

Appendix O

NPDES Permit

Page 1 of 49
Permit No.: WA-002041-9
Issuance Date: June 17, 2009
Effective Date: August 1, 2009
Expiration Date: July 31, 2014

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT NO. WA-002041-9**

State of Washington
DEPARTMENT OF ECOLOGY
Yakima, Washington 98902

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.

**RICHLAND PUBLICLY-OWNED TREATMENT WORKS
PO BOX 190
RICHLAND, WA 99352**

is authorized to discharge in accordance with the Special and General Conditions that follow.

<u>Plant Location:</u> 555 Lacy Road, Richland, WA 99352	<u>Receiving Water:</u> Columbia River (Lake Wallula) River Mile 337.1
<u>Water Body I.D. No.:</u> 1189897461506	<u>Discharge Location:</u> Latitude: 46° 16' 09"N Longitude: 119° 15' 48"W (NAD83/WGS84)
<u>Plant Type:</u> Primary clarification, aeration basins (utilizing an activated sludge process), secondary clarification, and chlorination.	

Jonathan Merz
Acting Section Manager
Water Quality Program
Central Regional Office
Washington State Department of Ecology

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SUMMARY OF PERMIT REPORT SUBMITTALS

Refer to the Special and General Conditions of this permit for additional submittal requirements. The following table is for quick reference only. Enforceable submittal requirements are contained in the permit narrative.

Permit Section	Submittal	Frequency	First Submittal Date
S3.A.1.	Discharge Monitoring Report	Monthly	September 15, 2009
S3.E.	Reporting Permit Violations	As necessary	
S4.B.	Plans for Maintaining Adequate Capacity	As necessary	
S4.D.	Notification of New or Altered Sources	As necessary	
S4.E.3.	Infiltration and Inflow Evaluation	1/permit cycle	July 31, 2013
S4.F.1.	Wasteload Assessment	Annually	December 31, 2009
S5.G.1.	Operations and Maintenance Manual Update	1/permit cycle	August 1, 2010
S5.G.2.	Operations and Maintenance Manual Update or Review Confirmation Letter	Annually	August 1, 2011
S6.A.3.	Pretreatment Accidental Spill Plan	1/permit cycle	August 1, 2010
S6.A.6.	Pretreatment Report	1/year	April 15, 2010
S8.	Application for Permit Renewal	1/permit cycle	July 31, 2013
S9.A.	Receiving Water Sampling Quality Assurance Project Plan	1/permit cycle	November 1, 2009
S9.H.	Receiving Water Temperature Results	Annually	December 31, 2010
S10.B.10	Acute Toxicity Effluent Test Results with Permit Renewal Application	1/permit cycle	July 31, 2013
S11.B.10	Chronic Toxicity Effluent Test Results with Permit Renewal Application	1/permit cycle	July 31, 2013
G1.	Signatory Requirements	as necessary	
G4.	Reporting Planned Changes	As necessary	
G5.	Plan Review Required	As necessary	
G7.	Transfer of Permit	As necessary	
G10.	Duty to Provide Information	As necessary	
G20.	Compliance Schedules	As necessary	
G21.	Contract Submittal	As necessary	

SPECIAL CONDITIONS

In this permit, the word “must” denotes an action that is mandatory and is equivalent to the word “shall” used in previous permits.

S1. DISCHARGE LIMITS

A. Effluent Limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit violates the terms and conditions of this permit.

Beginning on **August 1, 2009** and lasting through **July 31, 2014**, the Permittee may discharge municipal wastewater to the Columbia River at the permitted location subject to compliance with the following limits:

EFFLUENT LIMITS: OUTFALL # 001		
Parameter	Average Monthly^a	Average Weekly^b
Biochemical Oxygen Demand (5-day)	30 mg/L, 2,588 lbs/day 85% removal of influent BOD	45 mg/L, 3,882 lbs/day
Total Suspended Solids	30 mg/L, 2,852 lbs/day 85% removal of influent TSS	45 mg/L, 4,278 lbs/day
Fecal Coliform Bacteria ^c	200/100 mL	400/100 mL
pH ^d	Daily minimum is equal to or greater than 6.0 and the daily maximum is less than or equal to 9.0.	
Parameter	Average Monthly	Maximum Daily^e
Total Residual Chlorine	Not Applicable	0.5 mg/L
Total Ammonia, as N (NH ₃ -N)	18.5 mg/L	27.7 mg/L
^a	Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured. See footnote c for fecal coliform calculations	
^b	Average weekly discharge limit means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week. See footnote ^c for fecal coliform calculations.	
^c	To calculate the average monthly and average weekly values for fecal coliforms you must use the geometric mean. Ecology gives directions to calculate this value in publication No. 04-10-020, <i>Information Manual for Treatment Plant Operators</i> available at: http://www.ecy.wa.gov/pubs/0410020.pdf	

d	Indicates the range of permitted values. The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.
e	Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

B. Mixing Zone Authorization

The upstream length of the mixing zones shall not extend more than 100 feet, while the downstream length of the chronic and acute mixing zones shall extend no greater than 334 feet and 34.0 feet, respectively. The width of the chronic and acute mixing zones shall not be greater than 150 feet. The aquatic life-based dilution factors for the acute and chronic dilution factors were determined to be 12.4 and 162, respectively.

S2. MONITORING REQUIREMENTS

A. Monitoring Schedule

The Permittee must monitor in accordance with the following schedule and must use the laboratory method, detection level (DL), and quantitation level (QL) specified in Appendix A. Alternative methods from 40 CFR Part 136 are acceptable if the DL and QL are equivalent to those specified in Appendix A.:

Parameter	Units	Minimum Sampling Frequency	Sample Type
(1) Wastewater Influent			
Wastewater Influent means the raw sewage flow. Sample the wastewater entering the headworks of the treatment plant excluding any side-stream returns from inside the plant.			
BOD ₅	mg/L	3/week ^a	24-hour Composite ^b
BOD ₅	lbs/day	3/week	Calculation ^c
TSS	mg/L	3/week	24-hour Composite
TSS	lbs/day	3/week	Calculation
Total Ammonia	mg/L	1/week ^a	Grab ^d
Total Ammonia	lbs/day	1/week	Calculation
(2) Final Wastewater Effluent			
Final Wastewater Effluent means wastewater which is exiting, or has exited, the last treatment process or operation. Typically, this is after or at the exit from the chlorine contact chamber or other disinfection process. The Permittee may take effluent samples for the BOD ₅ analysis before or after the disinfection process. If taken after, dechlorinate and reseed the sample.			
Flow	MGD	Continuous ^e	Metered
BOD ₅ ^f	mg/L	3/week	24-hour Composite
BOD ₅	lbs/day	3/week	Calculation
BOD ₅	% removal	3/week	Calculation ^g
TSS	mg/L	3/week	24-hour Composite
TSS	lbs/day	3/week	Calculation
TSS	% removal	3/week	Calculation
Total Residual Chlorine ^h	mg/L	3/week	Grab
Total Residual Chlorine	lbs/day	3/week	Calculation
Fecal Coliform	Organisms / 100 ml	3/week	Grab
Total Ammonia	mg/L	2/week ^a	Grab
Total Ammonia	lbs/day	2/week	Calculation

Parameter	Units	Minimum Sampling Frequency	Sample Type
pH	Standard Units	3/week	Grab
Temperature (daily max) i	°C	Continuous	Meter
Alkalinity	mg/L, as CaCO ₃	Monthly ^j	Grab
Hardness	mg/L, as CaCO ₃	Monthly	Grab
Nitrite/Nitrate	mg/L	Monthly	Grab
TKN	mg/L	Monthly	Grab
Ortho-phosphate (PO ₄)	mg/L	Monthly	Grab
Total phosphorus	mg/L	Monthly	Grab
(3) Whole Effluent Toxicity Testing – Final Wastewater Effluent^k			
As specified in Permit Condition S10 and S11.			
(4) Pretreatment Monitoring – Wastewater Influent^l, Effluent^l, and Sludge			
As specified in Permit Condition S6.			
Influent, Effluent, Sludge Priority Pollutants (PP) – metals	µg/L	Four per year	See Permit Condition S6
Influent, Effluent, Sludge PP – Volatile Organic Compounds	µg/L	Once per year	See Permit Condition S6
(5) Extra Permit Application Requirements – Final Wastewater Effluent^l			
Oil and Grease	mg/L	Once per year	Grab
Total Dissolved Solids	mg/L	Once per year	Grab
Cyanide	µg/L	Once per year	24-hour Composite
Total Phenolic Compounds	µg/L	Once per year	24-hour Composite
Priority Pollutants (PP) - metals	µg/L	Four per year	24-hour Composite
PP – Volatile Organic Compounds	µg/L	Once per year	24-hour Composite
PP – Acid-extractable compounds	µg/L	Once per year	24-hour Composite
PP – Base-neutral compounds	µg/L	Once per year	24-hour Composite

Parameter	Units	Minimum Sampling Frequency	Sample Type
<p>The Permittee must record and report the wastewater treatment plant flow discharged on the day it collects the sample for priority pollutant testing with the discharge monitoring report.</p>			
<p>(6) Receiving Water Temperature Study</p>			
<p>As specified in section S9.</p>			
a	<p>X#/week (1, 2, or 3/week) means (X#) times during each calendar week and on a rotational basis throughout the days of the week, except weekends and holidays.</p>		
b	<p>24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.</p>		
c	<p>Calculation means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in MGD) X Conversion Factor (8.34) = lbs/day</p>		
d	<p>Grab means an individual sample collected over a fifteen (15) minute, or less, period.</p>		
e	<p>Continuous means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance. The Permittee must sample daily when continuous monitoring is not possible.</p>		
f	<p>Effluent samples for BOD₅ analysis may be taken before or after the disinfection process. If taken after, dechlorinate and reseed the sample.</p>		
g	<p>Calculate the Percent (%) removal of BOD and TSS using the following algorithm (concentrations in mg/L): (Average Monthly Influent Concentration - Average Monthly Effluent Concentration)/Average Monthly Influent Concentration.</p>		
h	<p>Sample chlorine at the outfall location.</p>		
i	<p>Continuous temperature monitoring: the Permittee must determine and report a <u>daily maximum</u> from half-hour measurements in a 24-hour period. Continuous monitoring instruments must achieve an accuracy of 0.2 degrees C and the Permittee must verify accuracy annually. When continuous temperature probe is not operating due to non-routine maintenance, temperature grab sampling must occur when the effluent is at or near its daily maximum temperature which is usually in the late afternoon.</p>		
j	<p>Monthly means once every calendar month during alternate weeks.</p>		
k	<p>Final Effluent means wastewater which is exiting, or has exited. Typically, this is after or at the exit from the chlorine contact chamber or other disinfection process.</p>		
l	<p>See Appendix A for the required detection (DL) or quantitation (QL) levels.</p> <p>Report single analytical values below detection as “less than (detection level)” where (detection level) is the numeric value specified in attachment A.</p> <p>Report single analytical values between the agency-required detection and quantitation levels with qualifier code of j following the value.</p> <p>To calculate the average value (monthly average):</p> <ul style="list-style-type: none"> • Use the reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value. • For values reported below detection, use one-half the detection value if the lab detected the parameter in another sample for the reporting period. 		

Parameter	Units	Minimum Sampling Frequency	Sample Type
		<ul style="list-style-type: none"> For values reported below detection, use zero if the lab did not detect the parameter in another sample for the reporting period. <p>If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix specific method detection level (MDL) and a QL to Ecology with appropriate laboratory documentation.</p>	

B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters. The Permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions that may affect effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136.

C. Flow Measurement and Continuous Monitoring Devices

The Permittee must:

1. Select and use appropriate flow measurement and continuous monitoring devices and methods consistent with accepted scientific practices.
2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer’s recommendation for that type of device.
3. If the Permittee uses micro-recording temperature devices known as thermistors it must calibrate the devices using protocols from Ecology’s Quality Assurance Project Plan Development Tool (*Continuous Temperature Sampling Protocols for the Environmental Monitoring and Trends*). This document is available online at <http://www.ecy.wa.gov/programs/eap/qa/docs/QAPPtool/Mod6%20Ecology%20SOPs/Protocols/ContinuousTemperatureSampling.pdf> . Calibration as specified in this document is not required if the Permittee uses recording devices which are certified by the manufacturer.
4. Use field measurement devices as directed by the manufacturer and do not use reagents beyond their expiration dates.
5. Calibrate these devices at the frequency recommended by the manufacturer.
6. Calibrate flow monitoring devices at a minimum frequency of at least one calibration per year.

