Fact Sheet for State Reclaimed Water Permit ST0007445
King County South Wastewater Treatment Plant - Water Reclamation Facility
[date issued]

Purpose of this fact sheet

This fact sheet explains and documents the decisions Washington State Department of Ecology (Ecology) made in drafting the proposed State reclaimed water permit for King County's South Water Reclamation Plant that will allow the beneficial use of reclaimed water for irrigation, commercial, and industrial uses at various locations as specified in the permit and King County's Water Reuse Plan.

State law requires any reclaimed water facility to obtain a permit before implementing a beneficial use that may impact waters of the state, which includes groundwater.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before it issues the final permit to the facility operator. Copies of the fact sheet and draft permit for the South Plant State Reclaimed Water Permit No. ST0007445 are available for public review and comment from date until the close of business date. For more details on preparing and filing comments about these documents, please see *Appendix A - Public Involvement Information.*

King County (the County) and the Washington State Department of Health (DOH) have reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, type and rate of reclaimed water production, or use areas prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses. Ecology will include these responses in this fact sheet as *Appendix E - Response to Comments,* and publish the revised fact sheet when we issue the final State Reclaimed Water permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

Summary

King County's South Wastewater Treatment Plant (South Plant) treats wastewater to secondary treatment standards using an activated sludge process. The majority of the treated effluent is discharged via a deepwater outfall in central Puget Sound; this discharge is authorized under NPDES permit number WA0029581. The County pumps a portion of the treated effluent to an on-site water reclamation facility that produces Class A reclaimed water using coagulation, filtration, and disinfection. The South Plant WWTP uses the reclaimed water on-site for irrigation and process water needs. The County also supplies reclaimed water off-site for irrigation, commercial, and industrial uses.

The proposed State Reclaimed Water Permit specifically authorizes the County's South Plant water reclamation facility to distribute Class A reclaimed to off-site users. Ecology must modify the permit before King County can distribute other classes of water or install additional treatment facilities.

Table of Contents

I. Introduction ***4***
II. Background Information ***5***
A. Facility description 7
Collection system status 7
Reclaimed water treatment process (prior to beneficial use) 7
Distribution system and use areas 9
Solid wastes 9
B. Wastewater influent characterization 9
C. Reclaimed water characterization 10
D. Summary of compliance with previous permit issued 10
E. State environmental policy act (SEPA) compliance 10
F. Water rights status 11
III. Proposed Permit Limits ***11***
A. Design criteria 12
B. Technology-based reclaimed water limits 12
C. Groundwater quality-based reclaimed water limits 14
D. Comparison of reclaimed water limits with the previous permit 14
IV. Monitoring Requirements ***14***
A. Lab accreditation 14
B. Wastewater and reclaimed water monitoring 15
V. Other Permit Conditions ***16***
A. Reporting and record keeping 16
B. Prevention of facility overloading 16
C. Operations and maintenance 16
D. Irrigation and crop management plans 16
E. Reclaimed water distribution and use 16
F. Solid wastes 16
G. General conditions 17
VI. Permit Issuance Procedures ***17***
A. Permit modifications 17
B. Proposed permit issuance 17
VII. References for Text and Appendices ***17***
Appendix A--Public Involvement Information ***19***
Appendix B--Your Right to Appeal ***20***
Appendix C--Glossary ***21***
Appendix D--Facility Data ***27***
Appendix E--Response to Comments ***29***

List of Tables

Table 1. General Facility Information....5
Table 2. Reclaimed water off-site use summary, 2013....9
Table 3. Influent characterization....10
Table 4. Reclaimed water characterization....10
Table 5. Violations/Permit Triggers....11
Table 6. Design Criteria for Wastewater Treatment Facility....12
Table 7. Technology-Based Limits for Class A Reclaimed Water using Traditional Filtration Methods....13
Table 8. Lab Accredited Parameters....15

List of Figures

Figure 1. Facility Location Map....6
Figure 2. Process Flow Schematic....8

I. Introduction

The Reclaimed Water Act, chapter 90.46 RCW, authorized the development of Water Reclamation and Reuse Standards for the beneficial use of reclaimed water. DOH and Ecology completed these standards in 1997, which you can access at Ecology's website at the following address: http://www.ecy.wa.gov/programs/wq/reclaim/index.html

RCW 90.46.220 requires any person proposing to generate any type of reclaimed water for a use regulated under this chapter to obtain a permit from the lead agency (Ecology). The permitted facility may then distribute and use the water subject to the provisions in the permit governing the location, rate, water quality, and purposes of use. RCW 90.46.030 states that DOH may issue a permit for industrial and commercial uses of reclaimed water and that the permits will govern the location, rate, water quality and purposes of use. Per memorandum of agreement between Ecology and DOH, Ecology issues a single permit that includes the DOH requirements. RCW 90.46.240 requires the submittal and approval by the lead agency of feasibility studies, planning documents, engineering reports, and plans and specifications for the construction of reclaimed water facilities.

All reclaimed water permits issued by Ecology must specify conditions demonstrating that the facility has adequately and reliably treated its wastewater to meet the requirements in the Water Reclamation and Reuse Standards appropriate for the use. In addition to meeting the water quality limits, the standards require specific treatment and disinfection requirements beyond those of most conventional wastewater treatment facilities. The standards also require automated alarms, redundancy of treatment units, emergency storage, stringent operator training requirements and public notification of reclaimed water use.

Ecology has also adopted rules under the Water Pollution Control Act, chapter 90.48 RCW, that give Ecology additional authority that applies to reclaimed water permits:

- State waste discharge program (chapter 173-216 WAC).
- Water quality standards for groundwaters of the state of Washington (chapter 173-200 WAC).
- Discharge standards and effluent limits for domestic wastewater facilities (chapter 173–221 WAC).
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC).

Under the State Reclaimed Water permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days. (See *Appendix A - Public Involvement Information* for more information on public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft State Reclaimed Water permit in response to comments. Ecology will summarize the responses to comments and any changes to the permit in *Appendix E*.

II. Background Information

Table 1. General Facility Information

Facility Information	
Applicant	King County Department of Natural Resources and Parks Wastewater Treatment Division 201 S Jackson Street Seattle, WA 98104-3855
Facility Name and Address	King County South Treatment Plant - Reclaimed Water Facility 1200 Monster Road SW Renton, WA 98057
Contact at Facility	Process Control Supervisor, 206-263-1810
Responsible Official	East Section Manager 1200 Monster Road SW 206-263-1810
Type of Treatment	Source water is chlorinated secondary treated effluent. The reclaimed water treatment includes coagulation, filtration, and disinfection.
Facility Location (NAD83/WGS84 reference datum)	Latitude: 47.467683 Longitude: -122.240323
Reuse Locations	Locations are identified in permit Section R4 and in the County's Reclaimed Water Reuse Plan

Permit Status	
Renewal Date of Previous Permit	September 30, 2009
Application for Permit Renewal Submittal Date	October 16, 2013
Date of Ecology Acceptance of Application	October 21, 2013

