to meet BAT/AKART design criteria. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition.

S11. RECEPTOR PROTECTION/MODEL VERIFICATION PLAN

A draft plan shall be submitted by the Permittee for Ecology approval 90 days after permit effective date. The Permittee may submit any appropriate documents or portions of documents prepared outside of the requirements of this permit to satisfy all or part of this permit condition. The final plan is due two weeks after issuance of Ecology comments, and shall consist of the following:

A. Tritium Breakthrough Prediction

A prediction of when tritium will first be detected at each of the Ecology approved tritium tracking wells listed in Special Condition S7.B herein. The prediction shall be based on the identical computer model (or Ecology-approved equivalent model) and input parameters used by DOE contractors to make the 105 year tritium plume travel time prediction.

B. Tritium Concentration Prediction

This submittal shall include computer generated overhead mapping of the predicted tritium plume in five-year intervals over the life of the plume. These maps shall be based on the identical model (or Ecology approved equivalent model) and input parameters used to make the 105 year tritium plume travel time prediction. Each map shall show predicted plume boundaries and tritium concentration contours.

This prediction shall include a calculation of the shortest plume travel time which would not result in an exceedance of the drinking water standard for tritium in the groundwater at the point just prior to the groundwater's discharge to the Columbia River.

C. Periodic Model Recalibration and Exposure Assessment Plan

The Permittee shall submit a plan for Ecology approval which includes the following elements: a proposed methodology for recalibration of the model used for tritium plume travel predictions over the predicted life of the tritium plume; recalibration shall as a minimum be based upon data gathered pursuant to Special Condition S7.B.2 herein; the recalibrated model shall be run to show predicted plume boundaries and breakthrough times pursuant to Special Condition S11.B herein, recalculated plume travel time, recalculated maximum tritium concentration in the groundwater at the point just prior to the groundwater's discharge to the Columbia River; the recalibration of the model shall occur annually for the first five years and may be done less frequently in the future if so approved by Ecology.

D. Remedial Action Plan

In the event that model recalibration results in a prediction that tritium concentrations will at any time exceed the drinking water standard at a point just prior to Columbia River discharge then Ecology must be immediately notified in writing, and remedial action(s) must be considered for implementation by the Permittee. The remedial action plan shall include, at a conceptual design level, a list of remedial actions which may be used by DOE in the event of an actual or predicted exceedance of tritium the drinking water standard at a point just prior to Columbia River discharge, including:

1. Discontinue ETF effluent discharge to the infiltration gallery.
2. Construction of subsurface groundwater flow barrier(s).
3. Groundwater pumping and surface treatment/storage.
4. Subsurface treatment.

A finalized plan, incorporating Ecology comments, shall be submitted by the Permittee two weeks after issuance of Ecology comments.

S12. RECEPTOR PROTECTION/MODEL VERIFICATION REPORTS

These reports shall be submitted to Ecology within two months of when the tritium plume is first detected at one of the tritium tracking wells and, thereafter, annually on April 15 of each year. These reports shall be based on recalibration of the tritium plume prediction computer model using all data gathered pursuant to Special Condition S7.B.2 and shall follow the format of

the Ecology approved Receptor Protection/Model Verification Baseline Plan and shall include the following:

- Recalculated tritium overall travel time and individual breakthrough times for each of the tritium tracking wells.
- Recalculated tritium concentration predictions done as overhead maps of the newly predicted tritium plume in five-year intervals over the life of the plume. Each map shall show predicted plume boundaries and tritium concentration contours.
- Recalculation of the maximum predicted tritium concentration in the groundwater at the point just prior to the discharge of the groundwater to the Columbia River.

S13. TRITIUM TREATMENT TECHNOLOGY SEARCH

The Permittee shall submit for Ecology review within 180 days of the permit effective date and annually during the permit cycle a listing of information regarding tritium treatment/removal technologies. To compile this listing, the Permittee shall demonstrate to Ecology they have made a thorough search of proven and developing tritium treatment/removal technologies. This listing shall as a minimum include, for each process, the following information:

1. Name of process.
2. Type of process - a comprehensive description of the physical and chemical process stages.
3. Name of process manufacturer, laboratory, or development firm.
4. Principal firm contact person; name, address and telephone number.
5. Technical advantages and disadvantages of each process.
6. Cost data relating to ETF installation.
7. Treatment/removal efficiency and predicted ETF effluent quality.
8. Ranking of these processes relative to each other regarding overall viability. Rank first through last.
9. A listing of whether the process proven or developing.