7. Maintain calibration records for at least three years.

D. Laboratory Accreditation

The Permittee must ensure that all monitoring data required by Ecology is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement. The Permittee must obtain accreditation for conductivity and pH if it must receive accreditation or registration for other parameters.

E. Request for Reduction in Monitoring

The Permittee may request a reduction of the sampling frequency after twelve (12) months of monitoring. Ecology will review each request and at its discretion grant the request through a permit modification or when it reissues the permit.

The Permittee must:

1. Provide a written request.
2. Clearly state the parameters for which it is requesting reduced monitoring.
3. Clearly state the justification for the reduction.

S3. REPORTING AND RECORDING REQUIREMENTS

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on **August 1, 2009**. The Permittee must:

1. Submit monitoring results each month.
2. Summarize, report, and submit monitoring data obtained during each monitoring period on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by Ecology.
3. Submit DMR forms monthly whether or not the facility was discharging. If the facility did not discharge during a given monitoring period, submit the form as required with the words "NO DISCHARGE" entered in place of the monitoring results.

4. Ensure that DMR forms are **postmarked or received** by Ecology no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit.
5. Send report(s) to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

All laboratory reports providing data for organic and metal parameters must include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/number, method detection limit (MDL), laboratory practical quantitation limit (PQL), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must include information on the chain of custody, the analytical method, quality assurance/quality control results, and documentation of accreditation for the parameter.

B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three (3) years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.
2. The individual who performed the sampling or measurement.
3. The dates the analyses were performed.
4. The individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Reporting Permit Violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

- a. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.
- b. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.

1. Immediate Reporting

The Permittee must report any failure of the disinfection system immediately to the Department of Ecology's Regional Office 24-hr. number listed below:

Central Regional Office 509-575-2490

The Permittee must report any failure of the disinfection system, any collection system overflows, or any plant bypass discharging to a waterbody used as a source of drinking water immediately to the Department of Ecology and the Department of Health, Drinking Water Program at the numbers listed below:

Central Regional Office 509-575-2490
Department of Health, 360-521-0323 (business hours)
Drinking Water Program 360-481-4901 (after business hours)

2. Twenty-four-hour Reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at the telephone numbers listed above, within 24 hours from the time the Permittee becomes aware of any of the following circumstances:

- a. Any noncompliance that may endanger health or the environment, unless previously reported under subpart 1, above.
- b. Any unanticipated bypass that exceeds any effluent limit in the permit (See Part S4.B., "Bypass Procedures").

- c. Any upset that exceeds any effluent limit in the permit (See G.15, "Upset").
- d. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit.
- e. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit.

3. Report Within Five Days

The Permittee must also provide a written submission within five days of the time that the Permittee becomes aware of any event required to be reported under subparts 1 or 2, above. The written submission must contain:

- a. A description of the noncompliance and its cause.
- b. The period of noncompliance, including exact dates and times.
- c. The estimated time noncompliance is expected to continue if it has not been corrected.
- d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- e. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

4. Waiver of Written Reports

Ecology may waive the written report required in subpart 3, above, on a case-by-case basis upon request if a timely oral report has been received.

5. All Other Permit Violation Reporting

The Permittee must report all permit violations, which do not require immediate or within 24 hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in paragraph E.3, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

6. Report Submittal

The Permittee must submit reports to the address listed in S3.

F. Other Reporting

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website:

<http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm> .

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

G. Maintaining a Copy of This Permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. FACILITY LOADING

A. Design Criteria

The flows or waste loads for the permitted facility must not exceed the following design criteria:

Maximum Month Design Flow (MMDF)	11.4 MGD
BOD ₅ influent loading for maximum month	17,250 lb/day
TSS influent loading for maximum month	21,200 lb/day
Ammonia influent loading	2,750 lbs/day

B. Plans for Maintaining Adequate Capacity

The Permittee must submit a plan and a schedule for continuing to maintain capacity to Ecology when:

1. The actual flow or waste load reaches 85 percent of any one of the design criteria in S4.A for three consecutive months.
2. The projected increase would reach design capacity within five years.

The plan and schedule for continuing to maintain capacity must be sufficient to achieve the effluent limits and other conditions of this permit. This plan must identify any of the following actions or any other actions necessary to meet the objective of maintaining capacity.

- a. Analysis of the present design, including the introduction of any process modifications that would establish the ability of the existing facility to achieve the effluent limits and other requirements of this permit at specific levels in excess of the existing design criteria specified in paragraph A, above.
- b. Reduction or elimination of excessive infiltration and inflow of uncontaminated ground and surface water into the sewer system.
- c. Limitation on future sewer extensions or connections or additional waste loads.
- d. Modification or expansion of facilities necessary to accommodate increased flow or waste load.
- e. Reduction of industrial or commercial flows or waste loads to allow for increasing sanitary flow or waste load.

Engineering documents associated with the plan must meet the requirements of WAC 173-240-060, "Engineering Report," and be approved by Ecology prior to any construction.

If the Permittee intends to apply for state or federal funding for the design or construction of a facility project, the plan may also need to meet the environmental review requirements as described in 40 CFR 35.3040 and 40 CFR 35.3045 and it may also need to demonstrate cost effectiveness as required by WAC 173-95-730. The plan must specify any contracts, ordinances, methods for financing, or other arrangements necessary to achieve this objective.

C. Duty to Mitigate

The Permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

D. Notification of New or Altered Sources

1. The Permittee must submit written notice to Ecology whenever any new discharge or a substantial change in volume or character of an existing discharge into the POTW is proposed which:

- a. Would interfere with the operation of, or exceed the design capacity of, any portion of the POTW;
 - b. Is not part of an approved general sewer plan or approved plans and specifications; or
 - c. Would be subject to pretreatment standards under 40 CFR Part 403 and Section 307(b) of the Clean Water Act.
2. This notice must include an evaluation of the POTW's ability to adequately transport and treat the added flow and/or waste load, the quality and volume of effluent to be discharged to the POTW, and the anticipated impact on the Permittee's effluent [40 CFR 122.42(b)].

E. Infiltration and Inflow Evaluation

1. The Permittee must conduct an infiltration and inflow evaluation. Refer to the U.S. EPA publication, *I/I Analysis and Project Certification*, available as Publication No. 97-03 at:

Publications Office
Department of Ecology
P.O. Box 47600
Olympia, WA, 98504-7600
or at

<http://www.ecy.wa.gov/programs/wq/permits/guidance.html> .

The Permittee may use plant monitoring records to assess measurable infiltration and inflow.

2. The Permittee must prepare a report which summarizes any measurable infiltration and inflow. If infiltration and inflow have increased by more than 15 percent from that found in the previous report based on equivalent rainfall, the report must contain a plan and a schedule for:
 - a. Locating the sources of infiltration and inflow; and
 - b. Correcting the problem.
3. The Permittee must submit a report summarizing the results of the evaluation and any recommendations for corrective actions by **July 31, 2013**.

F. Wasteload Assessment

1. The Permittee must conduct an assessment of their influent flow and waste load and submit a report to Ecology by **December 31, annually**.
2. The report must contain the following: an indication of compliance or noncompliance with the permit effluent limits; a comparison between the existing and design monthly average flows, peak flows, BOD, and total suspended solids loadings; and the percentage change in these parameters since the previous report.
3. The report must also state the present and design population or population equivalent, projected population growth rate, and the estimated date upon which the design capacity is projected to be reached, according to the most restrictive of the parameters above.
4. Ecology may modify the interval for review and reporting if it determines that a different frequency is sufficient.

S5. OPERATION AND MAINTENANCE

The Permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes keeping a daily operation logbook (paper or electronic), adequate laboratory controls, and appropriate quality assurance procedures. This provision of the permit requires the Permittee to operate backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit.

A. Certified Operator

This permitted facility must be operated by an operator certified by the state of Washington for at least a Class IV plant. This operator must be in responsible charge of the day-to-day operation of the wastewater treatment plant. An operator certified for at least a Class III plant must be in charge during all regularly scheduled shifts.

B. O & M Program

The Permittee must:

1. Institute an adequate operation and maintenance program for the entire sewage system.

2. Keep maintenance records on all major electrical and mechanical components of the treatment plant, as well as the sewage system and pumping stations. Such records must clearly specify the frequency and type of maintenance recommended by the manufacturer and must show the frequency and type of maintenance performed.
3. Make maintenance records available for inspection at all times.

C. Short-term Reduction

The Permittee must schedule any facility maintenance, which might require interruption of wastewater treatment and degrade effluent quality, during non-critical water quality periods and carry this maintenance out in a manner approved by Ecology.

If a Permittee contemplates a reduction in the level of treatment that would cause a violation of permit discharge limits on a short-term basis for any reason, and such reduction cannot be avoided, the Permittee must:

1. Give written notification to Ecology, if possible, thirty (30) days prior to such activities.
2. Detail the reasons for, length of time of, and the potential effects of the reduced level of treatment.

This notification does not relieve the Permittee of its obligations under this permit.

D. Electrical Power Failure

The Permittee must ensure that adequate safeguards prevent the discharge of untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations. Adequate safeguards include, but are not limited to: alternate power sources, standby generator(s), or retention of inadequately treated wastes.

The Permittee must maintain Reliability Class I (EPA 430/9-74-001) at the wastewater treatment plant. Reliability Class I requires a backup power source sufficient to operate all vital components and critical lighting and ventilation during peak wastewater flow conditions.

E. Prevent Connection of Inflow

The Permittee must strictly enforce its sewer ordinances and not allow the connection of inflow (roof drains, foundation drains, etc.) to the sanitary sewer system.

F. Bypass Procedures

This permit prohibits a bypass which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for Essential Maintenance without the Potential to Cause Violation of Permit Limits or Conditions.

Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

2. Bypass which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit.

This bypass is permitted only if:

- a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.
 - b. No feasible alternatives to the bypass exist, such as:
 - The use of auxiliary treatment facilities.
 - Retention of untreated wastes.
 - Stopping production.
 - Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
 - Transport of untreated wastes to another treatment facility or preventative maintenance), or transport of untreated wastes to another treatment facility.
 - c. Ecology is properly notified of the bypass as required in condition S3E of this permit.
3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

- a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:
- A description of the bypass and its cause.
 - An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
 - A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
 - The minimum and maximum duration of bypass under each alternative.
 - A recommendation as to the preferred alternative for conducting the bypass.
 - The projected date of bypass initiation.
 - A statement of compliance with SEPA.
 - A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
 - Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.
- b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.
- c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:
- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
 - If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
 - If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

G. Operations and Maintenance Manual

The Permittee must:

1. Update the Operations and Maintenance (O&M) Manual in accordance with 173-240-150 WAC and submit it to Ecology for approval by **August 1, 2010**.
2. Review the O&M Manual at least annually and confirm this review by letter to Ecology by **August 1 of each year**.
3. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual.
4. Keep the approved O&M Manual at the permitted facility.
5. Follow the instructions and procedures of this manual.

In addition to the requirements of WAC 173-240-080 (1) through (5), the O&M Manual must include:

1. Emergency procedures for cleanup in the event of wastewater system upset or failure.
2. Wastewater system maintenance procedures that contribute to the generation of process wastewater.
3. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).
4. The treatment plant process control monitoring schedule.
5. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit.
6. The manual must include all appropriate tables, figures, and schematics that detail operations and depict key infrastructure.
7. The manual must include as an appendix, details and an accounting of how the City implements the responsibilities given in the delegated Pretreatment Program.
8. As an appendix, details of the City's Sewer Main Renovation Program.

S6. PRETREATMENT

A. General Requirements

1. The Permittee must implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the Permittee's approved pretreatment program submittal entitled "City of Richland Pretreatment Program" dated December 1983; any approved revisions thereto; and

the General Pretreatment Regulations (40 CFR Part 403). The Ordinance section containing the local limits was last updated October 2004.

