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DOE/RL-93-94  
Revision 1

## Plan and Schedule for Disposition and Regulatory Compliance for Miscellaneous Streams



United States  
Department of Energy  
Richland, Washington

Approved for Public Release

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## PLAN AND SCHEDULE FOR DISPOSITION AND REGULATORY COMPLIANCE FOR MISCELLANEOUS STREAMS

### 1.0 INTRODUCTION

On December 23, 1991, the U.S. Department of Energy, Richland Operations Office (RL) and the Washington State Department of Ecology (Ecology) agreed to adhere to the provisions of Department of Ecology Consent Order No. DE 91NM-177 (Consent Order) (Ecology and U.S. DOE 1991). The Consent Order lists regulatory milestones for liquid effluent streams at the Hanford Site to comply with the permitting requirements of Washington Administrative Code (WAC) 173-216 (*State Waste Discharge Permit Program*) or WAC 173-218 (*Washington Underground Injection Control Program*) where applicable.

Hanford Site liquid effluent streams discharging to the soil column have been categorized in the Consent Order as follows:

- Phase I Streams
- Phase II Streams
- Miscellaneous Streams.

Phase I and Phase II Streams are addressed in two RL reports: "Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site" (DOE-RL 1987), and "Annual Status of the Report of the Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site" (Stordeur 1988). There were originally 33 Phase I and Phase II Streams, however, some of these streams have been eliminated. Miscellaneous Streams are those liquid effluent streams discharged to the ground that are not categorized as Phase I or Phase II Streams.

Miscellaneous Streams discharging to the soil column at the Hanford Site are subject to the requirements of several milestones identified in the Consent Order. This document provides a plan and schedule for the disposition of Miscellaneous Streams to satisfy one of the Consent Order requirements. The disposition process for the Miscellaneous Streams as developed for this milestone is facilitated using a decision tree format. The decision tree and corresponding analysis for determining appropriate disposition of these streams is presented in this document. The options for disposition of the Miscellaneous Streams have been selected based on demonstrating compliance with the intent of the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology, et al. 1994), Consent Order, WAC 173-216, WAC 173-218, and RCW 90.48.

### 2.0 PURPOSE

The original submittal of this document in January 1994 satisfied the milestone in Section 6 of the Consent Order to "submit a plan and schedule for disposition and regulatory compliance for all remaining Miscellaneous Streams to Ecology for approval by 1/94." This

milestone is applicable to all Miscellaneous Streams inventoried as a result of implementing the "Plan and Schedule for Identification and Evaluation of all Miscellaneous Streams" (WHC 1992), submitted to Ecology in September 1992. In addition, this document is intended to provide requirements for ensuring that future effluent streams will be in compliance with the applicable state regulations (e.g. WAC 173-216 and WAC 173-218).

Revision 1 of the "Plan and Schedule for Disposition and Regulatory Compliance for Miscellaneous Streams" has been prepared in order to respond to comments on Revision 0 received from Ecology in May 1994.

### **3.0 BACKGROUND**

As part of Tri-Party Agreement negotiations, RL, Ecology, and the U.S. Environmental Protection Agency (EPA) agreed that liquid effluents discharged to the soil column would be regulated in accordance with the M-17-00 major and interim milestones set forth in the Tri-Party Agreement Appendix D, and addressed in Chapter 13.0.

The three parties, RL, Ecology and EPA, agreed in the Second Amendment of the Tri-Party Agreement, September 9, 1991: ". . . that those waste water streams currently discharged to the soil column or future waste water streams (excluding discharges that are exempt from permitting under Section 121 of the Comprehensive Environmental Response, Compensation and Liability Act), which affect groundwater or have the potential to affect groundwater, shall be subject to regulatory permitting under RCW 90.48.160, WAC 173-216, or if applicable, WAC 173-218" (Ecology, et al. 1994). The three parties further agreed that RL and Ecology would negotiate a separate agreement by September 1991, or a later date as agreed upon by the necessary actions leading to obtaining such permits at the Hanford Site. That agreement, the Ecology Consent Order DE 91NM-177, was signed by RL and Ecology on December 23, 1991.

### **3.1 CONSENT ORDER MILESTONES FOR MISCELLANEOUS STREAMS**

Section 6 of the Consent Order stipulates several milestones for Miscellaneous Streams. Table 4 of Section 6 promulgates a schedule for the submittal of WAC 173-216/218 permit applications for eleven miscellaneous streams and corresponding disposal sites. The Consent Order specifically allows for any liquid effluent stream that is discontinued or rerouted, prior to the submittal date for any pertinent regulatory milestone, to be exempted from the milestone requirements for that effluent stream. However, if rerouted (which may occur only with Ecology approval), the liquid effluent stream shall assume the submittal date for any pertinent regulatory milestone established for the effluent treatment, collection, conveyance, storage or disposal facility it is rerouted to, in accordance with Tables 1 through 6 of the Consent Order.

Three milestones in Section 6 that are not identified in Table 4 apply to Miscellaneous Streams. These are:

- Submit revised "Inventory of Disposal Sites for Miscellaneous Streams, July, 1991" to Ecology by August 1992.
- Submit a plan which includes an overall regulatory strategy, methodology, and schedule for identification and evaluation of all Miscellaneous Streams by September 1992.
- Submit a plan and schedule for disposition and regulatory compliance for all remaining Miscellaneous Streams to Ecology for approval by January 1994.

The requirements of the first and second milestone listed above have been met through the submittal of the "Revised Inventory of Miscellaneous Streams, August 1992" (WHC 1993), and the "Plan and Schedule for Identification and Evaluation of All Miscellaneous Streams (September 1992)" (WHC 1992), respectively. This document satisfied the requirements of the third milestone when originally submitted in January 1994.

Section 7 of the Consent Order specifies that WAC 173-216/218 permits shall not be required for liquid effluent streams that:

- remain discontinued,
- are currently discharging to ground but shall not continue to discharge to ground after June 1995,
- are permitted through the NPDES, or through an Ecology approved pretreatment program, where applicable.

Although this statement is provided under the section heading of "Phase I and Phase II Liquid Effluents for which WAC 173-216 (WAC 173-218 where applicable) Permits Shall not be Required," the intent is considered applicable to Miscellaneous Streams as well.