Inspection Status	
Date of Last Non-sampling Inspection Date	January 13, 2015

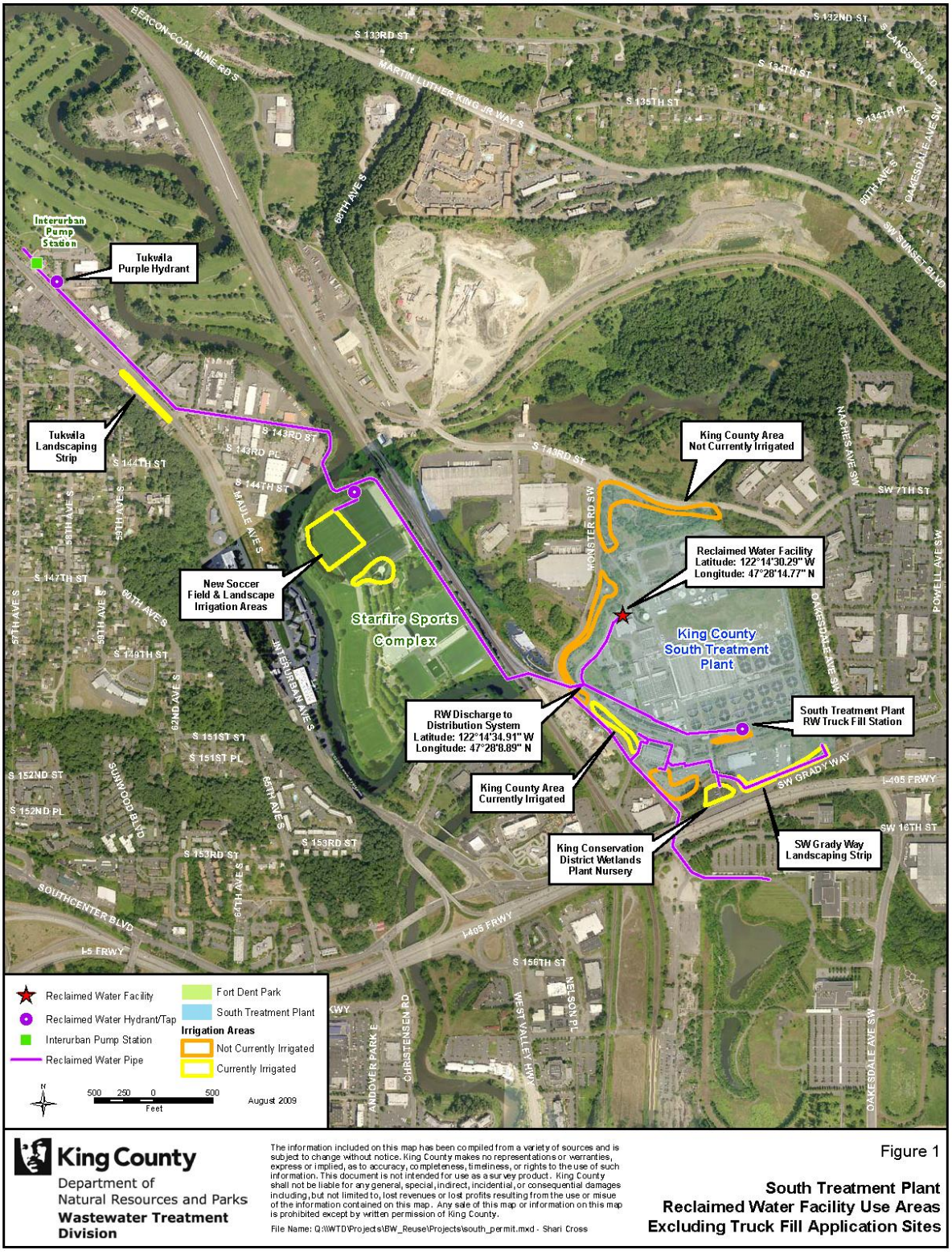


Figure 1. Facility Location Map

A. Facility description

King County's Department of Natural Resources and Parks, Wastewater Treatment Division owns and operates the South Wastewater Treatment Plant (South Plant) that serves south King County and a large area east of Lake Washington. The plant expansion in 2000 increased the facility's design capacity to 144 million gallons per day (MGD), maximum month flow. The plant is permitted to discharge secondary treated and disinfected effluent to Puget Sound via a deep, marine water outfall under NPDES permit number WA0029581.

In 1995, King County began planning a water reclamation facility at South Plant. The purpose of the water reclamation facility was to generate reclaimed water that provides an alternative to using potable water. The scope of the project, as described in the Engineering Report, is to construct a relatively simple and low cost facility to demonstrate that secondary treated effluent can be safely, reliably, and economically treated to meet the Water Reclamation and Reuse Standards. The Engineering Report for the facility identified potential uses of reclaimed water at South Plant and for other users in the vicinity. The County completed construction of the reclamation facility in 1997.

Collection system status

South Plant serves a collection area of 152 square miles that consists of domestic, commercial, and industrial users. King County owns and operates the major sewer interceptors and pump stations that carry the wastewater to the WWTP. Many component agencies individually own, operate, and maintain the pipelines and other conveyance facilities that convey wastewater to King County's interceptors. Wastewater is conveyed to South Plant via three interceptors: the Tukwila Interceptor, the South Interceptor, and the Eastside Interceptor. The County monitors and operates the 26 pump stations in the collection system using a SCADA (Supervisory Control and Data Acquisition) system located at the South WWTP.

Reclaimed water treatment process (prior to beneficial use)

A simplified process flow diagram is shown in Figure 2. The source water for the Reclamation Plant is chlorinated secondary treated effluent that contains 30 mg/L or less TSS and BOD_5 (based on a monthly average). It is pumped directly from the chlorine contact channel to the Reclamation Plant for treatment. The County first adds coagulant(s) to the chlorinated, secondary effluent to aid in the removal of suspended solids and reduce the turbidity of the water. The County monitors turbidity and adjusts the coagulant dose to ensure that the reuse water will meet the regulatory turbidity limits of less than 2 nephelometric turbidity units (NTU) for a monthly average and not to exceed 5 NTU's at any one time. The coagulant (poly-aluminum chloride) is mixed into the feed water using a static mixer located upstream of the sand filters.

The next step in the reclamation process is filtration which is required to produce Class A reclaimed water. The facility uses Dynasand® continuous backwash counter current up-flow sand filters for the filtration step. It can use from one to three filters in parallel depending on the demand for reclaimed water. Sodium hypochlorite is then injected into the coagulated and filtered water at a dosing rate from 5 – 10 mg/L as Cl_2. The filtered water flows through a series of chlorine contact tanks designed to provide a minimum of 30 minutes detention time at the design maximum flow rate. The final reclaimed water from the plant flows into a 550,000-gallon storage tank, which provides an additional 1-2 days of contact.