2. At a minimum, the Permittee must undertake the following pretreatment implementation activities:
 - a. Enforce categorical pretreatment standards under Section 307(b) and (c) of the Federal Clean Water Act (hereinafter, the Act), prohibited discharge standards as set forth in 40 CFR 403.5, local limits specified in Section 2.4 of the Pretreatment Ordinance Exhibit A to Title 17.30, or state standards, which ever are most stringent or apply at the time of issuance or modification of a local industrial waste discharge permit. Locally derived limits are defined as pretreatment standards under Section 307(d) of the Act and are not limited to categorical industrial facilities.
 - b. Issue industrial waste discharge permits to all significant industrial users [SIUs, as defined in 40 CFR 403.3(t)(i)(ii)] contributing to the treatment system, including those from other jurisdictions. Industrial waste discharge permits must contain as a minimum, all the requirements of 40 CFR 403.8 (f)(1)(iii). The Permittee must coordinate the permitting process with Ecology regarding any industrial facility which may possess a state waste discharge permit issued by Ecology. Once issued, an industrial waste discharge permit takes precedence over a state-issued waste discharge permit.
 - c. Maintain and update, as necessary, records identifying the nature, character, and volume of pollutants contributed by industrial users to the POTW. The Permittee must maintain records for at least a three-year period.
 - d. Perform inspections, surveillance, and monitoring activities on industrial users to determine or confirm compliance with pretreatment standards and requirements. The Permittee must conduct a thorough inspection of SIUs annually. The Permittee must conduct regular local monitoring of SIU wastewaters commensurate with the character and volume of the wastewater but not less than once per year. The Permittee must collect and analyze samples in accordance with 40 CFR Part 403.12(b)(5)(ii)-(v) and 40 CFR Part 136.
 - e. Enforce and obtain remedies for noncompliance by any industrial users with applicable pretreatment standards and requirements. Once violations have been identified, the Permittee must take timely and appropriate enforcement action to address the noncompliance. The Permittee's action must follow its enforcement response procedures and any amendments, thereof.
 - f. Publish, at least annually in the largest daily newspaper in the Permittee's service area, a list of all non-domestic users which, at any time in the previous 12 months, were in significant noncompliance as defined in 40 CFR 403.8(f)(2)(vii).

- g. If the Permittee elects to conduct sampling of an SIU's discharge in lieu of requiring user self-monitoring, it must satisfy all requirements of 40 CFR part 403.12. This includes monitoring and record keeping requirements of sections 403.12(g) and (o). For SIU's subject to categorical standards (CIUs), the Permittee may either complete baseline and initial compliance reports for the CIU (when required by 403.12(b) and (d)) or require these of the CIU. The Permittee must ensure SIUs are provided the results of sampling in a timely manner, inform SIUs of their right to sample, their obligations to report any sampling they do, to respond to non-compliance, and to submit other notifications. These include a slug load report (403.12(f)), notice of changed discharge (403.12(j)), and hazardous waste notifications (403.12(p)). If sampling for the SIU, the Permittee must not sample less than once in every six month period unless the Permittee's approved program includes procedures for reduction of monitoring for Middle-Tier or Non-Significant Categorical Users per 403.12(e)(2) and (3) and those procedures have been followed.
 - h. Maintain a data management system designed to track the status of the Permittee's industrial user inventory, industrial user discharge characteristics, and compliance status.
 - i. Maintain adequate staff, funds, and equipment to implement its pretreatment program.
 - j. Establish, where necessary, contracts or legally binding agreements with contributing jurisdictions to ensure compliance with applicable pretreatment requirements by commercial or industrial users within these jurisdictions. These contracts or agreements must identify the agency responsible for the various implementation and enforcement activities to be performed in the contributing jurisdiction. In addition, the Permittee must develop a Memorandum of Understanding (or Inter-local Agreement) that outlines the specific roles, responsibilities, and pretreatment activities of each jurisdiction
3. The Permittee must develop and submit to Ecology for approval, an updated Accidental Spill Prevention Program by **August 1, 2010**. The program must include a schedule for implementation. The Ecology-approved program becomes an enforceable part of these permit conditions.
4. The Permittee must evaluate, at least once every two years, whether each Significant Industrial User needs a plan to control slug discharges. For purposes of this subsection, a slug discharge is any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge. The Permittee must make the results of this evaluation available to Ecology upon request. If the Permittee decides that a slug control plan is needed, the plan must contain, at a minimum, the following elements:
- a. Description of discharge practices, including non-routine batch discharges.

- b. Description of stored chemicals.
 - c. Procedures for immediately notifying the Permittee of slug discharges, including any discharge that would violate a prohibition under 40 CFR 403.5(b), with procedures for follow-up written notification within five days.
 - d. If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment necessary for emergency response.
5. Whenever Ecology determines that any waste source contributes pollutants to the Permittee's treatment works in violation of Subsection (b), (c), or (d) of Section 307 of the Act, and the Permittee has not taken adequate corrective action, Ecology will notify the Permittee of this determination. If the Permittee fails to take appropriate enforcement action within 30 days of this notification, Ecology may take appropriate enforcement action against the source or the Permittee.
6. Pretreatment Report

The Permittee must provide to Ecology an annual report that briefly describes its program activities during the previous calendar year.

By **April 15th**, the Permittee must send the annual report to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

The report must include the following information

- a. An updated non-domestic inventory.
- b. Results of wastewater sampling at the treatment plant as specified in Special Conditions S2A and S6B. The Permittee must calculate removal rates for each pollutant and evaluate the adequacy of the existing local limits in Section 2.4 of the 2004 Pretreatment Ordinance in prevention of treatment plant interference, pass through of pollutants that could affect receiving water quality, and sludge contamination.

- c. Status of program implementation, including:
 - i. Any substantial modifications to the pretreatment program as originally approved by the U.S. EPA, including staffing and funding levels.
 - ii. Any interference, upset, or permit violations experienced at the POTW that are directly attributable to wastes from industrial users.
 - iii. Listing of industrial users inspected and/or monitored, and a summary of the results.
 - iv. Listing of industrial users scheduled for inspection and/or monitoring for the next year, and expected frequencies.
 - v. Listing of industrial users notified of promulgated pretreatment standards and/or local standards as required in 40 CFR 403.8(f)(2)(iii). The list must indicate which industrial users are on compliance schedules and the final date of compliance for each.
 - vi. Listing of industrial users issued industrial waste discharge permits.
 - vii. Planned changes in the pretreatment program implementation plan.

 - d. Status of compliance activities, including:
 - i. Listing of industrial users that failed to submit baseline monitoring reports or any other reports required under 40 CFR 403.12 and in Section 4 of the Permittee's Pretreatment Ordinance, dated October 2004.
 - ii. Listing of industrial users that were at any time during the reporting period not complying with federal, state, or local pretreatment standards or with applicable compliance schedules for achieving those standards, and the duration of such noncompliance.
 - iii. Summary of enforcement activities and other corrective actions taken or planned against non-complying industrial users. The Permittee must supply to Ecology a copy of the public notice of facilities that were in significant noncompliance.
7. The Permittee must request and obtain approval from Ecology before making any significant changes to the approved local pretreatment program. The Permittee must follow the procedure in 40 CFR 403.18 (b) and (c).

B. Monitoring Requirements

The Permittee must monitor its influent, effluent, and sludge for the priority pollutants identified in Tables II and III of Appendix D of 40 CFR Part 122 as amended, any compounds identified as a result of Condition S6.B.4, and any other pollutants expected from non-domestic sources using U.S. EPA-approved procedures for collection, preservation, storage, and analysis. The Permittee must test influent, effluent, and sludge samples for the priority pollutant metals (Table III, 40 CFR 122, Appendix D) on

a quarterly basis throughout the term of this permit. The Permittee must test influent, effluent, and sludge samples for the organic priority pollutants (Table II, 40 CFR 122, Appendix D) on an annual basis.

1. The Permittee must sample POTW influent and effluent on a day when industrial discharges are occurring at normal to maximum levels. The Permittee must obtain 24-hour composite samples for the analysis of acid and base/neutral extractable compounds and metals. The Permittee must collect samples for the analysis of volatile organic compounds and samples must be collected using grab sampling techniques at equal intervals for a total of four grab samples per day.

The laboratory may run a single analysis for volatile pollutants (methods in Appendix A) for each monitoring day by compositing equal volumes of each grab sample directly in the gas chromatography purge and trap apparatus in the laboratory, with no less than 1 ml of each grab included in the composite.

Unless otherwise indicated, all reported test data for metals must represent the total amount of the constituent present in all phases, whether solid, suspended, or dissolved, elemental or combined including all oxidation states.

The Permittee must handle, prepare, and analyze all wastewater samples taken for gas chromatography-mass spectrometry (GC-MS) analysis in accordance with the methods, detection levels, and quantitation levels given in Appendix A of this permit.

2. The Permittee must collect a sludge sample concurrently with a wastewater sample as a single grab of residual sludge. Sampling and analysis must conform to U.S. EPA Methods 624 and 625 unless the Permittee requests an alternate method and Ecology has approved.
3. The Permittee must take Cyanide, phenols, and oils as grab samples. Oils must be hexane soluble or equivalent, and should be measured in the influent and effluent only.
4. In addition to quantifying pH, oil and grease, and all priority pollutants, the Permittee must make a reasonable attempt to identify all other substances and quantify all pollutants shown to be present by gas chromatograph/mass spectrometer (GC/MS) analysis per 40 CFR 136, Appendix A, Methods 624 and 625. The Permittee should attempt to make determinations of pollutants for each fraction, which produces identifiable spectra on total ion plots (reconstructed gas chromatograms). The Permittee should attempt to make determinations from all peaks with responses 5% or greater than the nearest internal standard. The 5% value is based on internal standard concentrations of 30 µg/l, and must be adjusted

downward if higher internal standard concentrations are used or adjusted upward if lower internal standard concentrations are used. The Permittee may express results for non-substituted aliphatic compounds as total hydrocarbon content. The Permittee must use a laboratory whose computer data processing programs are capable of comparing sample mass spectra to a computerized library of mass spectra, with visual confirmation by an experienced analyst. For all detected substances which are determined to be pollutants, the Permittee must conduct additional sampling and appropriate testing to determine concentration and variability, and to evaluate trends.

C. Reporting of Monitoring Results

The Permittee must include a summary of monitoring results in the Annual Pretreatment Report.

D. Local Limit Development

As sufficient data become available, the Permittee must, in consultation with Ecology, reevaluate its local limits in order to prevent pass through or interference. If Ecology determines that any pollutant present causes pass through or interference, or exceeds established sludge standards, the Permittee must establish new local limits or revise existing local limits as required by 40 CFR 403.5. Ecology may also require the Permittee to revise or establish local limits for any pollutant discharged from the POTW that has a reasonable potential to exceed the Water Quality Standards, Sediment Standards, or established effluent limits, or causes whole effluent toxicity. Ecology makes this determination in the form of an Administrative Order.

Ecology may modify this permit to incorporate additional requirements relating to the establishment and enforcement of local limits for pollutants of concern. Any permit modification is subject to formal due process procedures under state and federal law and regulation.

S7. SOLID WASTES

A. Solid Waste Handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

S8. APPLICATION FOR PERMIT RENEWAL

The Permittee must submit an application for renewal of this permit by **July 31, 2013**.

S9. RECEIVING WATER STUDY OF TEMPERATURE

The Permittee must collect information on the effluent and receiving water to determine if the effluent has a reasonable potential to cause a violation of the water quality standards. If reasonable potential exists, Ecology will use this information to calculate effluent limits.

The Permittee must:

- A. Submit a Sampling Quality Assurance Project Plan for Ecology review and approval by **November 1, 2009**.
- B. Conduct all sampling and analysis in accordance with the guidelines given in *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*, Ecology Publication 04-03-030 (<http://www.ecy.wa.gov/pubs/0403030.pdf>).
A model Quality Assurance Plan specific for temperature is available at <http://www.ecy.wa.gov/programs/wq/permits/guidance.html>.
- C. Measure temperature in the ambient water upstream of the outfall during the months of **July through October of each year, beginning July 1, 2010**.
- D. Use micro-recording temperature devices known as thermistors to measure temperature. Ecology's Quality Assurance Project Plan Development Tool (*Continuous Temperature Sampling Protocols for the Environmental Monitoring and Trends*) contains protocols for continuous temperature sampling. This document is available online at <http://www.ecy.wa.gov/programs/eap/qa/docs/QAPPtool/Mod6%20Ecology%20SOPs/Protocols/ContinuousTemperatureSampling.pdf>.
- E. Calibrate the devices as specified in this document unless using recording devices which are certified by the manufacturer. Ecology does not require manufacture-specific

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equipment as given in this document however; if the Permittee wishes to use measuring devices from another company, it must demonstrate the accuracy is equivalent.