### **3.2 STATE WASTE DISCHARGE PERMIT PROGRAM AND THE UNDERGROUND INJECTION CONTROL PROGRAM**

The Consent Order requires that liquid effluent discharges at the Hanford Site be subject to certain regulatory milestones for complying with the WAC 173-216/218 permitting requirements. The Consent Order addresses discharges to the soil column.

The State Waste Discharge Permit (SWDP) Program described in WAC 173-216 applies to the discharge of waste materials from industrial, commercial, and municipal operations into ground and surface waters of the state and into municipal sewer systems.

Underground Injection Control Regulations are provided in WAC 173-218. The Consent Order recognizes the applicability of WAC 173-218 to govern liquid effluent discharges to the subsurface through a well at the Hanford Site. A well is defined as any bored, drilled or driven shaft, or dug hole whose depth is greater than the largest surface dimension. If the discharge is a waste fluid, WAC 173-218-090 defers to WAC 173-216 requirements for obtaining a State Waste Discharge Permit. WAC 173-218 regulates five different classes of injection wells; however, Class V is the only active Class on the Hanford Site. A Class V injection well notification or registration form must be completed and submitted for all injection well discharges.

#### **4.0 DESCRIPTION OF MISCELLANEOUS STREAMS AND STREAM CATEGORIES**

Implementation of the "Plan for Identification and Evaluation of All Miscellaneous Streams (September 1992)" (WHC 1992) provided an inventory of Miscellaneous Streams discharging to the soil column at the Hanford Site as described in the "Revised Inventory of Miscellaneous Streams" (WHC 1993). The primary objective for compiling the inventory was to identify types and categories of Miscellaneous Streams for subsequent evaluation to determine regulatory and permitting requirements. Currently, the inventory is being updated and verified. This inventory will be annually updated and submitted to Ecology until all permit applications required by this Plan and Schedule have been submitted. The Miscellaneous Streams are segregated into a quantitative inventory and a qualitative inventory as discussed below.

#### **4.1 QUANTITATIVE INVENTORY**

The quantitative inventory includes Miscellaneous Streams that discharge from a fixed location to an engineered disposal structure at a measurable flow rate. An engineered disposal structure is defined as a man-made structure that aids in infiltration of fluids into the soil. This inventory includes the relatively few Miscellaneous Streams that may potentially contain contaminants, discharge to a surface contaminated area or discharge within 91 meters (300 feet) of a contaminated disposal area. The distance of 91 meters (300 feet) is the Hanford Site guideline for siting new disposal areas. This is a conservative guideline considering the low flow rates of most Miscellaneous Streams. The majority of Miscellaneous Streams in the quantitative inventory discharge to injection wells.

The quantitative inventory consists of approximately 400 individual streams. An approximate total rate of 549 liters (145 gallons) per minute of liquid effluent is discharged to the soil column for all Miscellaneous Streams included in the inventory. Steam condensate discharges make up approximately 73% of the total number of Miscellaneous Streams and 95% of the total volume of Miscellaneous Streams included in the inventory. Storm water discharges make up approximately 15% of the total number of Miscellaneous Streams and 3% of the total volume of Miscellaneous Streams. The remaining streams

constitute less than 12% of the total number of Miscellaneous Streams and less than 2% of the total volume.

The Miscellaneous Streams quantitative inventory has been categorized by source water and process. The Miscellaneous Streams originate from four types of source water including: groundwater, surface water, storm water, and potable water. Groundwater is defined as "water in a saturated zone or stratum beneath the surface of land or below a surface water body" (WAC 173-200-020). "Surface waters of the State includes lakes, rivers, ponds, streams, inland waters, saltwaters and all other surface waters and water courses within the jurisdiction of the state of Washington" (WAC 173-201A-020). "Storm water means rainfall and snowmelt runoff" (NPDES General Permit for Storm Water). Potable means "water suitable for drinking by the public" (WAC 246-290-010). Potable water originates from groundwater or surface water that has been through a water treatment facility.

The processes associated with the quantitative inventory have been summarized into five categories. A description of the processes included in each category and the associated source water is found below.

- Cooling water discharges - Cooling water discharges include noncontact cooling of equipment, heating, ventilation and air conditioning (HVAC) cooling water, heater overflow, pressure relief valve waste water, air compressor blowdown, pump seal leakage. Groundwater, surface water, or potable water may be used as the source water for cooling water discharges.
- Steam condensate discharges - Steam or HVAC condensate discharges will originate from potable water.
- Washdown and Miscellaneous Discharges - Surface water is used to washdown the coal ramp at the powerhouse facilities. Surface water may also be discharged for various maintenance activities.
- Sink and safety showers - Sink drains collect discharges from cleaning, activities. Eye wash and safety showers discharge only when needed. Potable water is the source water for these discharges.
- Storm water runoff - Storm water runoff is collected from roofs and paved areas.

## 4.2 QUALITATIVE INVENTORY

The qualitative inventory consists of process-based Miscellaneous Streams. Qualitative streams are difficult to quantify due to their limited duration and/or multiple generation locations. Qualitative streams were not included on the inventory because the

waste water is not discharged to a fixed engineered disposal structure at a measurable flow rate. For example, waste water from hydrotesting of equipment is generated at varying flow rates and discharges to many locations on the Hanford Site; however, the general process producing the waste water is the same. Information regarding the number of streams within a category and the flow rates was not considered necessary for the types of streams included in the qualitative inventory. A description of the qualitative categories and the associated source water is found below.

- Hydrotesting of equipment and maintenance activities using potable water, surface water, or groundwater. Maintenance activities include but are not limited to backflow preventer tests, and pressure relief valve tests.
- Waste water from cleaning of transportation equipment - Potable water is used for the washing of all vehicles on site (e.g., cars, buses, trucks and boats).
- Purge water resulting from well sampling, well development, well rehabilitation and aquifer testing. Purge water from these activities is discharged and managed according to an agreement between DOE, Ecology, and EPA on August 21, 1990 (DOE-RL 1990).
- Surface water or groundwater used for irrigation and potable water used for aesthetics such as lawns, trees, and shrubs.
- Dust control using surface water, groundwater, or potable water.

Although fire test water discharges were part of the qualitative inventory, Ecology has agreed that fire test water discharges that are not potentially contaminated will not be subject to permitting under WAC 173-216. With the exception of the purgewater, the plan for disposition of all Miscellaneous Streams (in both quantitative and qualitative inventories) is presented in Section 5.0.