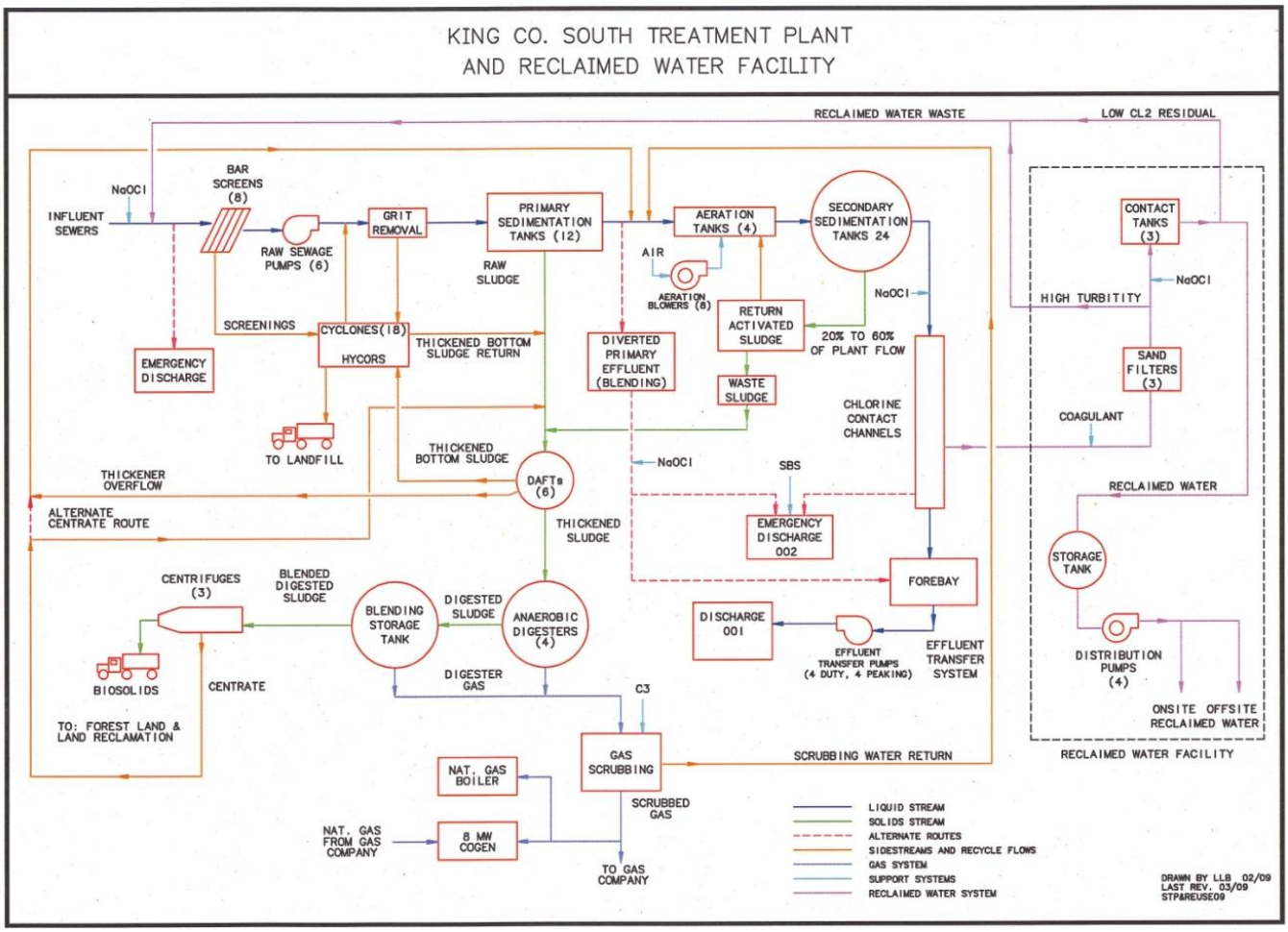


Figure 2. **Process Flow Schematic**

The Reclamation Plant meets the treatment, disinfection, redundancy, and other requirements of the Water Reclamation and Reuse Standards through the following design and operation protocols.

- Filtrate (prior to disinfection) automatically diverts to the South Plant WWTP headworks in the event of high turbidity or coagulant feed malfunction. Wastewater is also automatically diverted if sodium hypochlorite (NaOCl) feed shuts down.
- A standby source of potable water provides a back up to reclaimed water with the necessary air gap protection to prevent contamination of the potable water source.
- The coagulation system includes adequate storage and flow control.
- The disinfection system includes a standby metering pump for sodium hypochlorite. Continuous on-line analyzers and recorders measure residual chlorine at several locations, including the inlet and outlet of the chlorine contact tanks, and at the exit from the reclaimed water storage tank.

The County uses a supervisory control and data acquisition (SCADA) system to monitor off-site pump stations and facilities. Operators monitor and control critical plant operations from a central control room using a distributed control system (DCS). The plant is staffed 24 hours per day.

Distribution system and use areas

Four distribution pumps allow the County to pump reclaimed water to users at varying rates, up to 3600 gallons per minute (gpm). Reclaimed water is distributed to the South Plant WWTP for process and landscape irrigation uses, and to off-site users for industrial, commercial, and irrigation uses. This permit covers off-site use only. Ecology does not require a permit for on-site use normally associated with wastewater treatment practices. The off-site system distributes reclaimed water to off-site use points using an underground purple pipe system. Table 2 lists all the users of reclaimed water in the year 2013. The County will provide an updated list to Ecology and DOH as specified in the proposed permit.

Table 2. Reclaimed water off-site use summary, 2013

Entity	Use Description	Estimated Volume (MG) 2013	Use Area	Comments
City of Tukwila: Public Works Maintenance Shop & Starfire Sports Complex	Irrigation, street cleaning	1.830	Starfire Sports Complex (formally Ft Dent Park): soccer field and landscape irrigation. City of Tukwila: purple hydrant for street cleaning	Flow metered.
King Conservation District	Irrigation	0.978	King Conservation District nursery	Flow metered.
King County: Truck and Haul Program*	Irrigation	0.014	Irrigation to establish native plants for levee and park restoration, and wetland and stream buffer restoration	Flow metered by weight. Various entities fill tank-mounted trucks or tankers with 300-4800 gallons of reclaimed water per truck at fill station.
2013 Total		***2.822***		

*Groups that haul and apply reclaimed water: Washington Conservation Corps, EarthCorps, King County Department of Transportation, and King County Water and Land Resources Division.

The facilities that use the reclaimed water must use appropriate flow rates, setbacks, signs, and other controls in order to use Class A reclaimed water per the *Water Reclamation and Reuse Standards*.

Solid wastes

Solids that accumulate in the sand filters are removed using backwash water. The filter backwash water is then pumped to the South Plant WWTP headworks. The wastewater treatment process removes solids at the headworks (grit and screenings), and at the primary and secondary clarifiers. Solids for the facility are regulated under permit WA0029181.

B. Wastewater influent characterization

The County reported influent data in discharge monitoring reports, as summarized in Table 3. Under the proposed permit, the County can only generate reclaimed water using secondary treated effluent from the South Plant WWTP that meets the effluent limits listed in NPDES permit number WA0029181.

Table 3. Influent characterization, 2010-2014

Parameter	Units	Average	Weekly Maximum
BOD_5	mg/L	15	57
TSS	mg/L	11	42
		Average	**Daily Maximum**
Turbidity	NTU	6	21
		Minimum	**Maximum**
pH	std units	6.7	7.4

C. Reclaimed water characterization

The County reported reclaimed water data in the permit application and in discharge monitoring reports. The data in Table 4 represents the quality of the reclaimed water discharged from November 2009 – October 2014.

Table 4. Reclaimed water characterization, 2010-2014

Parameter	Units	Average	Maximum
Flow	gallons/day	11,231 (ave. monthly)	81,130 (Max Day)
Ammonia	mg/L as N	20	41
Nitrate + Nitrite	mg/L as N	5	19
Phosphorus, total	mg/L as P	1.6	7
Turbidity	NTU	0.5	1.5
		Max 7-day Median	**Maximum**
Total Coliforms	# cfu/100 mL	1.7	80
		Minimum	**Maximum**
pH	std units	6.4	7.3
Chlorine	mg/L	0.50	--
Dissolved Oxygen	mg/L	3.6	--

D. Summary of compliance with previous permit issued

The previous permit placed reclaimed water limits on total coliform, turbidity, pH, and residual chlorine. The facility complied with the limits and permit conditions throughout the permit term except as noted in Table 5. Ecology assessed compliance based on its review of the facility's discharge monitoring reports (DMRs).

E. State environmental policy act (SEPA) compliance

State law exempts reissuance or modification of any reclaimed water permit from the SEPA process as long as the permit contains conditions no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing reclaimed water uses, not to new uses.

Table 5. Violations/Permit Triggers

Date	Violation	Units	DMR Value	Max Limit
5/31/2011	Late Submittal - 2011 Cross Connection Report	--	--	--
2/1/2010	Late Submittal – DMR	--	--	--
4/1/2010	Late Submittal – DMR	--	--	--
8/1/2011	Late Submittal – DMR	--	--	--
12/1/2011	Late Submittal – DMR	--	--	--
4/1/2010	Total Coliform - Numeric effluent violation	#/100ml	80	23
8/1/2010	Total Coliform - Numeric effluent violation	#/100ml	69	23
8/1/2011	Total Coliform - Numeric effluent violation	#/100ml	26.3	23
7/1/2012	Total Coliform - Numeric effluent violation	#/100ml	39	23
8/1/2012	Total Coliform - Numeric effluent violation	#/100ml	32	23

F. Water rights status

The Permittee is the owner of the reclaimed water treatment facility and RCW 90.46.120 gives the Permittee exclusive right to any water generated by the reclaimed water treatment facility. Use and distribution of reclaimed water is exempt from the water right permit requirements of RCW 90.03.250 and 90.44.060.