- F. Set the recording devices to record at one-half-hour intervals.
- G. Report temperature monitoring data as the **daily maximum**. The model Quality Assurance Plan shows an example of these calculations.
- H. Use the temperature device manufacturer's software to generate (export) an Excel text file of the temperature data for each **July-October period**. Send this file and placement logs to Ecology by **December 31** of the monitoring year. The placement logs should include the following information for both thermistor deployment and retrieval: date, time, temperature device manufacturer ID, location, depth, whether it measured air or water temperature, and any other details that may explain data anomalies. An example of a placement log is shown in Appendix F of the document referenced in item D above.
- I. Submit the effluent temperature data for each month at the time of submittal of the discharge monitoring report.

S10. ACUTE TOXICITY

A. Testing When There Is No Permit Limit for Acute Toxicity

The Permittee must:

1. Conduct acute toxicity testing on final effluent during **July 2012 and January 2013**.
2. Submit the results to Ecology by **July 31, 2013**.
3. Conduct acute toxicity testing on a series of at least five concentrations of effluent, including 100% effluent, and a control.
4. Use each of the following species and protocols for each acute toxicity test:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	<i>Pimephales promelas</i>	EPA-821-R-02-012
Daphnid 48-hour static test	<i>Ceriodaphnia dubia</i> , <i>Daphnia pulex</i> , or <i>Daphnia magna</i>	EPA-821-R-02-012

B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.
2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.
3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*.
4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in Subsection C and the Department of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.
5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in Subsection A or pristine natural water of sufficient quality for good control performance.
6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.
7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the acute critical effluent concentration (ACEC). The ACEC equals 8.1% effluent.

8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing must comply with the acute statistical power standard of 29% as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.
9. Reports of individual characterization or compliance test results must be submitted to Ecology within sixty (60) days after each sample date.
10. The Acute Toxicity Summary Report must be submitted to Ecology by **July 31, 2013**.

S11. CHRONIC TOXICITY

A. Testing When There Is No Permit Limit for Chronic Toxicity

The Permittee must:

1. Conduct chronic toxicity testing on final effluent during **April 2012** and **October 2012**.
2. Submit the results to Ecology by **July 31, 2013**.
3. Conduct chronic toxicity testing on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 8.1% effluent.
4. Compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.
5. Perform chronic toxicity tests with all of the following species and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method
Fathead minnow	<i>Pimephales promelas</i>	EPA-821-R-02-013
Water flea	<i>Ceriodaphnia dubia</i>	EPA-821-R-02-013

B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80,

Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.

Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.
3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*.
4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.
5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection C. or pristine natural water of sufficient quality for good control performance.
6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.
7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the CCEC and the ACEC. The CCEC and the ACEC may either substitute for the effluent concentrations that are closest to them in the dilution series or be extra effluent concentrations. The CCEC equals 0.6% effluent. The ACEC equals 8.1% effluent.
8. All whole effluent toxicity tests that involve hypothesis testing must comply with the chronic statistical power standard of 39% as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to

increase the power.

9. Reports of individual characterization or compliance test results must be submitted to Ecology within 60 days after each sample date.
10. The Chronic Toxicity Summary Report must be submitted to Ecology by **July 31, 2013**.

GENERAL CONDITIONS

G1. SIGNATORY REQUIREMENTS

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

1. In the case of corporations, by a responsible corporate officer.

For the purpose of this section, a responsible corporate officer means:

- (i) 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
- (ii) The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. In the case of a partnership, by a general partner.

3. In the case of sole proprietorship, by the proprietor.

4. In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

Applications for permits for domestic wastewater facilities that are either owned or operated by, or under contract to, a public entity shall be submitted by the public entity.

B. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to Ecology.

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
- C. Changes to authorization. If an authorization under paragraph B.2, above, is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph B.2, above, must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
- D. Certification. Any person signing a document under this section must make the following certification:

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

G2. RIGHT OF INSPECTION AND ENTRY

The Permittee must allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

- A. To enter upon the premises where a discharge is located or where any records must be kept under the terms and conditions of this permit.
- B. To have access to and copy, at reasonable times and at reasonable cost, any records required to be kept under the terms and conditions of this permit.
- C. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required under this permit.

- D. To sample or monitor, at reasonable times, any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G3. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the Permittee) or upon Ecology's initiative. However, the permit may only be modified, revoked and reissued, or terminated for the reasons specified in 40 CFR 122.62, 40 CFR 122.64 or WAC 173-220-150 according to the procedures of 40 CFR 124.5.

- A. The following are causes for terminating this permit during its term, or for denying a permit renewal application:
 - 1. Violation of any permit term or condition.
 - 2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts.
 - 3. A material change in quantity or type of waste disposal.
 - 4. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations and can only be regulated to acceptable levels by permit modification or termination.
 - 5. A change in any condition that requires either a temporary or permanent reduction, or elimination of any discharge or sludge use or disposal practice controlled by the permit.
 - 6. Nonpayment of fees assessed pursuant to RCW 90.48.465.
 - 7. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.
- B. The following are causes for modification but not revocation and reissuance except when the Permittee requests or agrees:
 - 1. A material change in the condition of the waters of the state.
 - 2. New information not available at the time of permit issuance that would have justified the application of different permit conditions.
 - 3. Material and substantial alterations or additions to the permitted facility or activities which occurred after this permit issuance.

4. Promulgation of new or amended standards or regulations having a direct bearing upon permit conditions, or requiring permit revision.
 5. The Permittee has requested a modification based on other rationale meeting the criteria of 40 CFR Part 122.62.
 6. Ecology has determined that good cause exists for modification of a compliance schedule, and the modification will not violate statutory deadlines.
 7. Incorporation of an approved local pretreatment program into a municipality's permit.
- C. The following are causes for modification or alternatively revocation and reissuance:
1. When cause exists for termination for reasons listed in A1 through A7 of this section, and Ecology determines that modification or revocation and reissuance is appropriate.
 2. When Ecology has received notification of a proposed transfer of the permit. A permit may also be modified to reflect a transfer after the effective date of an automatic transfer (General Condition G8) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new Permittee.

G4. REPORTING PLANNED CHANGES

The Permittee must, as soon as possible, but no later than sixty (60) days prior to the proposed changes, give notice to Ecology of planned physical alterations or additions to the permitted facility, production increases, or process modification which will result in:

- 1) the permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b);
- 2) a significant change in the nature or an increase in quantity of pollutants discharged; or
- 3) a significant change in the Permittee's sludge use or disposal practices.

Following such notice, and the submittal of a new application or supplement to the existing application, along with required engineering plans and reports, this permit may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation.

G5. PLAN REVIEW REQUIRED

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications must be submitted to Ecology for approval in accordance with chapter 173-240 WAC. Engineering reports, plans, and specifications must be submitted at least one hundred eighty (180) days prior to the planned start of construction

unless a shorter time is approved by Ecology. Facilities must be constructed and operated in accordance with the approved plans.

G6. COMPLIANCE WITH OTHER LAWS AND STATUTES

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

G7. TRANSFER OF THIS PERMIT

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the Permittee must notify the succeeding owner or controller of the existence of this permit by letter, a copy of which must be forwarded to Ecology.

A. Transfers by Modification

Except as provided in paragraph (B) below, this permit may be transferred by the Permittee to a new owner or operator only if this permit has been modified or revoked and reissued under 40 CFR 122.62(b)(2), or a minor modification made under 40 CFR 122.63(d), to identify the new Permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

B. Automatic Transfers

This permit may be automatically transferred to a new Permittee if:

1. The Permittee notifies Ecology at least thirty (30) days in advance of the proposed transfer date.
2. The notice includes a written agreement between the existing and new Permittees containing a specific date transfer of permit responsibility, coverage, and liability between them.
3. Ecology does not notify the existing Permittee and the proposed new Permittee of its intent to modify or revoke and reissue this permit. A modification under this subparagraph may also be minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the written agreement.

G8. REDUCED PRODUCTION FOR COMPLIANCE

The Permittee, in order to maintain compliance with its permit, must control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement

applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G9. REMOVED SUBSTANCES

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

G10. DUTY TO PROVIDE INFORMATION

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. OTHER REQUIREMENTS OF 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G12. ADDITIONAL MONITORING

Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G13. PAYMENT OF FEES

The Permittee must submit payment of fees associated with this permit as assessed by Ecology.

G14. PENALTIES FOR VIOLATING PERMIT CONDITIONS

Any person who is found guilty of willfully violating the terms and conditions of this permit is deemed guilty of a crime, and upon conviction thereof must be punished by a fine of up to ten thousand dollars (\$10,000) and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit will incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars (\$10,000) for every such violation. Each and every such

violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is deemed to be a separate and distinct violation.

G15. UPSET

Definition – “Upset” means 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, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limits if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- 1) an upset occurred and that the Permittee can identify the cause(s) of the upset;
- 2) the permitted facility was being properly operated at the time of the upset;
- 3) the Permittee submitted notice of the upset as required in Condition S3.E; and
- 4) the Permittee complied with any remedial measures required under S4.C of this permit.

In any enforcement action the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G16. PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.

G17. DUTY TO COMPLY

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G18. TOXIC POLLUTANTS

The Permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in

the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G19. PENALTIES FOR TAMPERING

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit must, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two (2) years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this condition, punishment must be a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both.

G20. COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than fourteen (14) days following each schedule date.

G21. CONTRACT REVIEW

The Permittee must submit to Ecology any proposed contract for the operation of any wastewater treatment facility covered by this permit. The review is to ensure consistency with chapters 90.46 and 90.48 RCW. In the event that Ecology does not comment within a thirty (30)-day period, the Permittee may assume consistency and proceed with the contract.

APPENDIX A

EFFLUENT CHARACTERIZATION FOR POLLUTANTS

THIS LIST INCLUDES EPA REQUIRED POLLUTANTS (PRIORITY POLLUTANTS) AND SOME ECOLOGY PRIORITY TOXIC CHEMICALS (PBTs)

The following table with analytical methods and levels is to be used as guidance for effluent characterization in NPDES permit applications, applications for permit renewal, and monitoring required by permit. This attachment is used in conjunction with Section V, Parts A, B, and C of EPA Application Form 2C, Parts A.12, B.6, and D of EPA application form 2A and with State applications. This attachment specifies effluent characterization requirements of the Department of Ecology. For application, analyze your wastewater for all parameters required by the application and any additional pollutants with an X in the left column, group heading. The data should be compiled from last year's data if it is a parameter routinely measured. If you are a primary industry category with effluent guidelines you may have some mandatory testing requirements (see Table 2C-2 of Form 2C). If you are a municipal POTW you also have some mandatory testing requirements which are dependent upon the design flow (see EPA form 2A).

The permit applications will specify the groups of compounds to be analyzed. Ecology may require additional pollutants to be analyzed within a group. The objectives are to reduce the number of analytical "non-detects" in applications and to measure effluent concentrations near or below criteria values where possible at a reasonable cost. If an applicant or Permittee knows that an alternate, less sensitive method (higher DL and QL) from 40 CFR Part 136 is sufficient to produce measurable results in their effluent, that method may be used for analysis.