## **5.0 PLAN FOR DISPOSITION AND REGULATORY COMPLIANCE OF MISCELLANEOUS STREAMS**

A flowchart was developed based on the requirements of WAC regulations and discussions with representatives of Ecology and EPA. The intent is to focus state of Washington and Department of Energy (DOE) resources on discharges of the greatest significance, with priority based on potential to pollute the groundwater.

The flowchart has been developed to identify a process for managing Miscellaneous Streams in accordance with the applicable regulations stated in WAC 173-216, WAC 173-218 and Chapter 90.48, RCW. The strategy developed for disposition and compliance of the Miscellaneous Streams includes registering and/or permitting under WAC 173-216, WAC 173-218 and WAC 246-272 as described below.

## 5.1 PERMITTING OPTIONS

Using the logic diagram in Figure 5-1 will result in one of the following permitting options or actions for the Miscellaneous Streams:

- Register injection well under WAC 173-218, the Underground Injection Control Program.
- Permit waste stream under a categorical WAC 173-216 permit, the State Waste Discharge Permit Program.
- Permit waste stream under an individual WAC 173-216 permit, the State Waste Discharge Permit Program.
- Permit waste stream under a one-time/limited duration WAC 173-216 permit, the State Waste Discharge Permit Program.
- Register injection well under WAC 173-218, the Underground Injection Control Program and permit under a categorical WAC 173-216 permit, State Waste Discharge Permit Program.
- Register sewage system with the Department of Health under WAC 246-272.

These options are described in more detail in the following sections.

### 5.1.1 WAC 173-218 Underground Injection Control Program

Most of the disposal areas on the Hanford Site for small streams are surface or near-surface engineered structures that meet the definition of an injection well.

The injection wells receiving Miscellaneous Streams at the Hanford Site are Class V injection wells. Per WAC 173-218-090, all persons operating an existing Class V injection well that inject industrial, commercial, or municipal waste fluids into or above an underground source of drinking water (USDW), must apply to Ecology for approval to operate within one year of the effective date of the regulation (1984). RL and Ecology agreed through the Tri-Party Agreement negotiations and the subsequent Consent Order that the liquid effluents discharged to soil at Hanford would be best addressed through WAC 173-216/218 (where applicable). The Hanford Site is required to meet the schedules for compliance with the applicable regulations set forth in the Consent Order. Therefore, the schedule contained in Section 6.0 of this document serves as the effective date for the Hanford Site to submit applications for operating existing Class V injection wells (receiving Miscellaneous Streams).

In order to bring existing injection wells under regulatory compliance, all injection wells will be registered under WAC 173-218. This includes registering injection wells that

were previously registered, to assure that the registration is current, complete, and in the same format. Any new injection wells placed in service after all existing wells have been registered will be required to register under WAC 173-218 before being placed in service. New injection wells receiving storm water will also be subject to permitting under WAC 173-216. In the future, no new injection wells will be constructed to receive industrial, municipal or commercial waste fluids on the Hanford Site. In WAC 173-218-030, waste fluids are defined as "discarded, abandoned, unwanted, or unrecovered fluid(s) except discharges into the ground or groundwater of groundwater heat pump return flow (unaltered except for temperature), and discharges of storm water not contaminated or potentially contaminated by industrial or commercial sources." In addition, fluid is defined as "any material or substance that flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state." New injection wells may be constructed as part of Hanford site cleanup activities.

### **5.1.2 Categorical WAC 173-216 Permit Application**

Ecology has agreed to develop a categorical WAC 173-216 permit application to facilitate permitting groups of similar Miscellaneous Streams that fit the criteria WAC 173-216 Categorical Permit. One categorical permit application will be submitted for each of the categories listed in Table 5-1. Each categorical permit will include all of the Miscellaneous Streams applicable under that category. The categorical permit will also provide a vehicle to easily permit new Miscellaneous Streams with similar characteristics.

As shown in Table 5-1, one of the categories is storm water runoff. Although uncontaminated storm water is not regulated under WAC 173-216, there is a potential for storm water to become contaminated from industrial sources. Ecology has required that all storm water discharges be permitted under a categorical WAC 173-216 permit application.

In instances where more than one stream is discharging to the same disposal site, the streams will be permitted under all applicable categories. Currently, less than ten disposal sites receive more than one stream. The streams currently affected receive storm water in addition to another stream (i.e, cooling water). These disposal sites will be permitted under the storm water category as well as the category applicable to the other discharge (i.e, cooling water).

The categorical WAC 173-216 permit applications are based on the categories described in the qualitative and quantitative inventory (Section 4). A total of four categorical permit applications will be submitted and are identified in Table 5-1. From the qualitative inventory, a categorical WAC 173-216 permit application will be submitted for hydrotesting, maintenance and construction waste water. The vehicle wash waste water will be combined with the coal ramp washdown and cleaning discharges from the quantitative inventory. The other categories in the qualitative inventory including: fire test discharges, purge water, irrigation and water used for dust control are being rerouted, discontinued or are managed under a separate agreement with Ecology.

A categorical WAC 173-216 permit application will be submitted for all quantitative discharges to ground of less than 38 liters (10 gallons) per minute averaged over the period of a year, or less than 568 liters (150 gallons) per minute instantaneous maximum. Once a categorical permit is in place, new streams meeting the criteria specified in the permit may discharge after notifying Ecology. The acceptable procedure for notifying Ecology will be provided in each categorical permit. In order to discharge new streams that do not meet the criteria, a permit modification or an individual permit application would be required.

**Table 5-1. Categorical WAC 173-216 Permit Applications to be Submitted**

|   | <b>Source Water</b>  | <b>Process</b>  |
|---|--|---|
| 1 | Surface Water/Potable Water                                    | Hydrotesting, Maintenance and Construction Discharges               |
| 2 | Groundwater<br>Surface Water<br>Potable Water<br>Potable Water | Cooling Water<br>Cooling Water<br>Cooling Water<br>Steam Condensate |
| 3 | Surface Water<br>Potable<br>Potable Water                      | Coal Ramp Washdown<br>Vehicle Wash<br>Cleaning, Safety Shower       |
| 4 | Storm Water  | Storm Water Runoff  |

### 5.1.3 One-Time/Limited Duration WAC 173-216 Permit Application

One-time/limited duration WAC 173-216 permit applications will be submitted for Miscellaneous Streams which do not fit the description in Section 5.1.2 on categorical WAC 173-216 permit applications and are a one-time or limited duration discharge. Miscellaneous Streams which are a one-time or limited duration discharge which fit into one of the categorical WAC 173-216 permits may be included in the applicable categorical permit. Miscellaneous Streams which do not fit into a categorical permit and are not one-time or limited duration discharges will require an individual WAC 173-216 permit application.