In each ensuing annual listing the listed process information and relative ranking shall be updated as appropriate.

The Permittee may submit or reference documents prepared pursuant to Tri-Party Agreement Milestone M-26-05 ("Tritiated Wastewater Treatment and Disposal Evaluation" Report(s)) to satisfy corresponding requirements of this Special Condition.

GENERAL CONDITIONS**G1. DISCHARGE VIOLATIONS**

The Permittee shall at all times be responsible for continuous compliance with the terms and conditions of this permit. Failure to comply with the terms and conditions of this permit constitutes a violation of RCW 90.48.144. Such violations may result in orders, directives or penalties being issued by Ecology.

G2. REDUCED PRODUCTION FOR COMPLIANCE

The Permittee shall control production or discharge to the extent necessary to maintain compliance with the terms and conditions of this permit upon reduction of efficiency, loss, or failure of its treatment facility until the treatment capacity is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power for the treatment facility is reduced, lost, or fails.

G3. RIGHT OF ENTRY

Representatives of Ecology shall have the right to enter at all reasonable times in or upon any property, public or private, for the purpose of inspecting and investigating conditions relating to the pollution or the possible pollution of any waters of the state. Reasonable times shall include normal business hours; hours during which production, treatment, or discharge occurs; or times when Ecology suspects a violation requiring immediate inspection. Representatives of Ecology shall be allowed to have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the permit; to inspect any monitoring equipment or method required in the permit; and to sample the discharge, waste treatment processes, or internal waste streams.

G4. FACILITY CHANGE

The Permittee may be required to submit a new application, or a supplement to the previous application, along with required engineering reports and engineering plans and specifications, whenever a new or increased discharge or change in the nature of the discharge is anticipated which is not authorized by this permit as described in Section S3. The application shall be submitted at least 60 days prior to any proposed changes. Submission of the application does not relieve the Permittee of the duty to comply with the existing permit until it is modified or reissued.

G5. PLAN REVIEW REQUIRED

Prior to constructing or modifying any wastewater control systems, an engineering report and engineering plans and specifications shall be submitted

to Ecology for approval in accordance with Chapter 173-240 WAC. Systems shall be constructed and operated in accordance with the approved plans.

G6. PAYMENT OF PERMIT FEES

The Permittee shall pay the required wastewater discharge permit fees assessed in accordance with Chapter 173-224 WAC. Ecology may terminate this permit for nonpayment of fees or late-payment penalties.

G7. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in the permit shall be construed as excusing the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G8. REMOVED SUBSTANCES

Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall not be resuspended or reintroduced to the effluent stream for discharge.

G9. PERMIT TRANSFER

This permit is automatically transferred to a new owner or operator if:

- A. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to Ecology; and
- B. Ecology does not notify the Permittee of the need to modify the permit.

Unless this permit is automatically transferred according to Section A. above, this permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by Ecology.

G10. DUTY TO REAPPLY

The Permittee must reapply, for permit renewal, at least 60 days prior to the specified expiration date of this permit.

G11. REPORTING REQUIREMENTS

Monitoring results shall be submitted at a quarterly frequency. Monitoring data obtained during the previous calendar quarter (i.e., January, February, March) shall be summarized and reported on a form approved by Ecology, to be

submitted no later than 60 days following the completed reporting period, unless otherwise specified in this permit. The reports shall be sent to the Washington State Department of Ecology, Nuclear Waste Program, Water Quality Permit Coordinator, 1315 West 4th Avenue, Kennewick, Washington 99336-6018. The first monitoring period shall be started on the first day of ETF operations.

Monitoring shall be started on the effective date of the permit. Monitoring results obtained during the previous three months shall be summarized and reported on the Discharge Monitoring Report (DMR) Form (EPA 3320-1) and submitted no later than 60 days after the completed quarterly reporting period. The report shall be sent to Ecology at the address listed in the preceding paragraph.

If a contaminant is detected at the enforcement limit point of compliance and an Early Warning Value is attained or exceeded, then the Permittee shall submit the following Early Warning Report that notifies Ecology, in writing, within 10 calendar days from detection of the Early Warning Value. The notification shall contain, at a minimum, information regarding the concentration of contaminant(s) that attained or exceeded the early warning values, concentrations of other contaminants monitored, the location(s) and sampling date(s), and concentrations of other contaminants determined during previous events.

G12. RECORD KEEPING REQUIREMENTS

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by the Director of Ecology.