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
X¹	CONVENTIONALS			
	Biochemical Oxygen Demand	SM5210-B		2 mg/L
	Chemical Oxygen Demand	SM5220-D		10 mg/L
	Total Organic Carbon	SM5310-B/C/D		1 mg/L
	Total Suspended Solids	SM2540-D		5 mg/L
	Total Ammonia (as N)	SM4500-NH3- GH		0.3 mg/L
	Flow	Calibrated device		
	Dissolved oxygen	4500-OC/OG		0.2 mg/L
	Temperature (max. 7-day avg.)	Analog recorder or Use micro-recording devices known as thermistors		0.2° C
	pH	SM4500-H ⁺ B	N/A	N/A

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
X¹	NONCONVENTIONALS			
	Total Alkalinity	SM2320-B		5 mg/L as CaCo3
	Bromide (24959-67-9)	4110 B	100	400
	Chlorine, Total Residual	4500 Cl G		50.0
	Color	SM2120 B/C/E		10 color unit
	Fecal Coliform	SM 9221E	N/A	N/A
	Fluoride (16984-48-8)	SM4500-F E	25	100
	Nitrate-Nitrite (as N)	4500-NO3- E/F/H		100
	Nitrogen, Total Kjeldahl (as N)	4500-NH3-C/E/FG		300
	Ortho-Phosphate (PO ₄ as P)	4500- PE/PF	30	100
	Phosphorus, Total (as P)	4500-PE/PF	30	100
	Oil and Grease (HEM)	1664A		5,000
	Radioactivity	Table 1E		
	Salinity	SM2520-B		3 PSS
	Settleable Solids	SM2540 -F		100
	Sulfate (as mg/L SO ₄)	SM4110-B		200
	Sulfide (as mg/L S)	4500-S ² F/D/E/G		200
	Sulfite (as mg/L SO ₃)	SM4500-SO3B		2000
	Surfactants	SM5540 C		50
	Total dissolved solids	SM2540 C		20 mg/L
	Total Hardness	2340B		200 as CaCO3
	Aluminum, Total (7429-90-5)	200.8	2.0	10
	Barium Total (7440-39-3)	200.8	0.5	2.0
	Boron Total (7440-42-8)	200.8	2.0	10.0
	Cobalt, Total (7440-48-4)	200.8	0.05	0.25
	Iron, Total (7439-89-6)	200.8	12.5	50
	Magnesium, Total (7439-95-4)	200.8	10	50
	Molybdenum, Total (7439-98-7)	200.8	0.1	0.5
	Manganese, Total (7439-96-5)	200.8	0.1	0.5
	Tin, Total (7440-31-5)	200.8	0.3	1.5
	Titanium, Total (7440-32-6)	200.8	0.5	2.5
X¹	METALS, CYANIDE & TOTAL PHENOLS			
	Antimony, Total (7440-36-0)	200.8	0.3	1.0
	Arsenic, Total (7440-38-2)	200.8	0.1	0.5
	Beryllium, Total (7440-41-7)	200.8	0.1	0.5
	Cadmium, Total (7440-43-9)	200.8	0.05	0.25
	Chromium (hex) dissolved (185-402-99)	SM3500-Cr EC	0.3	1.2

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
	Chromium, Total (7440-47-3)	200.8	0.2	1.0
	Copper, Total (7440-50-8)	200.8	0.4	2.0
	Lead, Total (7439-92-1)	200.8	0.1	0.5
	Mercury, Total (7439-97-6)	1631E	0.0002	0.0005
	Nickel, Total (7440-02-0)	200.8	0.1	0.5
	Selenium, Total (7782-49-2)	200.8	1.0	1.0
	Silver, Total (7440-22-4)	200.8	0.04	0.2
	Thallium, Total (7440-28-0)	200.8	0.09	0.36
	Zinc, Total (7440-66-6)	200.8	0.5	2.5
	Cyanide, Total (7440-66-6)	335.4	5	10
	Cyanide, Available	SM4500-CN G	5	10
	Phenols, Total	EPA 420.1		50
	DIOXIN			
	2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin (176-40-16)	1613B	1.3 pg/L	5 pg/L
X¹	VOLATILE COMPOUNDS			
	Acrolein (107-02-8)	624	5	10
	Acrylonitrile (107-13-1)	624	1.0	2.0
	Benzene (71-43-2)	624	1.0	2.0
	Bis(2-Chloroethyl)ether (111-44-4)	611/625	1.0	2.0
	Bis(2-Chloroisopropyl) ether (108-60-1)	611/625	1.0	2.0
	Bromoform (75-25-2)	624	1.0	2.0
	Carbon tetrachloride (108-90-7)	624/601 or SM6230B	1.0	2.0
	Chlorobenzene (108-90-7)	624	1.0	2.0
	Chloroethane (75-00-3)	624/601	1.0	2.0
	2-Chloroethylvinyl Ether (110-75-8)	624	1.0	2.0
	Chloroform (67-66-3)	624 or SM6210B	1.0	2.0
	Dibromochloromethane (124-48-1)	624	1.0	2.0
	1,2-Dichlorobenzene (95-50-1)	624	1.9	7.6
	1,3-Dichlorobenzene (541-73-1)	624	1.9	7.6
	1,4-Dichlorobenzene (106-46-7)	624	4.4	17.6
	3,3'-Dichlorobenzidine (91-94-1)	605/625	0.5	1.0
	Dichlorobromomethane (75-27-4)	624	1.0	2.0

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
	1,1-Dichloroethane (75-34-3)	624	1.0	2.0
	1,2-Dichloroethane (107-06-2)	624	1.0	2.0
	1,1-Dichloroethylene (75-35-4)	624	1.0	2.0
	1,2-Dichloropropane (78-87-5)	624	1.0	2.0
	1,3-dichloropropylene (mixed isomers) (542-75-6)	624	1.0	2.0
	Ethylbenzene (100-41-4)	624	1.0	2.0
	Methyl bromide (74-83-9) (Bromomethane)	624/601	5.0	10.0
	Methyl chloride (74-87-3) (Chloromethane)	624	1.0	2.0
	Methylene chloride (75-09-2)	624	5.0	10.0
	1,1,2,2-Tetrachloroethane (79-34-5)	624	1.9	2.0
	Tetrachloroethylene (127-18-4)	624	1.0	2.0
	Toulene (108-88-3)	624	1.0	2.0
	1,2-Trans-Dichloroethylene (156-60-5) (Ethylene dichloride)	624	1.0	2.0
	1,1,1-Trichloroethane (71-55-6)	624	1.0	2.0
	1,1,2-Trichloroethane (79-00-5)	624	1.0	2.0
	Trichloroethylene (79-01-6)	624	1.0	2.0
	Vinyl chloride (75-01-4)	624/SM6200B	1.0	2.0
X¹	ACID COMPOUNDS			
	2-Chlorophenol (95-57-8)	625	1.0	2.0
	2,4-Dichlorophenol (120-83-2)	625	0.5	1.0
	2,4-Dimethylphenol (105-67-9)	625	0.5	1.0
	4,6-dinitro-o-cresol (534-52-1) (2-methyl-4,6,-dinitrophenol)	625/1625B	1.0	2.0
	2,4 dinitrophenol (51-28-5)	625	1.0	2.0
	2-Nitrophenol (88-75-5)	625	0.5	1.0
	4-nitrophenol (100-02-7)	625	0.5	1.0
	Parachlorometa cresol (59-50-7) (4-chloro-3-methylphenol)	625	1.0	2.0
	Pentachlorophenol (87-86-5)	625	0.5	1.0 ¹⁰
	Phenol (108-95-2)	625	2.0	4.0
	2,4,6-Trichlorophenol (88-06-2)	625	2.0	4.0
X¹	BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)			
	Acenaphthene (83-32-9)	625	0.2	0.4
	Acenaphthylene (208-96-8)	625	0.3	0.6
	Anthracene (120-12-7)	625	0.3	0.6
	Benzidine (92-87-5)	625	12	24

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
	Benzyl butyl phthalate (85-68-7)	625	0.3	0.6
	Benzo(a)anthracene (56-55-3)	625	0.3	0.6
	Benzo(j)fluoranthene (205-82-3)	625	0.5	1.0
	Benzo(r,s,t)pentaphene (189-55-9)	625	0.5	1.0
	Benzo(a)pyrene (50-32-8)	610/625	0.5	1.0
	3,4-benzofluoranthene (Benzo(b)fluoranthene) (205-99-2)	610/625	0.8	1.6
	11,12-benzofluoranthene (Benzo(k)fluoranthene) (207-08-9)	610/625	0.8	1.6
	Benzo(ghi)Perylene (191-24-2)	610/625	0.5	1.0
	Bis(2-chloroethoxy)methane (111-91-1)	625	5.3	21.2
	Bis(2-chloroethyl)ether (111-44-4)	611/625	0.3	1.0
	Bis(2-chloroisopropyl)ether (108-60-1)	625	0.3	0.6
	Bis(2-ethylhexyl)phthalate (117-81-7)	625	0.1	0.5
	4-Bromophenyl phenyl ether (101-55-3)	625	0.2	0.4
	2-Chloronaphthalene (91-58-7)	625	0.3	0.6
	4-Chlorophenyl phenyl ether (7005-72-3)	625	0.3	0.5
	Chrysene (218-01-9)	610/625	0.3	0.6
	Dibenzo (a,j)acridine (224-42-0)	610M/625M	2.5	10.0
	Dibenzo (a,h)acridine (226-36-8)	610M/625M	2.5	10.0
	Dibenzo(a-h)anthracene (53-70-3)(1,2,5,6-dibenzanthracene)	625	0.8	1.6
	Dibenzo(a,e)pyrene (192-65-4)	610M/625M	2.5	10.0
	Dibenzo(a,h)pyrene (189-64-0)	625M	2.5	10.0
	3,3'-Dichlorobenzidine (91-94-1)	605/625	0.5	1.0
	Diethyl phthalate (84-66-2)	625	1.9	7.6
	Dimethyl phthalate (131-11-3)	625	1.6	6.4
	Di-n-butyl phthalate (84-74-2)	625	0.5	1.0
	2,4-dinitrotoluene (121-14-2)	609/625	0.2	0.4
	2,6-dinitrotoluene (606-20-2)	609/625	0.2	0.4

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
	Di-n-octyl phthalate (117-84-0)	625	0.3	0.6
	1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	1625B	5.0	20
	Fluoranthene (206-44-0)	625	0.3	0.6
	Fluorene (86-73-7)	625	0.3	0.6
	Hexachlorobenzene (118-74-1)	612/625	0.3	0.6
	Hexachlorobutadiene (87-68-3)	625	0.5	1.0
	Hexachlorocyclopentadiene (77-47-4)	1625B/625	0.5	1.0
	Hexachloroethane (67-72-1)	625	0.5	1.0
	Indeno(1,2,3-cd)Pyrene (193-39-5)	610/625	0.5	1.0
	Isophorone (78-59-1)	625	0.5	1.0
	3-Methyl cholanthrene (56-49-5)	625	2.0	8.0
	Naphthalene (91-20-3)	625	0.3	0.6
	Nitrobenzene (98-95-3)	625	0.5	1.0
	N-Nitrosodimethylamine (62-75-9)	607/625	2.0	4.0
	N-Nitrosodi-n-propylamine (621-64-7)	607/625	0.5	1.0
	N-Nitrosodiphenylamine (86-30-6)	625	0.5	1.0
	Perylene (198-55-0)	625	1.9	7.6
	Phenanthrene (85-01-8)	625	0.3	0.6
	Pyrene (129-00-0)	625	0.3	0.6
	1,2,4-Trichlorobenzene (120-82-1)	625	0.3	0.6
X¹	PESTICIDES/PCBs			
	Aldrin (309-00-2)	608	0.025	0.05
	alpha-BHC (319-84-6)	608	0.025	0.05
	beta-BHC (319-85-7)	608	0.025	0.05
	gamma-BHC (58-89-9)	608	0.025	0.05
	delta-BHC (319-86-8)	608	0.025	0.05
	Chlordane (57-74-9)	608	0.025	0.05
	4,4'-DDT (50-29-3)	608	0.025	0.05
	4,4'-DDE (72-55-9)	608	0.025	0.05 ¹⁰
	4,4' DDD (72-54-8)	608	0.025	0.05
	Dieldrin (60-57-1)	608	0.025	0.05
	alpha-Endosulfan (959-98-8)	608	0.025	0.05

	Pollutant & CAS No. (if available)	Recommended Analytical Protocol	Detection (DL)² µg/L unless specified	Quantitation Level (QL)³ µg/L unless specified
	beta-Endosulfan (33213-65-9)	608	0.025	0.05
	Endosulfan Sulfate (1031-07-8)	608	0.025	0.05
	Endrin (72-20-8)	608	0.025	0.05
	Endrin Aldehyde (7421-93-4)	608	0.025	0.05
	Heptachlor (76-44-8)	608	0.025	0.05
	Heptachlor Epoxide (1024-57-3)	608	0.025	0.05
	PCB-1242 (53469-21-9)	608	0.25	0.5
	PCB-1254 (11097-69-1)	608	0.25	0.5
	PCB-1221 (11104-28-2)	608	0.25	0.5
	PCB-1232 (11141-16-5)	608	0.25	0.5
	PCB-1248 (12672-29-6)	608	0.25	0.5
	PCB-1260 (11096-82-5)	608	0.13	0.5
	PCB-1016 (12674-11-2)	608	0.13	0.5
	Toxaphene (8001-35-2)	608	0.24	0.5

1. An X placed in this box means you must analyze for all pollutants in the group.
2. Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.
3. Quantitation Level (QL) is equivalent to EPA's Minimum Level (ML) which is defined in 40 CFR Part 136 as the minimum level at which the entire GC/MS system must give recognizable mass spectra (background corrected) and acceptable calibration points. These levels were published as proposed in the Federal Register on March 28, 1997.