### 5.1.4 Individual WAC 173-216 Permit Application

Individual WAC 173-216 permit applications will be submitted for those Miscellaneous Streams which have flow rates greater than or equal to 38 liters (10 gallons) per minute averaged over the period of a year, or greater than or equal to 568 liters (150 gallons) per minute instantaneous maximum. The 38 liters (10 gallons) per minute limit was chosen to concur with the 549,000 liters (14,500 gallons) per day limit where Ecology's regulatory authority begins for septic systems in WAC 246-272. In conjunction with the 38

liters (10 gallons) per minute limit, Ecology requires that a Miscellaneous Stream exceeding a maximum of 568 liters (150 gallons) per minute will be required to submit an individual WAC 173-216 permit application. Individual WAC 173-216 permit applications would also be used for discharges that exceed groundwater standards at end of pipe. Ecology may require verification of meeting groundwater standards in the groundwater.

### **5.1.5 WAC 246-272 On-Site Sewage Systems**

Sanitary sewage systems with a design capacity of less than 549,000 liters (14,500 gallons) per day will be registered with the Department of Health in accordance with WAC 246-272. Sanitary sewage systems with design capacities greater than 549,000 liters (14,500 gallons) per day, as well as mechanical treatment systems, are required to submit individual WAC 173-216 permit application as shown in the decision tree diagram (Figure 5-1).

## **5.2 DECISION TREE ANALYSIS**

The decision tree analysis is designed to be used for existing waste streams as well as new waste streams. Details explaining each question in the decision tree are provided in the following sections.

### **5.2.1 Clarification and Justification - Figure 5-1, Page 1**

Miscellaneous Streams require application of the decision tree analysis that begins on page 1 of Figure 5-1.

#### Does effluent discharge to the ground?

This plan and schedule is applicable to waste water discharges to the ground. If discharge is to the Columbia River, the discharge is regulated under NPDES. If discharge is not to ground, the Plan and Schedule is not applicable.

#### Is effluent a domestic waste water?

As defined in WAC 173-216-030(4), domestic waste waters are: "water carrying human wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments or other places, together with such groundwater infiltration or surface waters as may be present". Examples of these waste waters at the Hanford Site include sanitary waste waters from bathrooms, showers, and kitchen areas discharged to the sanitary sewer system.

Is discharge from a septic tank with subsurface sewage treatment and disposal and an ultimate design capacity less than or equal to 549,000 lpd (14,500 gpd)?

If the septic system design capacity is less than 549,000 liters (14,500 gallons) per day, then per WAC 173-216-050(f), the systems are governed by WAC 246-272 (recodified from WAC 248-96), which is administered by the Washington State Department of Social and Health Services. At the Hanford Site, septic systems with a design capacity of less than 549,000 liters (14,500 gallons) per day are administered by Ecology and the Department of Health under a Memorandum of Understanding entitled "Respective Roles and Responsibilities of the Two Agencies Related to the Review and Approval of Septic Tank and Septic Tank Drainfield Systems on the Hanford Reservation". The regulatory disposition of these discharges is not covered in this plan and schedule.

Is effluent an industrial waste water?

Industrial waste waters are defined in WAC 173-216-030(7) as "water or liquid carried waste from industrial or commercial processes, as distinct from domestic waste water. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, leachate from solid waste facilities."