III. Proposed Permit Limits

The Reclaimed Water Act, Chapter 90.46 RCW requires that reclaimed water generators adequately and reliably treat wastewater to meet reclaimed water standards prior to distribution and beneficial use. Ecology and DOH have adopted criteria to demonstrate compliance with these requirements in the *Washington State Water Reclamation and Reuse Standards (1997)*. State regulations require that Ecology base limits in a State Reclaimed Water permit on the following:

- Technology and treatment methods available to treat specific pollutants (technology-based). Dischargers must treat wastewater using all known, available, reasonable methods of prevention, control, and treatment (AKART). In addition, reclaimed water must receive adequate and reliable treatment (ART) as specified by the *Washington State Water Reclamation and Reuse Standards* (1997).
- State drinking water contaminant criteria found in the drinking water quality standards adopted by the state board of health, pursuant to chapter 43.20 RCW, and DOH, pursuant to chapter 70.119A RCW for groundwater recharge via surface percolation.
- Washington State Groundwater Quality Standards pursuant to chapter 173-200 WAC for groundwater recharge.
- Applicable requirements of other local, state and federal laws.

Ecology and DOH have adopted criteria to demonstrate compliance with these requirements in the *Washington State Water Reclamation and Reuse Standards* (1997) and Chapter 173-221 WAC. Ecology applies the most stringent of technology and water quality-based limits to each parameter of concern. The limits in this permit reflect information received in the application and

from supporting reports (engineering, hydrogeology, monitoring, and irrigation/crop management). Ecology evaluated the permit application and determined the limits needed to comply with the rules and standards adopted by the state of Washington. Ecology does not develop reclaimed water limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, and are not listed in regulation.

Ecology does not usually develop permit limits for pollutants not reported in the permit application but that may be present in the reclaimed water. The permit does not authorize the discharge or distribution of the non-reported pollutants. During the five-year permit term, the facility may change the conditions of use of its reclaimed water from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent.

A. Design criteria

Under WAC 173-216-110(4), flows and waste loadings must not exceed the approved design criteria. Ecology obtained the design criteria for this facility from the engineering report called *Effluent Reuse Pilot Project*, dated May 1995, and prepared by Brown and Caldwell. The table below includes design criteria from the referenced report and cover letter.

Table 6. Design Criteria for Wastewater Treatment Facility

Parameter	Design Quantity
Maximum Daily Feed Rate to Filters	1.3 MGD

B. Technology-based reclaimed water limits

Waste discharge permits issued by Ecology specify conditions requiring the facility to use all known available and reasonable methods of prevention, control, and treatment of discharges (AKART) before discharging to waters of the state (RCW 90.48). Ecology defines AKART for domestic wastewater facilities in chapter 173-221 WAC, Discharge Standards and Effluent Limits for Domestic Wastewater Facilities, and in DOH's design criteria (1994).

Reclaimed water permits issued by Ecology specify conditions requiring the facility to use AKART before implementing a beneficial use contributing to waters of the state (RCW 90.48). All reclaimed water permits must assure that generators treat water derived from wastewater with a domestic wastewater component adequately and reliably before use for beneficial purposes. Reclaimed water is not considered a wastewater (RCW 90.46.010(14).

The authority and duties for reclaimed water use are in addition to those already provided in law with regard to sewage and wastewater collection, treatment and disposal for the protection of public health and the safety of the state's waters. All waste discharge permits issued by Ecology must specify conditions requiring all known available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). For land application, the proposed permit requires application of reclaimed water at rates not to exceed the infiltration capacity of the soils.

Ecology determined that the facility meets the minimum requirements demonstrating consistency with the Washington State *Water Reclamation and Reuse Standards* (1997) and the AKART standard if the County operates the treatment system and uses the reclaimed water for the beneficial uses as described in the approved engineering report and any subsequent Ecology-approved reports.

Table 7 lists the technology-based limits that apply to this facility. The County demonstrates compliance with the TSS and BOD_5/$CBOD_5$ requirements as part of their South Plant WWTP permit monitoring. The proposed reclaimed water permit prohibits the County from generating reclaimed water using WWTP effluent that does not meet the permit limits listed in the WWTP permit (WA0029581).

Table 7. Technology-Based Limits for Class A Reclaimed Water using Traditional Filtration Methods

Compliance Point - Oxidized Wastewater – Secondary Effluent		
Parameter	**Average Monthly Limit**	**Average Weekly Limit**
BOD_5 / $CBOD_5$	30 / 25 mg/L	45 /40 mg/L
TSS	30 mg/L	45 mg/L
	Instantaneous Minimum	
Dissolved Oxygen	0.2 mg/L (DO must be measurable in the effluent at all times)	
Compliance Point -Coagulated/ Filtered Wastewater – Prior to Disinfection		
	Average Monthly	**Sample Maximum**
Turbidity	2 NTU	5 NTU maximum
Compliance Point - Disinfected - Reclaimed Water		
	Seven Day Median	**Sample Maximum**
Total Coliform	2.2 cfu/100 mL	23 cfu/100 mL
	Daily Minimum	**Daily Maximum**
pH	6.0 std units	9.0 std units
Compliance Point - Distribution System		
		Minimum Daily
Total Chlorine Residual		0.5 mg/L

The reclamation facility produces Class A reclaimed water which is the highest quality of reclaimed water and therefore provides the broadest range of reuse opportunities. Conversely, Class A reclaimed water requires the most stringent treatment and water quality limits. The technology and water quality requirements for the production of Class A reclaimed water are as follows:

1. "Class A Reclaimed Water" is reclaimed water that had been adequately and reliably treated and, at a minimum is, at all times, an oxidized, coagulated, filtered, and disinfected wastewater.
2. Oxidized is defined as wastewater in which the organic matter has been stabilized such that the biochemical oxygen demand (BOD_5) does not exceed 30 mg/L and total suspended solids (TSS) does not exceed 30 mg/L, is non-putrescible, and contains dissolved oxygen.
3. Coagulated wastewater is defined as an oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated prior to filtration by the addition of chemicals or by an equally effective method.

4. Filtered wastewater is defined as an oxidized, coagulated wastewater which has been passed through natural undisturbed soils or filter media, such as sand or anthracite, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 nephelometric turbidity units (NTU), determined monthly, and does not exceed 5 NTU at any time.
5. Adequate disinfection is demonstrated when the median number of total coliform organisms after disinfection does not exceed 2.2/100 milliliters, as determined from the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform organisms does not exceed 23/100 milliliters in any sample.
6. The reclamation facility must maintain a 0.5 mg/L chlorine residual in the reclaimed water during conveyance to the use areas.

C. Groundwater quality-based reclaimed water limits

The proposed permit does not cover discharges to groundwaters. The County is required to re-apply if planning a use that would impact ground water quality.

D. Comparison of reclaimed water limits with the previous permit

Ecology is proposing the same limits as those in the previous permit, with the addition of a dissolved oxygen (DO) limit. The proposed permit requires DO to be measurable in the effluent at all times.

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-216-110) to verify that the treatment process functions correctly and that the discharge complies with the permit's effluent limits.

The County must ensure that the laboratory uses methods that meets or exceeds the method detection levels required by the permit. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

A. Lab accreditation

Ecology requires facilities to use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*, to prepare all monitoring data (with the exception of certain parameters). Ecology accredited the South Plant laboratory for General Chemistry and Microbiology. The County's environmental lab at W. Ewing Street is additionally accredited for trace metals by ICP-OES and ICP-MS, mercury, inorganics, organics by GC and GC-MS, bioassays, and microbiology in matrices, including liquids, sediments, and tissues.