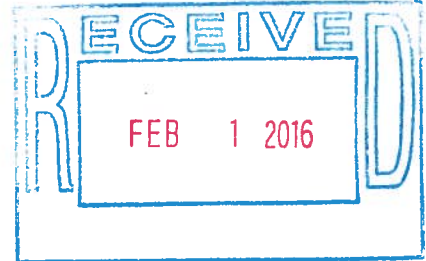


STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

1250 W Alder St • Union Gap, WA 98903-0009 • (509) 575-2490

January 27, 2016

Pete Rogalsky
City of Richland
PO Box 190 MS-27
Richland, WA 99352



Dear Mr. Rogalsky:

**RE: Draft National Pollutant Discharge Elimination System (NPDES) Permit
No. WA0020419 for the City of Richland POTW**

Enclosed for your review is your revised draft NPDES Permit and Fact Sheet which Ecology proposes to issue for your facility. The documents contain changes from the factual review copy. A draft permit and fact sheet were sent to you on **October 19, 2015**, for your preliminary review. Please review these documents to insure that you understand and agree will all conditions. Your written comments must be submitted no later than **March 3, 2016**, to be considered in the formulation of final determinations regarding the draft permit. Comments should be sent to: Cindy Huwe, Permit Coordinator, Department of Ecology, Central Regional Office, 1250 West Alder Street, Union Gap, WA 98903-0009.

State Water Pollution Control laws require the publishing of a Public Notice which describes the discharge for any new or existing operation. This is to give the public a chance to be aware of, and comment on the draft permit and fact sheet. Enclosed is a copy of the public notice of draft permit describing your wastewater treatment discharge. The Department of Ecology will publish this notice in the "Legal Classified Section" of the **Tri City Herald** on **February 2, 2016**. Please review the enclosed notice and contact me **immediately** if you find any errors.

Should you have questions regarding this process, please contact me at 509/457-7105. Questions regarding content of the fact sheet or permit should be directed to Richard Marclely at 509/454-7250.

Sincerely,

Cindy Huwe
Permit Coordinator
Water Quality Program

Enclosures: Draft Permit and Fact Sheet
Public Notice

Cc: John Bykonen, City of Richland



NOTICE: ANNOUNCEMENT OF AVAILABILITY OF DRAFT PERMIT

PERMIT NO.: WA0020419

APPLICANT: CITY OF RICHLAND POTW

The City of Richland POTW has applied for renewal of National Pollutant Discharge Elimination System (NPDES) Permit No. WA0020419 in accordance with the provisions of Chapter 90.48 Revised Code of Washington (RCW), Chapter 173-220 Washington Administrative Code (WAC), and the Federal Clean Water Act.

Following evaluation of the application and other available information, a draft permit has been developed which would allow the discharge of treated domestic wastewater to a maximum of 11.4 million gallons per day (mgd) to the Columbia River at river mile 337.1 from its facility located at 555 Lacy Road, Richland, Washington. All discharges to be in compliance with the Department of Ecology's Water Quality Standards for a permit to be issued.

A tentative determination has been made to issue a proposed permit based on the effluent limitations and special permit conditions that will prevent and control pollution. A final determination will not be made until all timely comments received in response to this notice have been evaluated.

PUBLIC COMMENT AND INFORMATION

The draft permit and fact sheet may be viewed at the Department of Ecology (Department) website: <http://www.ecy.wa.gov/programs/wq/permits/index.html> . The application and other related documents are available at Ecology's Central Regional Office for inspection and copying between the hours of 8:00 a.m. and 4:30 p.m., weekdays. To obtain a copy or to arrange to view copies at the Central Regional Office, please call 509/575-2490 or write to the address below.

Interested persons are invited to submit written comments regarding the proposed permit. All comments must be submitted by March 3, 2016 to be considered for the final determination. E-mail comments should be sent to cynthia.huwe@ecy.wa.gov . Comments should be sent to:

Cindy Huwe, Permit Coordinator
Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009

Any interested party may request a public hearing on the proposed permit within 30 days of the publication date of this notice. The request for a hearing shall state the interest of the party and the reasons why a hearing is necessary. The request should be sent to the above address. Ecology will hold a hearing if it determines that there is significant public interest. If a hearing is to be held, public notice will be published at least 30 days in advance of the hearing date. Any party responding to this notice with comments will be mailed a copy of a hearing public notice.

If you require special accommodations or need this document in a format for the visually impaired, call Cindy Huwe at 509-457-7105. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Publication date of this Notice is February 2, 2016.

Fact Sheet for NPDES Permit No. WA0020419

CITY OF RICHLAND POTW
January 26, 2016

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for City of Richland POTW (Richland).

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for Richland NPDES permit No. WA0020419, are available for public review and comment from February 2, 2016 until March 3, 2016. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

Richland reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, wastewater discharges, or receiving water prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix E - Response to Comments**, and publish it when issuing the final NPDES 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

The City of Richland operates an activated sludge wastewater treatment plant that discharges to the Columbia River. Ecology issued the previous permit for this facility on June 17, 2009.

The City of Richland owns and operates the wastewater treatment facilities. The system presently serves a population of approximately 53,078. The Richland Wastewater Treatment Plant, built in 1985, can treat up to 11.4 million gallons per day (MGD) of wastewater using semi-plug flow conventional activated sludge. Wastewater is delivered to the plant by approximately 278 miles of sewer line which the City's operational and maintenance staff maintains.

Currently, the average daily flow through the plant is 6.253 MGD. As the population of the City grows beyond existing treatment capabilities, built-in design flexibility allows for the construction of additional facilities which will double the treatment capacity of the plant.

The Richland wastewater treatment plant is classified as a Class IV plant using the classification system listed in WAC 173-230-140. The wastewater treatment plant mainly treats domestic sewage. The treatment plant receives approximately 0.7 million gallons per day of industrial flow from identified sources. This accounts for approximately 12% of the wastewater flow.

Industrial and commercial establishments discharging into the City's collection system include: printers, photographic processors, dental and medical facilities, a university facility, two industrial laundries, dry cleaners, chemical/biological testing and research laboratories, radiator repair and auto body shops, a potato starch processor, a federal contractor, pesticide applicators, and a nuclear fuel rod manufacturer. The City monitors and regulates these industries through its pretreatment program. The City has 10 non-categorical and 1 categorical industrial users

In 1985, the federal Environmental Protection Agency (EPA) delegated authority to Richland to administer industrial wastewater discharges to its treatment plant, and is thus termed a "pretreatment" city. The City was one of the first in the nation to receive this special status.

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I. Introduction

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The Legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations apply to domestic wastewater NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for groundwaters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

These rules require any treatment facility owner/operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for requirements imposed by the permit.

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them 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 (WAC 173-220-050). (See **Appendix A-Public Involvement Information** for more detail about the public notice and comment procedures).

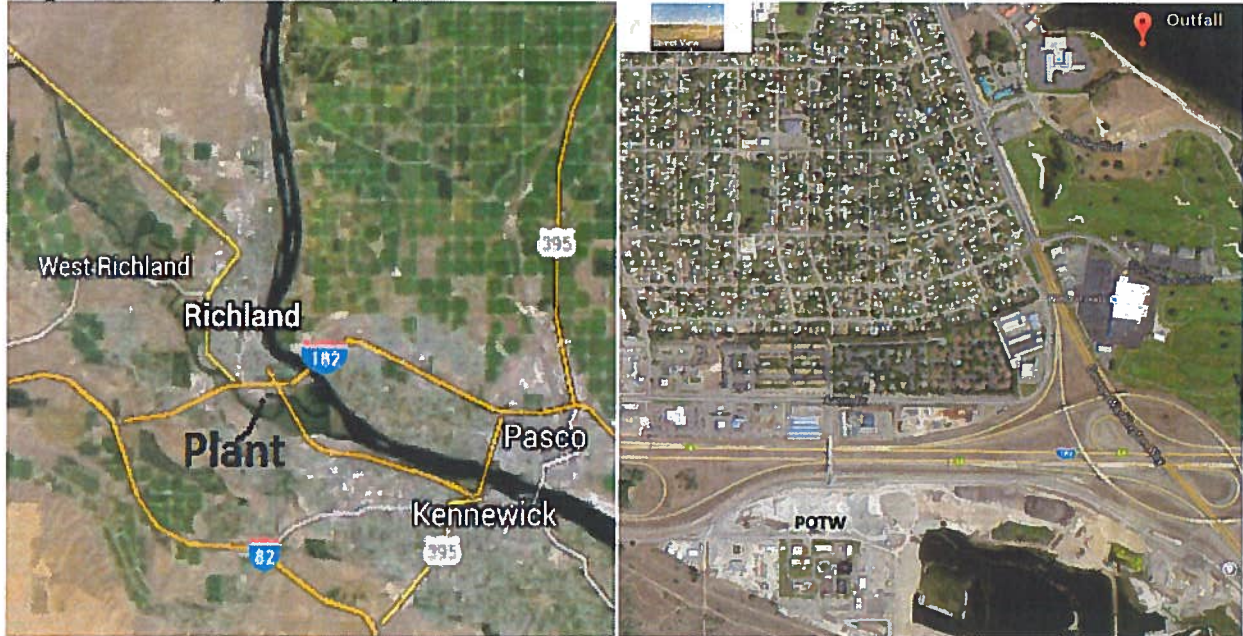
After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix E**.

II. Background Information

Table 1 - General Facility Information

Facility Information	
Applicant	City of Richland
Facility Name and Address	City of Richland Wastewater Treatment Facility 555 Lacy Drive Richland, WA 99352
Contact at Facility	Name: John Bykonen Telephone #:509-942-7481
Responsible Official	Name: Hon. David W. Rose Title: Mayor of Richland Address: 505 Swift Blvd., Richland, WA. 99352 Telephone #:509-942-7390
Type of Treatment	Semi-plug flow conventional activated sludge; secondary clarification; and chlorination
Facility Location (NAD83/WGS84 reference datum)	Latitude: 46.256011 Longitude: -119.275657
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Columbia River river mile 337.1 (Lake Wallula) Latitude: Longitude:
Permit Status	
Renewal Date of Previous Permit	March 9, 2009
Application for Permit Renewal Submittal Date	July 26, 2013
Date of Ecology Acceptance of Application	August 6, 2013
Inspection Status	
Date of Last Sampling Inspection	NA
Date of Last Non-sampling Inspection Date	April 9, 2015

Figure 1 Facility Location Map



A. Facility description

The City's original sewage treatment facility was constructed between 1942 and 1943 by the U.S. Atomic Energy Commission as a trickling filter secondary treatment facility, located just south of the old Sham-na-pum Golf Course. The City de-commissioned this plant in 1985.

In 1976 the City retained R.W. Beck and Associates to conduct a wastewater facilities planning study to develop a plan for providing secondary treatment to meet State and Federal requirements. The engineering report concluded that the City should build a new wastewater treatment facility to replace the old plant. Richland also constructed new interceptors and a new Columbia River Outfall during the construction of the wastewater plant. The new facility began operations in the fall of 1985.

The U.S. EPA designates the Richland POTW as a major facility. The EPA delegated pretreatment authority to Richland in January 1985. Planning for the implementation of the pretreatment program occurred concurrently with the design and construction of the new wastewater treatment plant.