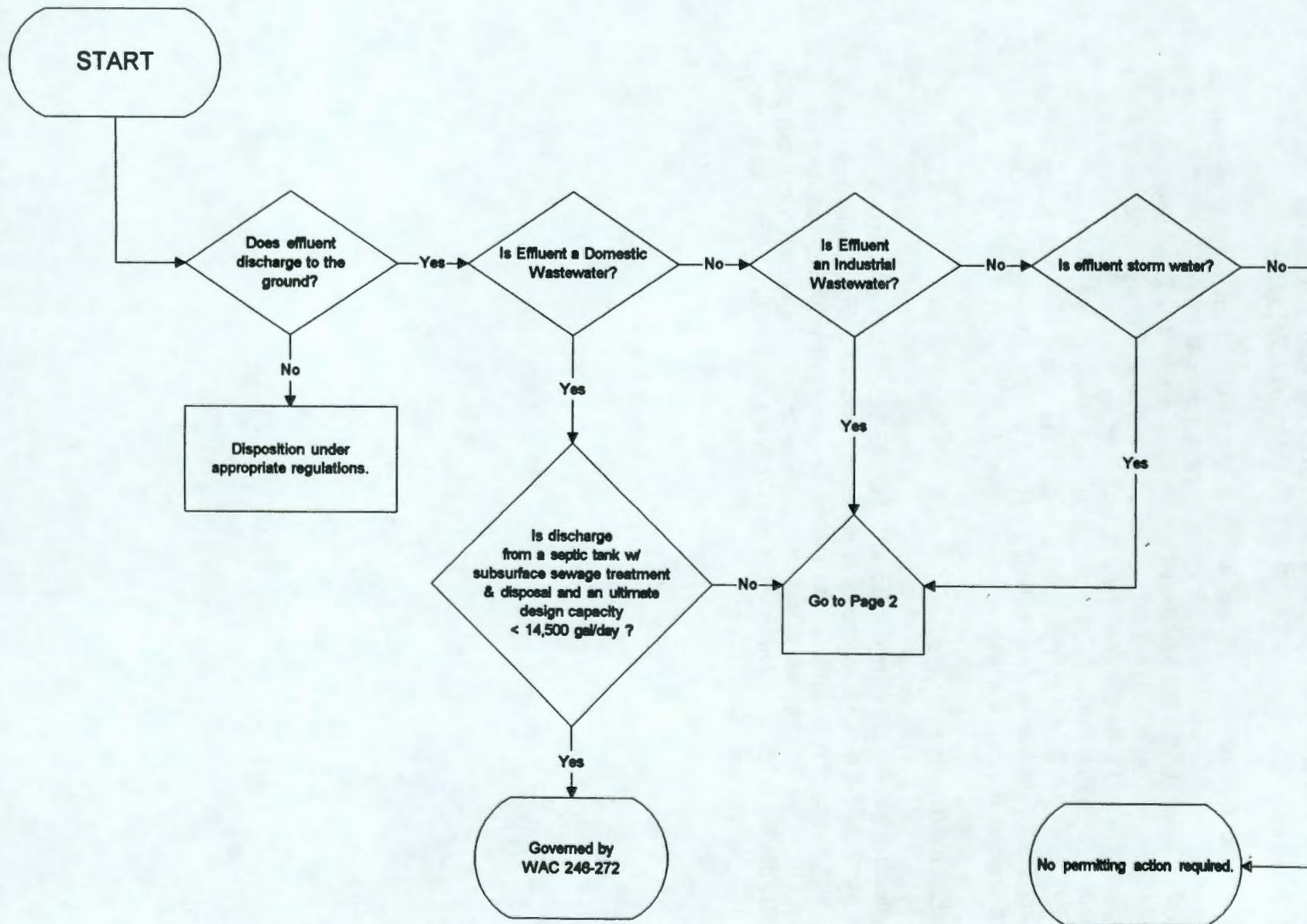


Figure 5-1. Plan for Disposition of Miscellaneous Streams Discharging to Ground (1 of 3)

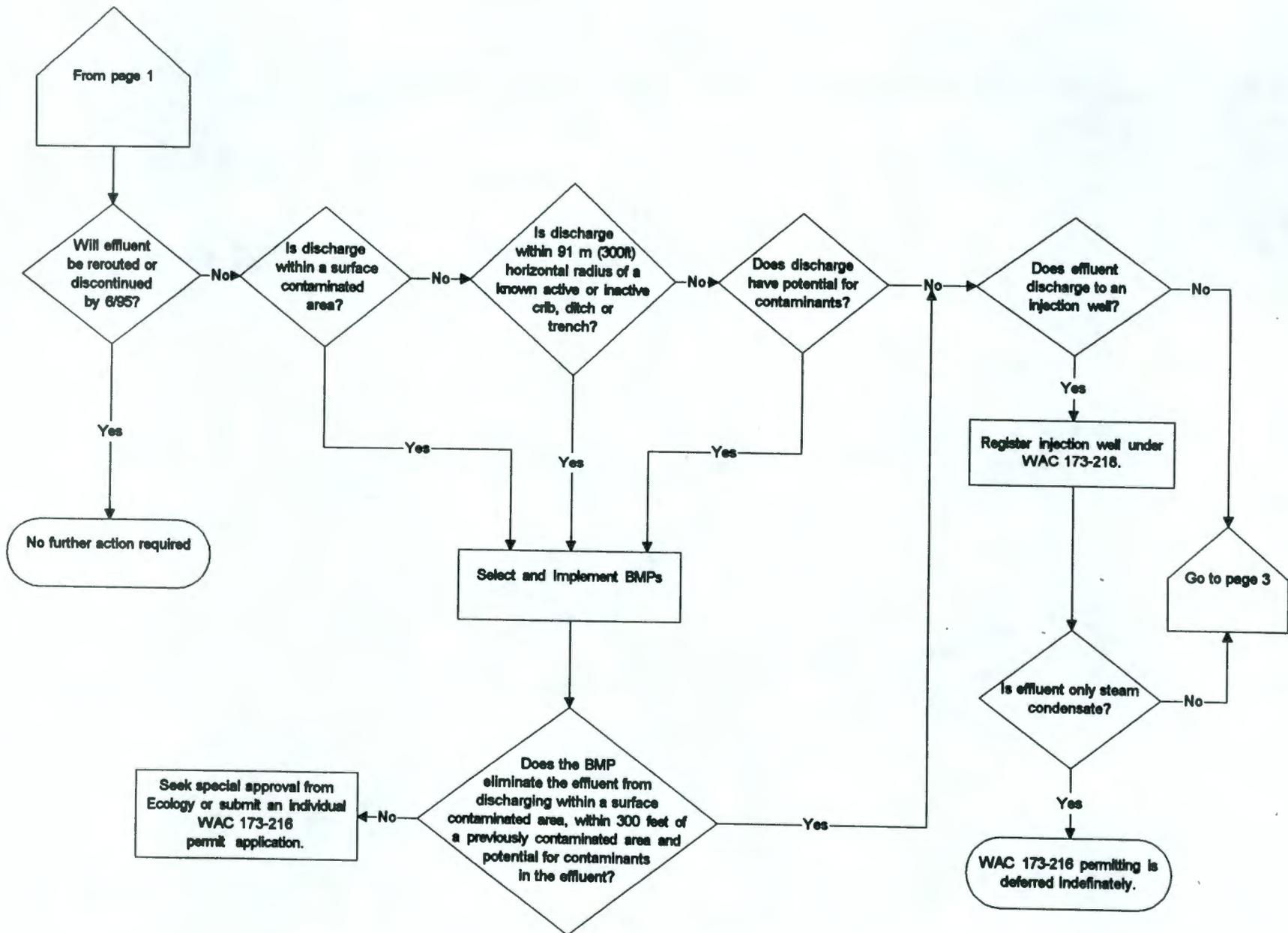


Figure 5-1. Plan for Disposition of Miscellaneous Streams Discharging to Ground  
(2 of 3)