Table 8. Lab Accredited Parameters

Parameter Name	Analyte ID	Method Name	Method Code
Solids, Total Volatile	1970	EPA 160.4_1971	10010409
Turbidity	2055	SM 2130 B-01	20048219
Alkalinity	1505	SM 2320 B-97	20045607
Hardness, Total (as CaCO3)	1755	SM 2340 C-97	20047603
Specific Conductance	1610	SM 2510 B-97	20048606
Solids, Total	1950	SM 2540 B-97	20049405
Solids, Total Dissolved	1955	SM 2540 C-97	20050402
Solids, Total Suspended	1960	SM 2540 D-97	20051201
Chlorine (Residual), Total	1940	SM 4500-Cl D-00	20080108
Chlorine (Residual), Total	1940	SM 4500-Cl G-00	20081612
pH	1900	SM 4500-H+ B-00	20105219
Ammonia	1515	SM 4500-NH3 F-97	20023556
Nitrite	1835	SM 4500-$NO2^{-}$ B-00	20113104
Nitrate	1805	SM 4500-$NO3^{-}$ F-00	20117617
Nitrate + Nitrite	1820	SM 4500-$NO3^{-}$ F-00	20117617
Nitrogen, Total Kjeldahl	1795	SM 4500-Norg B-97	20119204
Dissolved Oxygen	1880	SM 4500-O G-01	20121408
Orthophosphate	1870	SM 4500-P F-99	20125013
Phosphorus, total	1910	SM 4500-P F-99	20125013
Biochemical Oxygen Demand (BOD)	1530	SM 5210 B-01	20135006
Chemical Oxygen Demand (COD)	1565	SM 5220 D-97	20136805
Total coliform-count	2500	SM 9222 B (M-endo)-97	20203207
Fecal coliform-count	2530	SM 9222 D (m-FC)-97	20210008

B. Wastewater and reclaimed water monitoring

Ecology details the proposed monitoring schedule under Reclaimed Water Condition R2. Specified monitoring frequencies take into account the quantity and variability of the reclaimed water, the approved uses, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (Publication Number 92-09) for a Class A reclaimed water facility.

V. Other Permit Conditions

A. Reporting and record keeping

Ecology based Reclaimed Water Condition R3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-216-110).

B. Prevention of facility overloading

Overloading the reclamation facility is a violation of the terms and conditions of the permit; Condition R4 restricts the amount of flow to the facility. To prevent this from occurring, RCW 90.48.110 and WAC 173-216-110 require King County to report and correct conditions that could result in new or increased pollutant flow to the facility.

C. Operations and maintenance

Ecology requires dischargers to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state regulations (WAC 173-240-080 and WAC 173-216-110). The facility must maintain an updated O&M manual for the wastewater facility.

Implementation of the procedures in the O&M manual ensures the facility's compliance with the terms and limits in the permit and ensures the facility provides AKART to the waste stream.

D. Irrigation and crop management plans

Ecology requires the irrigation and crop management plan to support the engineering report(s) and operations and maintenance manual. This plan must include a consideration of wastewater application at agronomic rates as required by Reclaimed Water Condition R1 and should describe and evaluate various irrigation controls.

Plans must comply with the requirements for an irrigation and crop management plan given in Ecology's guidance, *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems.* (1993).

E. Reclaimed water distribution and use

These permit requirements are based on the *Water Reclamation and Reuse Standards* authorized in Chapter 90.46 RCW. The standards contain requirements to assure that distribution and use of reclaimed water are protective of public health and the environment at all times. The requirements in this section cover use area responsibilities, alarms, alternative disposal of substandard water, maintenance of operational records, cross connection control, enforceable contracts, local reclaimed water use ordinances, and prohibitions on bypass.

F. Solid wastes

To prevent water quality problems the facility is required in Reclaimed Water Condition R8 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080, state water quality standards, and NPDES permit WA00029581.

G. General conditions

Ecology bases the standardized general conditions on state law and regulations. They are included in all state waste discharge permits issued by Ecology.

VI. Permit Issuance Procedures

A. Permit modifications

Ecology may modify this permit to impose numerical limits, if necessary, to comply with water quality standards, based on new information from sources such as inspections and effluent monitoring. Ecology may also modify this permit to comply with new or amended state regulations.

B. Proposed permit issuance

This proposed permit meets all statutory requirements for Ecology to authorize a beneficial use of reclaimed water. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of Washington. Ecology proposes to issue this permit for a term of 5 years.

VII. References for Text and Appendices

Gavlak, R., D. Horneck, R.O. Miller, and J. Kotuby-Amacher.

3rd edition 2005. *Soil, Plant And Water Reference Methods For The Western Region* http://cropandsoil.oregonstate.edu/wera103/soil_methods

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1997. *Water Reclamation and Reuse Standards*, Ecology Publication Number 97-23. 73 pp. http://www.ecy.wa.gov/biblio/97023.html

Laws and Regulations http://www.ecy.wa.gov/laws-rules/index.html

Permit and Wastewater Related Information http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Revised August 2008. *Criteria for Sewage Works Design*. Publication Number 98-37. http://www.ecy.wa.gov/biblio/9837.html

December 2011. *Permit Writer's Manual*. Publication Number 92-109 http://www.ecy.wa.gov/biblio/92109.html

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February 1994. *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection*. http://www.ecy.wa.gov/programs/wq/wastewater/municipal_land_treatment_design_criteria.pdf

Appendix A--Public Involvement Information

Ecology proposes to reissue a permit to King County's South Plant Water Reclamation Facility. The permit includes reclaimed water limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on date in the *Seattle Times* to inform the public and to invite comment on the proposed draft State Reclaimed Water permit and fact sheet.

The notice:

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed state waste discharge permit.
- Explains the next steps in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting*, which is available on our website at http://www.ecy.wa.gov/biblio/0307023.html.

You may obtain further information from Ecology by telephone, 425-649-7201, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

The primary author of this permit and fact sheet is Alison Evans, P.E.

Appendix B--Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 9850	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Appendix C--Glossary

1-DMax or 1-day maximum temperature -- The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures -- The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute toxicity -- The lethal effect of a compound on an organism that occurs in a short time period, usually 48 to 96 hours.

AKART -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate point of compliance -- An alternative location in the groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ammonia -- Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual average design flow (AADF) – The average of the daily flow volumes anticipated to occur over a calendar year.

Average monthly (intermittent) discharge limit -- The average of the measured values obtained over a calendar months time taking into account zero discharge days.

Average monthly discharge limit -- The average of the measured values obtained over a calendar month's time.

Best management practices (BMPs) -- Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD5 -- Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic

environment. Although BOD_5 is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass -- The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine -- A chemical used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic toxicity -- The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean water act (CWA) -- The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance inspection-without sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance inspection-with sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite sample -- A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction activity -- Clearing, grading, excavation, and any other activity, which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous monitoring -- Uninterrupted, unless otherwise noted in the permit.

Date of receipt -- This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Detection limit -- The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Dilution factor (DF) -- A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Distribution uniformity -- The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Enforcement limit -- The concentration assigned to a contaminant in the groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater criterion will not be exceeded and that background water quality will be protected.

Engineering report -- A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal coliform bacteria -- Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab sample -- A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Groundwater -- Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Industrial user -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater -- Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. 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 stormwater and, also, leachate from solid waste facilities.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Major facility -- A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum daily discharge limit -- The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum day design flow (MDDF) -- The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum month design flow (MMDF) -- The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum week design flow (MWDF) -- The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method detection level (MDL) -- See Detection Limit.

Minor facility -- A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

National pollutant discharge elimination system (NPDES) -- The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH -- The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Peak hour design flow (PHDF) -- The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak instantaneous design flow (PIDF) -- The maximum anticipated instantaneous flow.

Point of compliance -- The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential significant industrial user (PSIU) --A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day; or

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency, December 2007).

Reasonable potential -- A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer -- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sample Maximum -- No sample may exceed this value.

Significant industrial user (SIU) --

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; and

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

* The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil scientist -- An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5, 3, or 1 year(s), respectively, of professional experience working in the area of agronomy, crops, or soils.

Solid waste -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

State waters -- Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater -- That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based effluent limit -- A permit limit based on the ability of a treatment method to reduce the pollutant.