Ecology approved the City of Richland Waste Water Treatment Plant Capacity Assessment Report and the Richland Wastewater Treatment Plant Solids Process Engineering Services Final Report as a facility plan in October 2004.

Additional upgrades completed and pending include:

- 1) City received ARRA funds to upgrade aeration system to fine pore diffusers and energy efficient blowers. Engineering report approved 10/29/2004. Plans and specs approved in 2009. Projected physically completed on 2/12/2013.
- 2) Upgraded chlorine disinfection from gas to liquid. Project completed July, 20 2015.
- 3) And they will upgrade their solids handling and processing this year (2015).

Collection system status

The collection system consists of over 278 miles of piped sewer and 14 lift stations. The City recently decommissioned 2 lift stations and built a new one at the Columbia Park Trail.

The City has an active maintenance schedule on the collection system. As part of a comprehensive sewer main rehabilitation program, the City's maintenance personnel inspect all new and old sewer lines in the collection system with a TV camera and store inspection data in a computer software maintenance program. It also has an active program to identify sources of infiltration and inflow (I&I) to the sewer system.

The Infiltration and Inflow Evaluation required by the 2003 permit revealed I&I volume within the acceptable range given by EPA guidance.

The 300 Area of the Hanford Site located immediately north of the City to the collection system was added to the collection system in the mid-1090s. This area contains operating and de-commissioned research facilities for the U.S. Department of Energy (USDOE). USDOE'S Treated Effluent Disposal Facility (TEDF), which treated the wastewater from this site, is no longer in service. 300 Area discharges to the POTW under a municipal pretreatment contract pursuant to Title 17 of the Richland Municipal Code.

The City completed engineering and design for a multi-year sewer main and lining replacement program in 2005. Construction for the project began in 2006 and will continue as an ongoing project. Richland funds the project from existing wastewater user fees. The City has spent over 4.4 million dollars on reducing inflow and infiltration between 2007 and 2012. Rehab work performed includes; installed replacement pipe, lined pipe, replaced manholes, and cleanouts.

The summer months typically experience the highest rate of I&I. I&I was reduced from approximately 115 gallons per capita, (2006) to 110 per capita (2012) and winter I&I was reduced to 99 gallons per capita in 2012 from 117 gallons per day to, which is well below the EPA threshold. The annual average per capita flow is estimated to be 105 gallons per capita per day (gpcd). The 2013 report states the per capita I&I rate is approximately 249,450 gpd compared to the 2007 figure of 707,680 gpd

Treatment processes

In accordance with WAC 173-230-140, the City's treatment plant is classified as a Class IV facility, based on its maximum monthly design flow of 11.4 MGD and its activated sludge treatment process.

Present POTW processes include barscreens, grit removal, primary sedimentation, activated sludge, anaerobic sludge digestion, dissolved air flotation thickening (DAFT), filter belt press sludge dewatering, final clarification, and disinfection by chlorine. Redundancy is provided for the key clarification and aeration processes.

You can find basic information describing wastewater treatment processes at the Water Environment Federation website at:

<http://www.wef.org/AboutWater/ForThePublic/WastewaterTreatment/>

Influent enters the treatment plant through a 54-inch interceptor to an influent pump station and through a coarse bar screen.. Influent pumping is required to permit gravity flow through the treatment facility. Wastewater pumped to the headworks passes through an aerated grit chamber and then to one of two primary clarifiers, which are equipped with fine screens to meet WAC 173-308 to remove inert solids greater than 3/8-inch.

The City then pipes primary clarified wastewater through fine screens to remove inert solids greater than 3/8-inch in compliance with biosolids regulation and then to the aeration basin. The aeration basin contains biomass termed "activated sludge". Activated sludge contains living bacteria and other single-celled organisms that process and treat wastewater.

In 2006, Richland modified aeration basin #1 to include:

- An anoxic selector.
- Fine bubble diffusers.
- Submerged mixers.
- Process piping, valves, and instrumentation.

The City completed this work to alleviate foaming problems in the aeration basin, clarifiers, and sludge digesters caused by undesirable filamentous bacteria. In 2011, aeration basin #2 received the same set of upgrades aeration basin received in 2006 as listed above.

After aeration, wastewater is conveyed to a secondary clarifier. To maintain a balance of biomass in the aeration basin, a portion of the settled solids from the secondary clarifier is piped through the return activated sludge (RAS) line to the aeration basin. Clarified wastewater flows to the chlorine contact chamber for disinfection.

The treated wastewater is discharged to the Columbia River through a 54-inch, 7,000 feet outfall pipe and submerged diffuser. The long outfall pipe provides additional chlorine contact time to disinfect the effluent during its passage to the Columbia River.

In 2007 the City replaced the POTW's Programmable Logic Controllers, a computerized system which monitors and controls key treatment processes.

The City replaced its chlorine gas disinfection system with a Parkson Miox hypochlorite system. This will improve worker safety and reduce regulatory hurdles for the treatment plant.

Solid wastes/Residual Solids

Ecology approved Plans and Specs for the upgrade to the solids handling equipment in August 2015. The treatment plant has two anaerobic sludge digester treatment units. The digesters can be operated either in parallel (as two primary units) or in series (as a primary and a secondary unit), which allows for a large degree of operational flexibility. The digesters process settled solids and scum removed from the primary and secondary clarifiers.

For the present, waste activated sludge from the secondary clarifier is pumped to a dissolved air floatation thickener (DAFT) unit. Solids from the DAFT unit are pumped to the digesters or belt presses. The DAFT unit serves to increase sludge's solids content by separating out the liquid. Ecology is in the process of approving plans and specs (7/2015) for upgrades to the solids handling system, which abandons in place the existing DAFT unit and pumps. Upgrades include installation of a rotary drum thickener (RDT), preceded by a new waste activated sludge (WAS) pump, polymer mixing and filtration. Following the RDT, a new TWAS pump will feed the anaerobic digesters. Two new belt filter presses will receive feed sludge from the anaerobic digesters for dewatering.

The City treats the sludge solids to biosolids standards according to Chapter 173-308 WAC. The city has a program for beneficial reuse of biosolids. Dried solids are mixed with City yard debris (compost). The product is distributed and sold to the public. To date, the POTW has not disposed of biosolids via landfill or a contractor such as Natural Selection Farms. The compost program has been very successful.

Methane generated in the anaerobic digesters is used for heating the incoming solids and solids/digester buildings.

Discharge outfall

Secondary treated and disinfected effluent discharges into the Columbia River from the

facility via a 7,000-foot long ductile steel pipe, beginning with 54-inch diameter and reducing later down to 48 inches in diameter. Effluent flows through four 12-inch ports. The diffuser has a total of seven ports, but three are capped and are intended for use when treatment capacity increases.

The 2003 permit required an outfall evaluation. Liquid Visions Technology completed the evaluation for Richland on September 13, 2004. The company's diver filmed the outfall inspection, providing good audio and video documentation. The diver examined all seven outfall ports, three of which were capped. The inspection revealed little or no sediment build-up in the vicinity of the outfall. A new inspection of the outfall is required in the proposed permit.

B. Description of the receiving water

The Richland POTW discharges to the Columbia River. Other nearby point source outfalls include the City of Kennewick and the City of Pasco, which discharge to the Columbia River downstream from Richland's outfall. Significant nearby non-point sources of pollutants include agriculture and municipal stormwater sources.

The ambient river background data used for this permit includes the following monitoring from United States Geological Service (USGS) and Pacific Northwest National Laboratory (PNNL) reports:

Table 2 – Ambient Columbia River Background Data

Parameter	Value Used
Temperature (highest annual 1-Day Maximum) ^{a,b}	23.3°C
pH (Minimum/Maximum) ^c	7.3 / 8.3
Dissolved Oxygen (10 th / 90 th percentiles)	9.0 / 13.4 mg/L
Total Ammonia-N (90 th percentile)[1997-2006 USGS Richland Pump house]	0.10 mg/L
Total N (unfiltered)(90 th percentile)[1997-2006 USGS Richland Pump house]	0.29 mg/L
Nitrogen, Ammonia + Organic Total as N (90 th percentile)[1997-2006 USGS Richland Pump house]	0.17 mg/L
Orothophosphate as P (filtered)	0.004 ^d mg/L
Turbidity (90 th percentile)[1997-2006 USGS Richland Pump house]	3.3 NTU
Hardness (as CaCO ₃)(50 th percentile)[1997-2006 USGS Richland Pump house]	63 mg/L
Ambient Metals ^e	
Antimony	0.21 µg/L
Arsenic	0.90 µg/L
Beryllium	0.07 µg/L
Cadmium	0.03 µg/L

Chromium	0.18 µg/L
Copper	1.03 µg/L
Lead	0.24 µg/L
Mercury	0.0007 µg/L
Nickel	0.87 µg/L
Selenium	0.5 µg/L
Silver	0.009 µg/L
Thallium	0.02 µg/L
Zinc	3.79 µg/L
^a Maximum river temperatures for the years 2002 through 2014 at the Richland water treatment plant.	
^b Specific water quality temperature criteria of 20 °C 1-day maximum for the Columbia River at Richland outfall location from Table 602 from WAC 173-201A.	
^c USGS sampling in Columbia River at Richland Pump house for years 1997 through 2006	
^d estimated from USGS sampling in Columbia River at Richland Pump house.	
^e 90 th percentile unfiltered samples from transect across the Columbia River in the vicinity of the Richland Pump house. PNNL environmental surveys. (2003-2006).	

C. Wastewater influent characterization

Richland reported the concentration of influent pollutants in discharge monitoring reports. The influent wastewater is characterized as follows:

Table 2 - 3-Year Influent Monthly Wastewater Characterization

Parameter	Three-year Average		Highest Monthly Loading		Maximum Loading Percent of Monthly Design Loading		Maximum Monthly Design Loading	
	2005-2008	1/2011-2/2015	2005-2008	1/2011-2/2015	2005-2008	1/2011-2/2015	2005-2008	1/2011-2/2015
Flow, in MGD	5.5	5.7	5.9	7.5	52	65.8	11.4	11.4
BOD ₅ , in lbs/day	9,748	10,906	11,513	13,436	67	77.9	17,250	17,250
TSS, in lbs/day	10,787	12,790	13,081	16,960	62	80	21,200	21,200
Ammonia, in lbs/day	1,059	859	1,325	1,509	48	54.9	2,750	2,750

Priority Pollutants were analyzed on the influent up to 14 times in the timeframe February 2012 to February 2015. The results of the analysis is contained below in Table 4. Non-detects and samples below the method quantification level are omitted.

Table 3 - Influent Priority Pollutants

Parameter	Antimony	Arsenic	Beryllium (1)	Cadmium	Chromium	copper	Cyanide (2)	Molybdenum	Zinc
AVG	0.68	2.45	na	0.21	2.03	91.74	na	4.10	146.86
MAX	1.02	3.20	0.03	0.29	3.50	123.00	0.002	6.24	190.00
STDV	0.14	0.31	na	0.05	0.61	22.89	na	1.04	33.31
COV	0.21	0.13	na	0.24	0.30	0.25	na	0.25	0.23
count	14.00	14.00	na	14.00	14.00	14.00	na	14.00	14.00
Parameter	Mercury	Lead	Nickel	Selenium	Silver	Phenol	Thallium	Titanium	FOG *
AVG	125.99	2.32	9.10	0.96	0.58	0.08	0.02	53.20	41571.8
MAX	666.00	3.77	21.90	1.30	2.17	0.17	0.06	83.00	42051.0
STDV	159.96	0.63	5.37	0.25	0.64	0.04	0.02	na	341.4
COV	1.27	0.27	0.59	0.26	1.10	0.45	0.73	na	0.0
count	14.00	13.00	14.00	9.00	14.00	14.00	9.00	2.00	44.0

- (1) One hit May 2014
- (2) One hit March 2013
- * FOG means fats, oil and grease.

Nutrient analysis was conducted on the influent periodically during the 2013 permit year. The results are depicted below in Table 5.