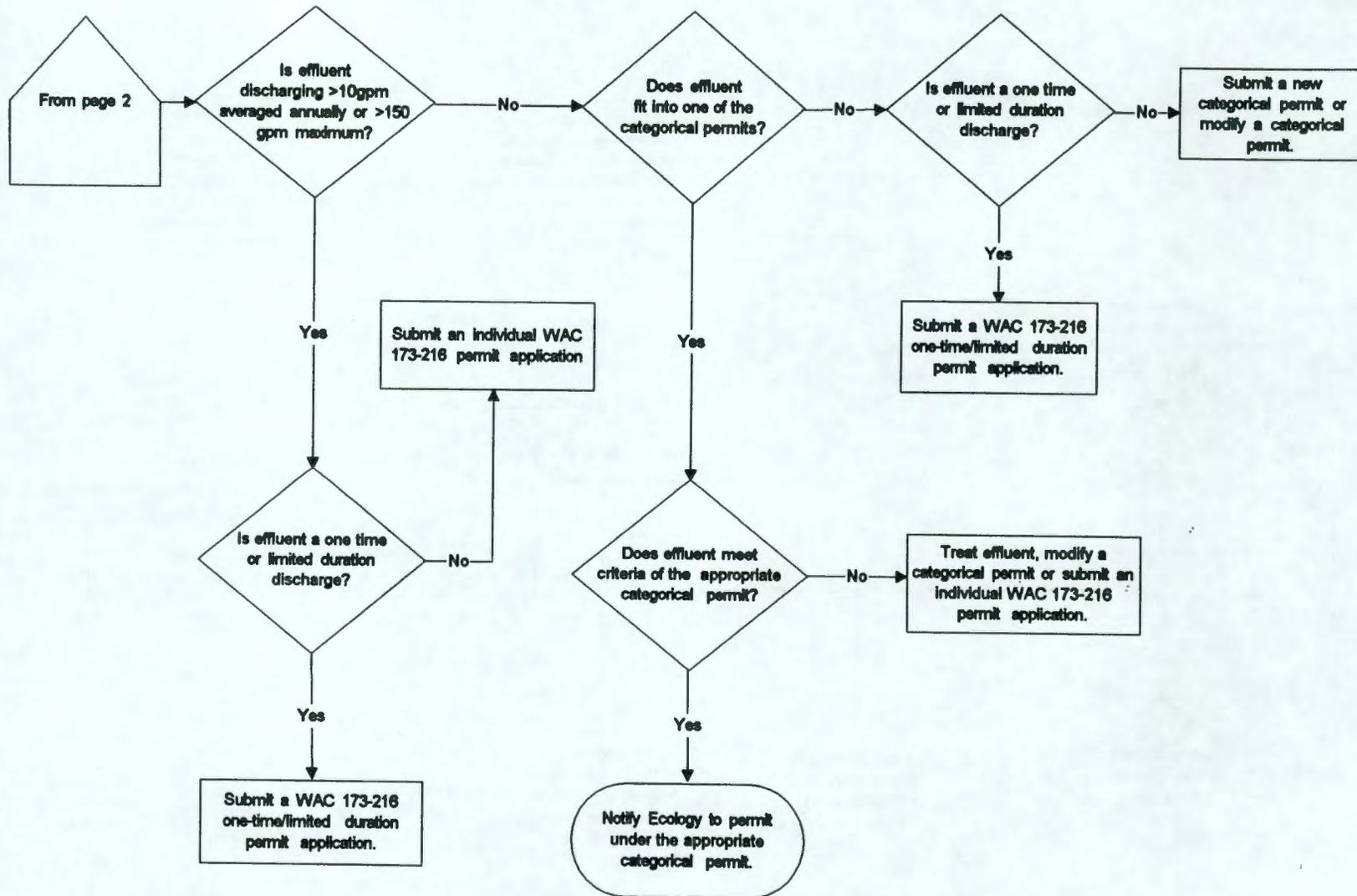


Figure 5-1. Plan for Disposition of Miscellaneous Streams Discharging to Ground  
(3 of 3)

### Is effluent storm water?

Storm water is rainfall and snowmelt runoff. Storm water is one of the categorical WAC 173-216 permit applications that will be submitted to Ecology as shown in Table 5-1. If the effluent is not storm water, no further action is required. Examples of effluent requiring no further action are irrigation water, water used for aesthetics, and water discharged for dust control.

### **5.2.2 Clarification and Justification - Figure 5-1, Page 2**

Liquid effluent discharges directed to page 2 of Figure 5-1 in the decision tree analysis require the following analysis to ascertain proper disposition.

#### Will effluent be rerouted or discontinued by 6/95?

If the existing effluent will not be rerouted or discontinued, proceed with the logic. If the effluent will be discontinued, no further action is necessary. However, if the effluent will be rerouted, the new stream needs to be evaluated by the logic diagram for the new disposal site. This logic does not apply to one-time or limited duration discharges. Although one-time or limited duration discharges would be eliminated by June 1995, a one-time limited duration permit application must be submitted for these discharges.

#### Select and Implement Best Management Practices (BMP)

BMPs as defined in WAC 173-200 are "schedules of activities, prohibition of practices, maintenance of procedures, and other management practices, to prevent or reduce the pollution of groundwater of the state. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or water disposal, or drainage from raw material storage." For the purposes of this document, BMP means rerouting or eliminating miscellaneous streams that are in or near known surface contamination areas, cribs, trenches, or ditches.

An evaluation by RL of best management practices (BMPs) must be performed if any of the following questions are answered with a "yes".

1. Is the discharge within a surface contaminated area? Surface-contaminated areas are defined as those near-surface soils contaminated with dangerous and/or radioactive wastes. There is a potential for migration of existing contaminants present in the soil of the discharge site to the ground water. The concern is with Miscellaneous Streams discharging directly to a surface contaminated area.

2. Is the discharge within a 91 m (300 ft) horizontal radius of a known active or inactive crib, ditch, or trench? Cribs, ditches and trenches were used for the disposal of hazardous or radioactive contaminants. There is a potential for migration of existing contaminants present in the soil within a 91 meter (300 feet) radius of the discharge point. The 91 meter (300 feet) criterion has been used as a minimum separation distance for siting new cribs at the Hanford Site. It is considered a conservative distance based on collective experience at the Hanford Site from borehole drilling in the vicinity of liquid effluent disposal sites. Lateral spreading from adjacent liquid disposal sites greater than 91 meters (300 feet) apart has not been observed to impact either disposal stream. This will include streams discharging directly to a surface contaminated area.
  
3. Does the discharge have potential for contaminants? The acceptable effluent quality is based on evaluating the potential for constituents listed in the Groundwater Quality Standards (Table 1 of WAC 173-200) to enter the source water and cause the groundwater criteria to be exceeded. Miscellaneous Streams originating from sources with physical and/or administrative barriers to prevent contaminants from entering the stream are not considered to have a potential for contaminants. Groundwater, surface water or potable waste water unaltered except for temperature, which consists of a large portion of the inventory (i.e., steam condensate, uncontaminated storm water, noncontact cooling water) is not considered to have the potential for contaminants exceeding groundwater criteria.