Total coliform bacteria -- A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total suspended solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset -- An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

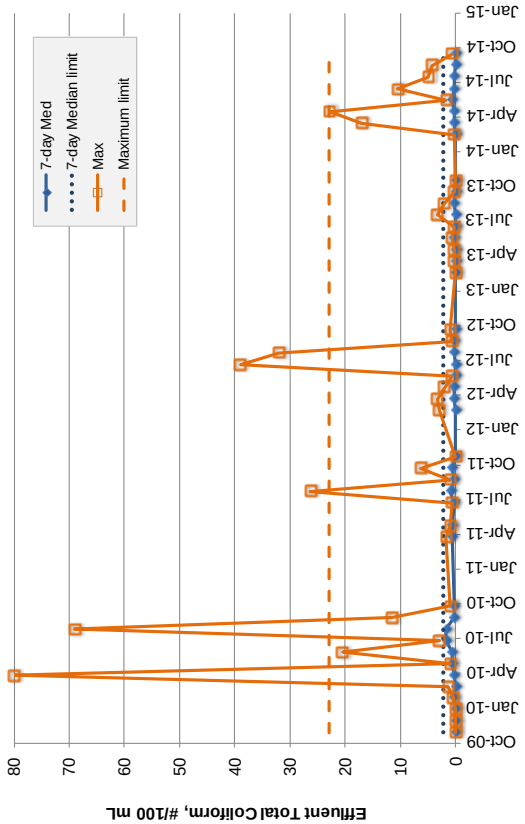
Appendix D--Facility Data

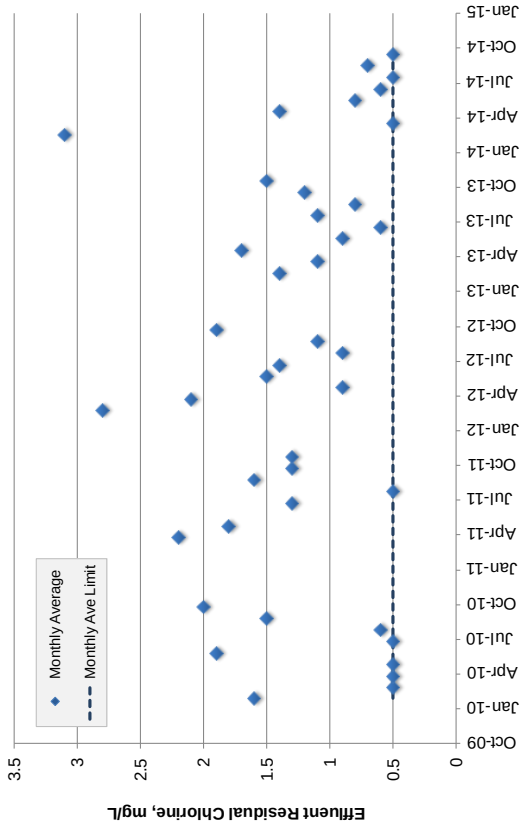
South Plant Reclaimed Water Treatment Plant DMR Data