For each measurement or sample taken, the Permittee shall record the following information: (1) the date, exact place, and time of sampling; (2) the dates the analyses were performed; (3) who performed the analyses; (4) the analytical techniques or methods used; (5) the results of the analyses reported to the Method Detection Limit; and (6) the name of the individual who performed the sampling or provided the measurement.

G13. REPRESENTATIVE SAMPLING

Samples and measurements taken to meet the requirements of this permit shall be representative of the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge

condition, including bypasses, upsets and maintenance-related conditions affecting effluent quality.

G14. TEST PROCEDURES

All sampling and analytical methods used to meet the monitoring requirements specified in this permit shall conform to the latest revision of the "Guidelines Establishing Test Procedures for the Analysis of Pollutants" contained in 40 CFR Part 136, unless otherwise specified in this permit or approved in writing by Ecology.

G15. FLOW MEASUREMENT

Appropriate effluent discharge flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements are consistent with the accepted industry standard for that type of device. Frequency of calibration shall be in conformance with manufacturer's recommendations or at a minimum frequency of at least one calibration per year. Calibration records should be maintained for a minimum of three years.

G16. LABORATORY ACCREDITATION

All monitoring data, except for flow, temperature, conductivity, pH, and internal process control parameters, shall be prepared by a laboratory registered or accredited under the provisions of: Accreditation of Environmental Laboratories, Chapter 173-50 WAC.

G17. ADDITIONAL MONITORING BY THE PERMITTEE

If the Permittee monitors any pollutant more frequently than required by this permit, using test procedures specified by this permit, then the results of this monitoring shall be included in calculation and reporting of the data submitted in the Permittee's self-monitoring reports.

G18. SIGNATORY REQUIREMENTS

All applications, reports, or information submitted to Ecology shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer of at least the level of vice president of a corporation, a general partner of a partnership, or the proprietor of a sole proprietorship, or a

principal executive officer or ranking elected official for a municipal, state, federal or other public facility.

2. All reports required by this permit and other information requested by Ecology shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to Ecology, and
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to authorization. If an authorization under paragraph 1.2.b is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of G18.2.b must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following certification:

"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."

G19. NONCOMPLIANCE NOTIFICATION

In the event the Permittee, upon discovery of the circumstances, is unable to comply with any of the permit terms and conditions due to any cause, the Permittee shall:

- A. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the violation, and correct the problem;
- B. Immediately notify Ecology's designated water quality permit coordinator, Kennewick Office at (509) 735-7581 of the failure to comply; and
- C. Submit a detailed written report to Ecology within 30 days, unless requested earlier by Ecology, describing the nature of the violation, corrective action taken and/or planned, planned steps to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

If the Permittee is in compliance with the terms and conditions of this permit, but its activities have been shown to violate the groundwater protection provisions of WAC 173-200, Ecology is electing to precede any civil or criminal penalty with a compliance order or permit modification per the provisions of WAC 173-200-100(5).

G20. PERMIT TERMINATION

A permit shall be subject to termination upon 30 days notice in writing if Ecology finds:

- A. That it was procured by misrepresentation of any material fact or by lack of full disclosure in the application;
- B. That there has been a violation of the conditions thereof; or
- C. That a material change in quantity or type of waste disposal exists.

G21. PERMIT MODIFICATION

This permit may be modified in whole or in part for the following causes:

- A. Violation of any permit term or condition;
- B. Obtaining a permit by misrepresentation or failure to fully disclose all relevant facts;

- C. A material change in quantity or type of waste disposal; or
- D. A material change in the condition of the waters of the state affected by this permit.

Ecology may also modify this permit if it determines good and valid cause exists, including promulgation or revisions of categorical standards.

Ecology may modify the terms of this permit if the effluent characteristics are later documented by the Permittee, and accepted by Ecology, that reveal errors in best professional judgement by Ecology due to data limitations in existence at the time of permit development. Such a permit modification that results in a higher concentration for a constituent's enforcement limit shall not constitute backsliding on the part of the Permittee.

Per the allowed provisions of WAC 173-216-110(5), the Permittee may submit a new application, or supplement to this permit's previous application which requests modification of this permit, when the Permittee has refined data or believes conditions have changed since issuance of this permit. Said submittal shall include supporting documentation and a statement of the proposed permit modification. Said submittal shall be submitted at least 60 days prior to any proposed changes. Ecology shall respond to said request for permit modification, by either accepting, accepting with modification, or denying said request within 60 days of its receipt.