If any of the questions above are answered "yes", the Miscellaneous Stream may have the potential to affect groundwater. This will require a study to identify options for the selection and implementation of BMP. Selection of the proper BMPs will address and identify contaminants, flow rates, alternatives, costs, and identify practices and procedures that will satisfy the decision tree analysis in Figure 5-1. Baseline BMPs that should at minimum be implemented for these streams include good housekeeping, preventative maintenance, visual inspections, employee training, and recordkeeping and reporting.

Does the BMP eliminate the effluent from discharging within 91 m (300 ft) of a contaminated disposal area and the potential for contaminants in the effluent?

For those Miscellaneous Streams that answer "no" after implementation of BMPs, a decision is required to eliminate the discharge, reroute the discharge, pursue an individual WAC 173-216 State Waste Discharge Permit or seek special approval from Ecology for the discharge. For streams that pose no significant threat to the groundwater, Ecology may approve a BMP option of 'no further action' on a case-by-case basis. The 'no further action' option would be used for minor streams for which no viable options for rerouting or elimination are feasible.

### Does effluent discharge to an injection well?

As defined in WAC 173-218-030 (11, 18), an injection well is "a bored, drilled, or driven shaft or dug hole whose depth is greater than the largest surface dimension, used for the subsurface emplacement of fluids."

The injection wells receiving Miscellaneous Streams at the Hanford Site are Class V injection wells. Per WAC 173-218-090, all persons operating an existing Class V injection well that inject industrial, commercial, or municipal waste fluids into or above an underground source of drinking water (USDW), must apply to Ecology for approval to operate within one year of the effective date of the regulation (WAC 173-218). RL and Ecology agreed through the Tri-Party Agreement negotiations and the subsequent Consent Order that the liquid effluents discharged to soil at Hanford would be best addressed through WAC 173-216/218 (where applicable). The Hanford Site is required to meet the schedules for compliance with the applicable regulations set forth in the Consent Order. Therefore, the effective date for the Hanford Site to submit applications for operating existing Class V injection wells (receiving Miscellaneous Streams) is considered to be the schedule defined within this document.

In the future, no new injection wells will be constructed to receive industrial, municipal or commercial waste fluids on the Hanford Site. In WAC 173-218-030, "waste fluids" are defined as "discarded, abandoned, unwanted, or unrecovered material or substance that flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state except discharges into the ground or groundwater of groundwater heat pump return flow (unaltered except for temperature), and discharges of storm water not contaminated or potentially contaminated by industrial or commercial sources." New injection wells may be constructed as part of Hanford site cleanup activities; such wells would receive only remediation discharges and not any industrial, municipal or commercial waste fluids.

### Is effluent only steam condensate?

Steam condensate discharges to injection wells will be registered under WAC 173-218. However, Ecology has agreed that WAC 173-216 permitting of existing steam condensate streams discharging to the ground will be deferred to a later date due to the low flow rates and low potential for contamination. Therefore, it is important to separate out discharges to injection wells that only consist of steam condensate. New steam condensate discharges that do not discharge to injection wells will be permitted under a categorical WAC 173-216 permit as described in Section 5.1.2. No new injection wells will be constructed to receive industrial steam condensate discharges.

### 5.2.3 Clarification and Justification - Figure 5-1, Page 3

Is effluent discharging greater than 38 lpm (10 gpm) averaged annually or greater than 568 lpm (150 gpm) maximum?

Two criteria have been developed to determine whether an individual or categorical WAC 173-216 permit application is required. One criteria measures the annual average discharge rate and the other criteria measures the maximum instantaneous discharge rate.

The annual discharge rate is measured by converting the total annual discharge volume of the Miscellaneous Stream into gallons per minute averaged over the entire year. The maximum discharge rate measures maximum flow rate in the total gallons minute. If the effluent discharges less than 38 liters per minute (10 gallons per minute) for the annual discharge rate and less than 568 liters per minute (150 gallons per minute) maximum instantaneous discharge rate, a categorical WAC 173-216 permit application may be submitted. Otherwise, an individual WAC 173-216 permit application is required.

Does effluent fit into one of the categories?

Based on process knowledge, source water and waste stream characteristics, determine whether the waste stream fits into one of the categories listed in Table 5-1. The categories are separated by source water and processes.

Does effluent meet the criteria of the appropriate categorical permit?

For each of the categories, a categorical permit will be written with specific discharge criteria. Examples of criteria are average and maximum flow rate or, acceptable constituent levels. If a Miscellaneous Stream meets these criteria and fits into one of the categories, the effluent may be permitted under the categorical permit. If the Miscellaneous Stream does not meet the criteria, the categorical permit may require modification to incorporate the Miscellaneous Stream, or an individual WAC 173-216 permit application could be submitted for the stream.

Is effluent a one-time or limited duration discharge?

Occasionally, activities (e.g, maintenance or technology testing) may produce liquid effluent streams that are discharged one-time or for a limited duration. If the one-time or limited duration discharges do not fall into one of the categorical WAC 173-216 permits, then a one-time/limited duration State Waste Discharge Permit application can be used. The one-time/limited duration State Waste Discharge Permit application is supplied by Ecology. Individual WAC 173-216 permit applications are generally used for streams that discharge continuously, or for more than a limited duration. Ecology reserves the right to require an individual WAC 173-216 permit for one-time/limited duration discharges.

## 6.0 SCHEDULE FOR DISPOSITION AND REGULATORY COMPLIANCE OF MISCELLANEOUS STREAMS

Tables 6-1 and 6-2 identify specific commitments that have been established for activities associated with the planned disposition of the Miscellaneous Streams. These activities correspond to actions identified as a result of performing the decision tree analysis presented in Figure 5-1. Table 6-1 identifies Best Management Practice activities for Miscellaneous Streams that may have the potential to affect groundwater. Table 6-2 identifies a required schedule for submitting registrations and permit applications. The applicability column of Table 6-1 and Table 6-2 provides a reference to the category of liquid effluents requiring the specified action. For the purposes of this schedule, the phrase "Ecology approval of the Plan and Schedule" shall be defined as the date written approval is received from Ecology.