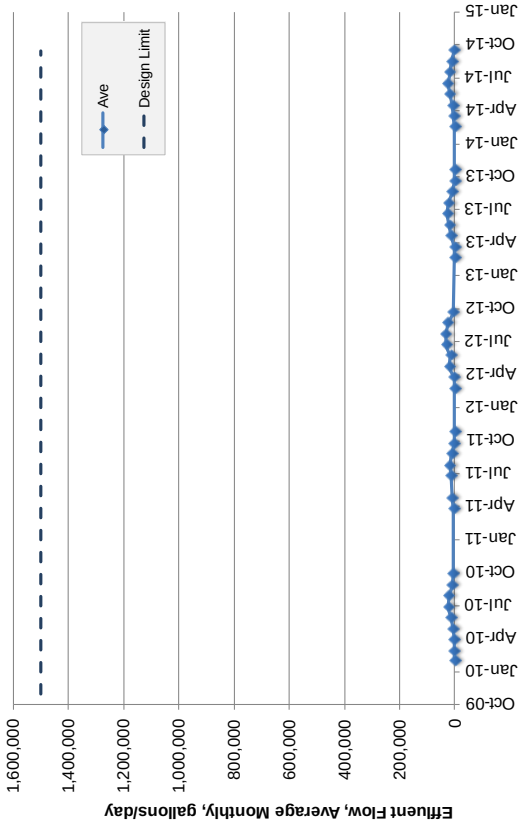
	Influent								Effluent																Filter 1		Filter 2		Filter 3	
	BOD5, mg/L		TSS, mg/L		Turbidity, NTU		pH		Flow, gal/day		Total Coliform, #/100 ml		pH		Chlorine, mg/L	DO, mg/L	Ammonia, mg/L		Nitrate+ Nitrite, mg/L as N		Total Phos, mg/L as P		Coagulant, lbs/day		Turbidity, NTU		Turbidity, NTU		Turbidity, NTU	
	Ave	Max	Ave	Max	Ave	Max	Max	Min	Ave	Max	7-day Med	Max	max	min	Min	Min	Mnth Ave	Day Max	Mnth Ave	Day Max	Mnth Ave	Day Max	Mnth Ave	Day Max	Mnth Ave	Day Max	Mnth Ave	Day Max	Mnth Ave	Day Max
1-Nov-09	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
1-Dec-09	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
1-Jan-10	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
1-Feb-10	20	30	15	24	6	8	7.4	7.0	504	8,707	0.4	0.5	7.0	6.9	1.6	5.7	33	33	0	0	1.4	1.4	91	134	m	m	m	m	0.6	1.0
1-Mar-10	21	29	18	27	8	11	7.2	7.0	1,680	12,055	0.0	1.3	7.2	6.9	0.5	7.1	29	32	0	0	1.1	1.2	118	129					0.7	1.3
1-Apr-10	18	29	20	28	10	13	7.1	7.0	1,301	4,064	0.3	80	7.2	6.7	0.5	7.5	32	36	0	0	0.7	0.9	251	400	c	c	c	c	0.9	1.3
1-May-10	19	27	16	26	7	12	7.0	7.0	5,153	11,558	0.7	1.0	7.3	6.9	0.5	7.6	33	37	0	0	0.9	1.4	212	364	c	c	c	c	0.7	1.3
1-Jun-10	20	47	16	36	8	21	7.0	7.0	13,132	26,802	0.7	21	7.1	6.9	1.9	7.1	31	32	0	0	0.9	1.9	171	258	0.2	1.3	0.5	1.3	0.6	1.3
1-Jul-10	17	26	10	15	6	9	7.1	7.0	22,925	35,848	1.7	3.0	7.3	6.8	0.5	6.4	30	31	1	1	0.3	0.5	169	317	0.4	1.3	0.6	1.3	0.6	1.3
1-Aug-10	12	21	10	15	5	8	7.2	7.0	22,201	30,528	1.7	69	7.3	6.8	1.5	6.5	19	28	4	6	1.1	3.0	147	199	c	c	c	c	0.6	1.3
1-Sep-10	11	15	8	11	4	6	7.0	6.9	9,369	23,729	0.3	11.5	7.2	6.8	2.0	6.7	21	32	4	9	2.2	4.4	162	205	0.5	1.3	c	c	0.6	1.3
1-Oct-10	16	22	9	18	4	5	7.0	6.9	5,559	15,930	0.3	1.0	7.2	6.8	2.0	6.9	16	23	4	11	2.1	3.7	116	158	0.5	1.3	m	m	m	m
1-Apr-11	13	18	14	17	6	8	7.0	7.0	3,908	28,289	0.7	1.7	7.0	7.0	2.2	8.1	26	31	0	0	0.6	0.9	126	129	0.6	1.5	0.6	1.5	c	c
1-May-11	16	21	11	18	7	9	7.0	7.0	10,321	31,265	0.7	1.0	7.1	7.0	1.8	8.0	27	33	0	0	1.3	1.8	171	259	0.6	1.5	0.7	1.5	c	c
1-Jul-11	23	38	9	16	7	18	6.9	6.8	14,359	34,052	0.3	0.7	6.9	6.4	1.3	5.9	18	24	7	13	0.9	2.2	286	431			0.7	1.5		
1-Aug-11	13	19	9	12	4	6	7.0	6.9	17,469	24,936	1.0	26	7.3	6.7	0.5	6.3	16	27	9	16	1.9	3.3	146	255	c	c	0.5	1.5	c	c
1-Sep-11	14	24	9	18	4	5	7.0	7.0	12,224	23,952	0.3	1.0	7.0	6.9	1.6	6.7	28	33	3	7	1.5	2.5	211	316	0.4	1.5	0.4	1.5	c	c
1-Oct-11	13	18	10	13	5	8	7.1	7.0	2,984	4,875	0.7	6.3	7.1	6.9	1.3	5.2	26	29	1	2	1.0	2.4	210	256	0.5	1.5	0.6	1.5	m	m
1-Nov-11	21	47	15	42	6	12	7.0	7.0	338	2,533	0.0	0.0	7.0	6.9	1.3	6.2	24	24	3	3	0.8	0.8	182	202	0.4	1.5	0.6	1.5	c	c
1-Mar-12	13	23	13	37	5	8	7.0	7.0	137	3,100	0.0	3.0	7.0	6.9	2.8	6.5	25	25	0	0	1.0	1.0	107	112	c	c	0.3	0.5	c	c
1-Apr-12	13	28	9	12	5	5	7.0	7.0	2,589	7,350	0.3	3.3	7.2	7.0	2.1	6.2	27	29	0	0	1.0	1.4	105	107	c	c	0.6	1.3	c	c
1-May-12	19	33	9	13	6	9	7.0	6.9	19,507	39,583	0.3	2.0	7.2	6.7	0.9	5.2	17	29	6	15	3.0	3.5	128	145	c	c	0.5	1.3	c	c
1-Jun-12	13	28	10	16	5	7	6.9	6.8	16,172	30,967	0.0	0.7	6.9	6.7	1.5	6.2	3	6	13	14	3.2	4.4	131	175	c	c	0.4	1.3	0.5	1.3
1-Jul-12	9	15	7	13	3	5	6.8	6.8	30,436	49,349	0.0	39	7.3	6.6	1.4	6.1	2	3	14	14	3.0	3.1	139	171	c	c	c	c	0.4	1.3
1-Aug-12	12	27	8	29	3	5	6.9	6.8	33,803	64,011	0.3	32	6.9	6.6	0.9	5.5	5	6	10	13	3.1	3.5	142	170	m	m	m	m	0.3	1.0
1-Sep-12	15	19	8	11	4	4	7.0	6.9	25,599	42,783	0.3	0.7	7.0	6.8	1.1	6.2	10	16	8	12	2.3	3.1	179	219	c	c	c	c	0.3	0.8
1-Oct-12	19	32	7	15	3	7	7.0	7.0	6,645	19,240	0.0	1.0	7.0	6.8	1.9	6.9	22	24	3	5	1.9	6.3	173	202	0.4	0.8	c	c	0.3	0.8
1-Mar-13	19	31	11	15	9	12	7.0	6.9	877	12,200	0.0	0.0	6.9	6.8	1.4	7.3	22	25	3	5	1.0	1.2	196	323	1.0	1.3	c	c	c	c
1-Apr-13	16	27	12	15	7	9	6.9	6.8	840	8,007	0.0	0.3	6.9	6.8	1.1	6.8	19	23	3	6	0.5	0.8	229	286	0.8	1.1	m	m	m	m
1-May-13	13	20	11	14	9	13	7.0	6.9	14,989	37,380	0.0	0.3	7.0	6.9	1.7	6.7	35	36	0	0	0.6	0.9	300	394	0.7	1.3	c	c	c	c
1-Jun-13	18	37	10	15	7	9	7.0	6.9	19,053	31,367	0.3	0.7	7.0	6.8	0.9	7.0	28	41	3	7	1.4	2.4	323	482	0.7	1.5	m	m	m	m
1-Jul-13	21	57	16	27	10	16	6.8	6.7	27,360	39,726	0.0	0.3	6.8	6.7	0.6	6.2	7	10	16	17	2.3	3.0	253	320	0.4	1.3	c	c	c	c
1-Aug-13	12	27	8	17	4	7	6.8	6.8	22,879	50,611	0.0	3.3	7.1	6.7	1.1	6.8	0	1	16	19	3.1	3.3	124	238	0.3	1.3	m	m	m	m
1-Sep-13	14	32	9	15	4	5	6.9	6.8	8,883	33,358	0.3	2.0	7.0	6.7	0.8	6.6	1	2	16	19	2.6	2.9	139	176	0.2	1.3	m	m	m	m
1-Oct-13	28	49	11	19	6	17	7.2	7.0	612	3,663	0.0	0.3	7.3	6.9	1.2	7.4	20	29	6	12	1.0	2.0	145	196	0.3	1.3	c	c	c	c
1-Nov-13	11	17	12	15	11	20	7.2	7.0	110	2,347	0.0	0.0	7.3	7.0	1.5	8.1	24	24	5	5	0.1	0.1	132	177	0.3	1.3	c	c	c	c
1-Mar-14	12	18	8	11	5	7	7.2	7.1	702	8,833	0.0	0.3	7.1	7.0	3.1	8.8	20	23	1	1	0.5	0.7	127	171	0.5	1.3	m	m	m	m
1-Apr-14	20	32	8	11	7	9	7.1	7.0	3,869	15,404	0.3	17	7.1	6.9	0.5	7.3	19	27	4	9	1.6	2.4	141	183	0.6	1.3	c	c	c	c
1-May-14	13	22	8	13	6	8	7.1	7.0	7,987	21,295	0.3	23	7.2	6.9	1.4	6.9	19	21	5	7	1.3	1.6	137	162	0.5	1.3	c	c	c	c
1-Jun-14	15	29	11	23	7	12	7.1	6.9	17,783	81,130	0.7	1.7	7.1	6.8	0.8	4.8	14	20	9	11	2.4	2.7	161	182	0.4	1.3	m	m	m	m
1-Jul-14	10	15	7	13	4	6	7.0	6.9	24,154	46,306	0.3	11	7.0	6.8	0.6	4.3	10	15	13	15	2.6	6.7	167	194	0.3	1.3	c	c	c	c
1-Aug-14	9	19	7	15	4	8	7.0	7.0	17,424	42,189	0.3	5.0	7.0	6.9	0.5	4.0	19	20	8	8	2.8	3.2	166	204	0.4	1.3	c	c	c	c
1-Sep-14	9	17	7	11	4	6	7.0	7.0	11,694	38,114	0.0	4.3	7.0	6.9	0.7	4.0	15	16	10	12	2.4	3.0	188	204	0.3	1.3	m	m	m	m
1-Oct-14	11	33	8	21	4	7	7.1	7.0	2,930	12,534	0.0	0.7	7.1	6.9	0.5	3.6	19	27	7	12	1.6	2.7	180	203	0.2	1.3	m	m	m	m
AVE:	15	27	11	18	6	9	7.0	6.9	11,231	25,853	0.3	9.2	7.1	6.8	1.23	6.4	7.5	20	5	8	1.6	2.4	170	229	0.5	1.3	0.5	1.3	0.5	1.2
MIN:	9	15	7	11	3	4	6.8	6.7	110	2,347	0.0	0.0	6.8	6.4	0.50	3.6	4.4	0	0	0	0.1	0.1	91	107	0.2	0.8	0.3	0.5	0.3	0.8
MAX:	28	57	20	42	11	21	7.4	7.1	33,803	81,130	1.7	80	7.3	7.0	3.10	8.8	9.4	35	16	19	3	7	323	482	0.7	1.5	0.9	1.5	0.9	1.3
Limits									1.5 MGD		2.2	23	6.0	9.0	0.50			2.0							2.0	5.0	2.0	5.0		

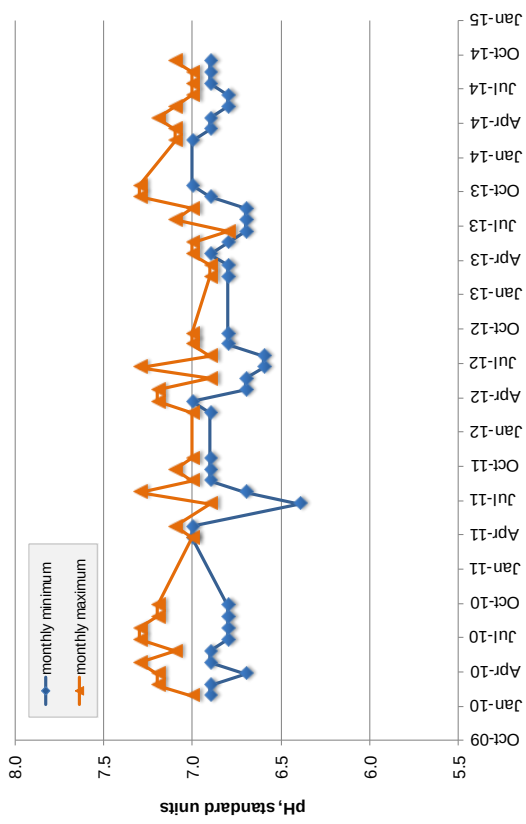
c = no discharge, m = monitoring is conditional