**Table 6-1. Schedule for Disposition of the Best Management Practice Process**

| Activity No. | Activity  | Applicability  | Schedule for Submittal   |
|--------------|---|--|--|
| 6-1.1        | Identify streams requiring selection of BMP.  | Liquid effluent discharges that may have the potential to affect groundwater, as discussed in Section 5.2.2.   | 3 months following Ecology approval of the Plan and Schedule.  |
| 6-1.2        | Submit the BMP options, the preferred selection, and implementation schedule to Ecology for approval.       | Liquid effluent discharges that may have the potential to affect groundwater, as discussed in Section 5.2.2.   | 18 months following Ecology approval of the Plan and Schedule.   |
| 6-1.3        | Receive a response from Ecology approving or not approving the BMP preferred selection.                     | Liquid effluent discharges that may have the potential to affect groundwater, as discussed in Section 5.2.2.   | 45 days after the BMP options, and the preferred selection and the implementation schedule were submitted. |
| 6-1.4        | Initiate implementation of Best Management Practices.   | Liquid effluent discharges that may have the potential to affect groundwater, as discussed in Section 5.2.2.   | October 1996.  |
| 6-1.5        | Eliminate discharges with the potential to affect groundwater and not applied for permit under WAC 173-216. | Liquid effluent discharges that must select and implement BMPs in the decision tree, as presented in Figure 5-1 and not being permitted under WAC 173-216. | October 1996.  |

Elimination of some Miscellaneous Streams that may have the potential to affect groundwater may not be completed by October 1996. The BMP selection and timeframe for elimination of these streams will be provided at the conclusion of the BMP selection process (18 months following Ecology approval of the Plan and Schedule).

**Table 6-2. Schedule for Disposition and Regulatory Compliance of the Miscellaneous Streams**

| Activity No. | Activity   | Applicability  | Schedule for Submittal   |
|--------------|--|--|--|
| 6-2.1        | Register Class V injection wells with Ecology.                 | Liquid effluent discharges requiring well registration based on criteria presented in Figure 5-1.  | 6 months following Ecology approval of the Plan and Schedule.  |
| 6-2.2        | Issue and annually update the Miscellaneous Streams Inventory. | Liquid effluent discharges meeting the definition of Miscellaneous Streams.  | At the end of each fiscal year following Ecology approval of the Plan and Schedule until all categorical permit applications required by this Plan and Schedule have been submitted. |
| 6-2.3        | File one categorical WAC 173-216 permit application.           | Liquid effluent discharges applicable to categories #1, in Table 5-1. This includes hydrotesting, maintenance and construction discharges.   | September 1995 provided that Ecology has approved the categorical permit application form for use by January 1995.   |
| 6-2.4        | File one categorical WAC 173-216 permit application.           | Liquid effluent discharges applicable to categories #2, and in Table 5-1. This includes cooling water discharges originating from groundwater, surface water and potable water and steam condensate discharges originating from potable water. | September 1996.  |
| 6-2.5        | File one categorical WAC 173-216 permit application.           | Liquid effluent discharges applicable to categories #3, and in Table 5-1. This includes surface water discharges from the coal ramp washdown process, and vehicle wash cleaning and safety shower discharges originating from potable water.   | September 1997.  |
| 6-2.6        | File one categorical WAC 173-216 permit application.           | Liquid effluent discharges applicable to category, #4, in Table 5-1. This includes storm water discharges.   | September 1998.  |

Permitting of the Miscellaneous Streams under the categorical WAC 173-216, State Waste Discharge Permit Program is being staggered to allow for the efficient use of Ecology and RL personnel in permit application and renewal preparation. Ecology is currently reviewing a number of permit applications (i.e., C-018, W-049, Miscellaneous Streams Interim Compliance) and would prefer to phase submittal of the categorical permit applications. Ecology will develop permit application forms for all WAC 173-216 categorical permits by January 1995. The commitment date of September 1995 will be subject to delays in issuing the WAC 173-216 categorical permit application forms.

## 7.0 REFERENCES

### 7.1 DOCUMENTS AND LETTERS

DOE-RL, 1987, *Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site*, DOE-065, Response to Congressional Request, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 1990, Letter from R.D. Izatt to President, Hanford Environmental Health Foundation; General Manager, Kaiser Engineers Hanford Company; Director, Pacific Northwest Laboratory; President, Westinghouse Hanford Company, *Strategy for Handling and Disposing of Purgewater at the Hanford Site, Washington*, 90-ERB-076, August 9, 1990.

Ecology, EPA, and DOE, 1994, *Hanford Federal Facility Agreement and Consent Order*, 89-10 Rev. 3, Washington Department of Ecology, U.S. Environmental Protection Agency, an U.S. Department of Energy, Olympia Washington.

Ecology and USDOE, 1991, *Consent Order No. DE 91NM-177*, Washington Department of Ecology, U.S. Department of Energy, Olympia Washington.

Stordeur, R.T. and D.L. Flyckt, 1988, Annual Status Report of the Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site, WHC-EP-0196-1, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, *Plan and Schedule for Identification and Evaluation of All Miscellaneous Streams (September 1992)*, WHC-SD-EN-EV-017, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1993, *Revised Inventory of Miscellaneous Streams*, WHC-SD-EN-EV-014, Westinghouse Hanford Company, Richland, Washington.

### 7.2 CODE OF FEDERAL REGULATIONS AND FEDERAL REGISTER

40 CFR 122.2, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*.

### 7.3 FEDERAL AND STATE ACTS

*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601 et seq.

*Water Pollution Control*, Revised Code of Washington, Chapter 90.48 et seq., Olympia, Washington.

**7.4 WASHINGTON ADMINISTRATIVE CODE**

WAC 173-200, *Water Quality Standards for Groundwater of the State of Washington*, Washington State Department of Ecology, Olympia, Washington.

WAC 173-201A, *Water Quality Standards for Surface Waters of the State of Washington*, Washington State Department of Ecology, Olympia, Washington.

WAC 173-216, *State Waste Discharge Program*, Washington State Department of Ecology, Olympia, Washington.

WAC 173-218, *State Underground Injection Control Regulations*, Washington State Department of Ecology, Olympia, Washington.

WAC 246-272, *On-Site Sewage System*, Washington State Department of Ecology, Olympia, Washington.



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