Exceeds Permit Limit


Effluent Total Coliform, #/100 mL
7-day Med
7-day Median limit
Max
Maximum limit
0
10
20
30
40
50
60
70
80
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15


Effluent Residual Chlorine, mg/L
Monthly Average
Monthly Ave Limit
0
0.5
1
1.5
2
2.5
3
3.5
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15


Effluent Flow, Average Monthly, gallons/day
Ave
Design Limit
0
200,000
400,000
600,000
800,000
1,000,000
1,200,000
1,400,000
1,600,000
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15


pH, standard units
monthly minimum
monthly maximum
5.5
6.0
6.5
7.0
7.5
8.0
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15

Appendix E--Response to Comments

King County Entity Review Comments
Significant comments are listed below; comments that provided clarification and/or corrections are not listed.

Page of Permit	Section	Comments	Suggested Resolution/Change	Ecology Response
10	R3.D	Does the second paragraph mean that permittee has to save our potable water backflow device testing reports for 3 years for property under the direct control of the permittee? A lot of the RW use areas are not under the control of the permittee and King County is not the potable water provider. We do not have access to those records or the ability to save those records.	We don't receive these reports and can request but King County does not have an jurisdiction or enforcement rights for these records. Suggest deleting this paragraph.	Paragraph deleted. Retention of 3 years still required for all monitoring information and all records pertaining to the reclaimed water use plan.
11	R3.G2a and R3.G2b.3 and 4	2a. Class A water is considered safe for public contact. Class A reclaimed water is acceptable for use on food crops, landscaping, and used where there is public contact. " Under immediate reporting it requires us to notify the Public Health of Seattle/King County if reclaimed water " ….is discharged to a water body used as a source of ….irrigation water." Potentially any water body could be interpreted as a "irrigation" source or "drinking" water source. Furthermore, this language is not consistent with the guidance in the WQ Permit Writer's Manual relating to reclaimed water which recommends treating water, once reclaimed, as any other nonpotable water supplies. Additionally, surface water will receive additional treatment prior to use and it seems unnecessary to contact the local Health Department for these specific permit violations. We think it is appropriate to contact Ecology and that there may be environmental concerns associated with unapproved discharge. Also 2b. 3 and 4. Are essentially the same violation. Please clarify how handled differently.	Section 6.4 in Chapter 22 of the Permit Writer's Manual mentions, once reclaimed, Class A water should be subject to the same requirements as other nonpotable water supplies. Propose replacing with language in Brightwater permit under R3E and R7K or discussing how to clarify section and risks. In addition suggest adding language from Section 6.3.2 from Chapter 11 of the Permit Writer's Manual, "The incidental discharge of reclaimed water to waters of the State is not a violation of these requirements if the incidental discharge does not unreasonable affect the beneficial uses of the water, and does not result in exceeding an applicable water quality objective in the receiving water (from 6.3.2).	Revised second bullet in R3.G.a to "Any overflows or discharges of effluent that does not meet the requirements of this permit to a waterbody used as a source of drinking water". In response to the requested text addition, the Permit Writers' Manual is 'guidance' and the language is not appropriate permit language. While it is likely that any discharge of RW to a surface water will not violate water quality standards, each situation will be assessed on a case-by-case basis.
14	R4.C.4	In regards to #4 what is meant by "cross connection control identification?" RW? Potable? Need clarity. Not known what #4 means.	Suggest discussing needs for #4 and if King County will have that information or the potable water utility.	Requirement removed to be consistent with the Brightwater permit. KC will not necessarily have this cross-connection information because it is the water purveyor's jurisdiction.The County is required in Section R3.B to submit annual reminders to water purveyors to remind them to comply with their DOH cross-connection responsibilities.
14	R4.C.4	#3 is confusing. Surface percolation and irrigation are two completely different applications and don't need the same level of analysis. Therefore, we are confused on why there is a requirement for potential impact to groundwater or surface water at the site, background water quality, and hydrogeological information necessary to evaluate potential water quality impacts. I would expect to see this requires if we were doing groundwater recharge or wetland enhancement with connection to groundwater. How is this evaluated?	Suggested removing "...potential impact to groundwater or surface water at the site, background water quality, and hydrogeological information necessary to evaluate potential water quality impacts." Suggest adding to section R4.G, language from section 6.4 of Chapter 11 of the permit writer's manual, " A small amount of deep percolation from an efficient and well maintained spray irrigation system should not be penalized by requiring more monitoring that would be required for other water supplies.	Ecology re-worded this bullet because, as KC pointed out, the language was intended for surface perculation uses. Ecology removed "surface perculation" and some of the requirements pertaining to this use since surface perculation is not allowed by this permit.
16	R4.E.2	If the sale and distribution agreement outlines requirements in the permit and Standards why does it need to be submitted to DOH and Ecology **60 days prior to use**?	Suggest changing language to mimic R4.F.3	Text revised for consistency with R4.F.3

Page of Permit	Section	Comments	Suggested Resolution/Change	Ecology Response
17	R4.G	Seem like these requirements are for sprayfields for wastewater land application or treatment but not for Class A reclaimed water irrigation. Specifically, the terms and provisions: "sprayfield system" (1); " not allow spray irrigation practices to result in runoff of wastewater...(2);" measures to reduce odors (4); not apply "wastewater" to the irrigation lands in quantities that…(by statute reclaimed water is no longer considered wastewater) (6); "maintain a viable and health cover crop on all fields that receive wastewater" (9); "install and maintain signs and fencing to prevent unauthorized access in the land treatment site (Class A water is acceptable for public contact) (10); maintain...setback distances from...property lines, roads, residences and populated areas..(this is not a requirement of the 1997 standards; Safe for public contact) (12). Furthermore, the WQ Permit Writers Manual, Chapter 11, Section 1.1 specifically states, "It does not include dedicated sprayfields used for land treatment and disposal of wastewater" however these conditions reference such items. Why are these requirements included?	Suggest replacing with Section R7.F and G from the Brightwater permit.	Section R4.G replaced with Brightwater language for consistency.
18	R4.K	King County currently has approved policies and ordinances regarding reclaimed water and authorization to administer a RW program. . The proposed ordinance in R4K requires that the ordinance include procedures for distribution and delivery. Typically procedures are best located in O&M manuals and standard operating procedures not ordinances that require council approval and are not easily modified to address operation and distribution concerns. The proposed ordinance in R4K also requires that it include authority to terminate service of reclaimed water from any customer violating the Water Reclamation and Reuse Standards and restrictions outlined in the Service and Use Area Agreement. An ordinance stipulating the termination ability will not give King County much leverage to terminate end user agreements. However, language in the individual contracts will give King County that authority which is currently our practice. This permit also requires that the sale and distribution agreement and end user agreements (See R4.E and R4F) be submitted to Ecology before reclaimed water use so Ecology will be able to verify that these clauses are included in the contracts. Currently, all our contracts have language for termination of reclaimed water distribution to customer not meeting the Water Reclamation and Reuse standards, contract requirements, and provide specific terms on termination that are developed for each customer's type of use and responsibilities. We feel a separate ordinance adds no value since our binding contracts governs termination and our ability to enforce it.	Suggest changing R4.K to " The Permittee must complete a local ordinance to include reclaimed water policies and authorization to administer a reclaimed water program." Add any desired distribution and delivery procedure requirements to permit section R6.E. Note that R4.E.3 and R4.F4 already require termination language in the contracts.	Section R4.K removed since RW service termination is addressed in Service and Use Area Agreements and Sale and Distribution Agreements .

Public Review Comments

[Ecology will complete this section after the 30-day public notice of draft period.]