Table 4 - Nutrient analysis

Parameter	Nitrate	T-Nitrogen	Ortho-P	T-Phosphorus
AVG	7.3	40.2	3.6	na
MAX	16.0	41.2	4.2	5.6
STDV	6.5	na	0.3	na
COV	0.9	na	0.1	na
Count	6.0	2.0	5.0	1.0

D. Wastewater effluent characterization

Richland reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from January 2010 to February 2015. The wastewater effluent is characterized as follows:

Table 5 - Wastewater Effluent Characterization

Parameter	Units	# of Samples	Average Monthly Value	Maximum Weekly Value
Flow	MGD	60	5.685	7.50
Nitrate	mg/L	60	1.1	10.0
Biochemical Oxygen Demand (BOD ₅)	mg/L	60	14.9	30.4
Biochemical Oxygen Demand (BOD ₅)	lbs/day	60	705.2	1604
Total Suspended Solids (TSS)	mg/L	60	8.2	20.0
Total Suspended Solids (TSS)	lbs/day	60	388.8	908.3
Ammonia	mg/L	60	1.7	18
Ammonia	lbs/day	60	83.6	925
Total Residual chlorine	mg/L	60	0.3	0.5
Total Residual chlorine	lbs/day	60	7.8	24.8
Ortho-Phosphate	mg/L	60	10.6	16.2
Hardness	mg/L	60	186.7	418
Parameter	Units	# of Samples	Maximum Monthly Geometric Mean	Maximum Weekly Geometric Mean
Fecal Coliforms	CFU	60	140	333
pH	standard units	60	6.9	7.6

Priority Pollutants were analyzed on the effluent up to 14 times in the timeframe February 2012 to February 2015. The results of the analysis is contained below in Table 7. Non-detects and samples below the method quantification level are omitted.

Table 6 - 2012-2015 Effluent priority pollutants in µm/L

Parameter	Antimony	Arsenic	Cadmium	Chloroform	Chromium	Copper	Thallium	Phenol, Total
AVG	0.49	1.86	0.04		0.62	15.84		0.02
MAX	0.68	2.30	0.07	6.9 *	1.59	19.70	0.03	0.02
STDV	0.09	0.30	0.02		0.39	2.74		0.005
COV	0.18	0.16	0.35		0.63	0.17		0.29
Count	14	13	14	1	14	14	1	4.00
Parameter	Lead	Mercury	Molybdenum	Nickel	Zinc	Silver	Titanium	
AVG	0.36	0.006	2.55	3.28	41.54	0.04		
MAX	0.54	0.021	4.50	4.90	53.50	0.08	2.30	
STDV		1.60	0.81	0.97	5.19	0.02		
COV	0.00	1.18	0.32	0.30	0.12	0.47		
Count	14	14	14	14	14	12	1	

* Embolded numbers indicate an increase from the pervious analytical results reported in 2009.

** Mercury maximum value of 30.6 ng/L occurred in February 2012.

Four parameters show an increase in concentration from previous analytical results. Chloroform, a by-product of chlorine disinfection, maximum increased 28 % in September 2012 to 6.9 µg/L up from 5.4 µg/L. However this is based on one analysis above the quantification level. The 95th percentile is 4.62 µg/L based on a count of 13 samples, which is below the maximum in 2005 of 5.42 µg/L.

Copper also shows an increase of 35 % above the previous (2005-2008) data set. Titanium and Thallium were not recorded in the previous factsheet and the results report in Table7 represents results of only one analytical event above the quantification level.

Reasonable potential will be determined for those compounds whose levels have increased or were not contained in the previous factsheet.

Nutrient analysis was conducted on the influent periodically during the 2013 permit year. The results are depicted below in Table 8.

Table 7 - Nutrients and TDS

Parameter	Nitrate	ortho-Phosphate	Total Nitrogen	TDS
AVG	14.66	3.50	29.60	496.00
MAX	22.10	3.70	44.40	591.00
STDV	5.66	0.32	20.93	82.94
COV	0.39	0.09	0.71	0.17
Count	4.00	3.00	2.00	3.00

E. Summary of compliance with previous permit issued

The previous permit placed effluent limits on BOD, TSS, Fecal Coliform bacteria, pH, Total chlorine, and Total Ammonia.

Richland has substantially complied with the effluent limits and permit conditions throughout the duration of the permit issued on June 17, 2009. Ecology assessed compliance based on its review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), discharge monitoring reports (DMRs) and on inspections. Richland has been in the process of reconfiguring its wastewater treatment train. Interference has largely been attributable to higher than normal BOD and excessive oxygen depletion during testing.

In April 2015 and June 2015 the Richland laboratory personnel had issues with finding the right volume of seed that would not cause the BOD5 samples to go out of the quality and control parameters (high depletion of dissolved oxygen during the testing period). After discussions with Ecology both at the field office in Manchester and Andy O'Neill the Ecology Roving Operator, we believe this was caused by wide variations in the seed samples that were drawn from the samples. We tried throughout April and June to find the right combination of seed volume. We switched seed sample sources from influent to primary effluent with no success. It was finally suggested from The Roving Operator to try using a purchased synthetic seed. This seems to be working well now. Richland at this time (July 2015) is experimenting with the volume range to better meet the QC and QA.

As far as the May 2015 BOD Effluent issued violations, Richland had torn diffusers in the aeration basin and some plugged up ones which Richland believes caused the high BOD in the effluent. Richland also had the Roving Operator over here to help us. We also might have carried a lower MLSS (higher FM) than we should have to get proper BOD reduction.

Richland switched to its other basin and have had no other issues. The remaining citations contained in the violation report are reporting errors that are a result of using wrong reporting codes or violation overrides during the BOD fore mentioned BOD analysis issues.

Table 8 - Violations Report

Violations

Violation	Date	Parameter	Units	Fraction	Addressed	Due Date	Compliance Date	Monitor Point	DMR Value	Bench Min	Bench Max	Design Limit	Min Limit	Max Limit	Category	Event Category
Numeric effluent violation	05/01/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	001	60.8	-	-	-	-	45	Permit Violation	Effluent Violations
Numeric effluent violation	05/01/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	001	36.1	-	-	-	-	30	Permit Violation	Effluent Violations
Improper/Incorrect Reporting	06/17/2015	Biochemical Oxygen Demand (BOD5)	Percent	Total	N	-	-	001	91	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/17/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Not Applicable	N	-	-	001	1233.49	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/17/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	N	-	-	001	25	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/17/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Calculated	N	-	-	IN1	13114.42	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/17/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	N	-	-	IN1	265.8	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/16/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	N	-	-	IN1	280.4	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/16/2015	Biochemical Oxygen Demand (BOD5)	Percent	Total	N	-	-	001	90	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/16/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Calculated	N	-	-	IN1	13816.07	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/16/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Not Applicable	N	-	-	001	1414.13	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/16/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	N	-	-	001	28.7	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/02/2015	Biochemical Oxygen Demand (BOD5)	Percent	Total	N	-	-	001	92	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/02/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Not Applicable	N	-	-	001	985.75	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/02/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	N	-	-	IN1	226.8	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/02/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Calculated	N	-	-	IN1	11891.94	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	06/02/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	N	-	-	001	18.8	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	05/01/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	001	60.8	-	-	-	-	45	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	05/01/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	001	36.1	-	-	-	-	30	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/22/2015	Biochemical Oxygen Demand (BOD5)	Percent	Total	Y	-	-	001	90	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/22/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	001	21.3	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/22/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Not Applicable	Y	-	-	001	1009.36	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/22/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Calculated	Y	-	-	IN1	10411.12	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/22/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	IN1	219.7	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/21/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Not Applicable	Y	-	-	001	1795.64	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/21/2015	Biochemical Oxygen Demand (BOD5)	Lbs/Day	Calculated	Y	-	-	IN1	9473.56	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/21/2015	Biochemical Oxygen Demand (BOD5)	Percent	Total	Y	-	-	001	81	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/21/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	IN1	198.9	-	-	-	-	-	Permit Violation	Reporting Violations
Improper/Incorrect Reporting	04/21/2015	Biochemical Oxygen Demand (BOD5)	Milligrams/L (mg/L)	Not Applicable	Y	-	-	001	37.7	-	-	-	-	-	Permit Violation	Reporting Violations

The following Table 10 summarizes compliance with report submittal requirements over the permit term.

Table 9 - Report Submittals

<u>Submittal</u>	<u>Submittal Name</u>	<u>Status</u>	<u>Report Date</u>	<u>Due Date</u>	<u>Received</u>	<u>Approved</u>	<u>Approved Date</u>	<u>Reviewer</u>
Wasteload Assessment	Wasteload Assessment	Received	-	12/31/2012	12/10/2012	N	-	-
Other	Solids Upgrade Specs - Drawings	Received	-	-	02/25/2015	N	-	-
Wasteload Assessment	Wasteload Assessment	Received	-	12/31/2013	12/04/2013	N	-	-
Infiltration And Inflow Evaluation	Infiltration And Inflow Evaluation	Received	-	07/31/2013	07/26/2013	N	-	-
Other	O&M Manual Confirmation Letter	Received	-	08/01/2011	07/18/2011	N	-	-
Other	O&M Manual Confirmation Letter	Not Received	-	08/01/2015	-	-	-	-
Other	O&M Manual Confirmation Letter	Received	-	08/01/2014	07/23/2014	N	-	-
Other	O&M Manual Confirmation Letter	Received	-	08/01/2013	07/23/2013	N	-	-
Other	Pretreatment Accidental Spill Plan	Received	-	08/01/2010	07/30/2010	Y	08/13/2010	Dean Smith
Pretreatment - Annual Pretreatment Report	Pretreatment- Pretreatment Report (Annual)	Not Received	-	04/15/2015	-	-	-	-
Other	Acute Toxicity Effluent Test Results	Received	-	07/31/2013	07/26/2013	N	-	-
Other	Chronic Toxicity Effluent Test Results	Received	-	07/31/2013	07/26/2013	N	-	-
Other	Pretreatment Local Limits	Received	-	-	08/17/2010	N	-	-
Other	Pretreatment Local Limits	Received	-	-	12/03/2010	Y	12/10/2010	-
O&M - Operation And Maintenance Manual (Update)	Operation And Maintenance Manual (Update)	Approved	-	08/01/2010	10/21/2011	Y	-	-

Table 10 above, inaccurately reports the August 2015 O&M confirmation Letter and the Annual 2015 Pre-treatment reports as not received. Both were submitted prior to the due dates.

F. State environmental policy act (SEPA) compliance

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

The Richland POTW is an existing facility. The most recent SEPA documents to date are below.

SEPA announcement January 29, 2009 – Determination of Non-Significance.

- Lead Agency: City of Richland.
- Proponent: City of Richland Public Works Department.
- Project description: Broadmoor lift station gravity sewer line extension Phase 2 & 3; includes construction of approximately 1,153 linear feet of 18 inch gravity main with multiple manhole & service connections;
- Project location: Within the Broadmoor Street right of way from the existing Bellerive sewer lift station at Claybell Park west to Gleneagles Court.

III. Proposed Permit Limits

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Design criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology-approved design criteria for this facility’s treatment plant were obtained from the City of Richland Wastewater Treatment Plant Capacity report prepared by HDR Engineering (1998). In 2003, the City of Richland Wastewater Treatment Facility Capacity Assessment Report prepared by the Brown and Caldwell engineering firm confirmed the design criteria from HDR Engineering. Table 11 lists the design criteria.

Table 10 - Design Criteria for the Richland POTW.

Parameter	Design Quantity
Maximum Month Design Flow (MMDF)	11.4 MGD
BOD ₅ loading for maximum month	17,250 lb/day
TSS loading for maximum month	21,200 lb/day
Ammonia loading for maximum month	2,750 lbs/day

B. Technology-based effluent limits

Federal and state regulations define technology-based effluent limits for domestic wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for domestic wastewater.

Table 12 below identifies technology-based limits for pH, fecal coliform, BOD₅, and TSS, as listed in chapter 173-221 WAC. Section III.F of this fact sheet describes the potential for water quality-based limits.

Table 11 - Technology-based Limits

Parameter	Average Monthly Limit	Average Weekly Limit
BOD ₅ (concentration)	30 mg/L	45 mg/L
BOD ₅ (concentration)	In addition, the BOD ₅ effluent concentration must not exceed fifteen percent (15%) of the average influent concentration.	
TSS (concentration)	30 mg/L	45 mg/L
TSS (concentration)	In addition, the TSS effluent concentration must not exceed fifteen percent (15%) of the average influent concentration.	
Parameter	Average Monthly Limit	Maximum Daily
Chlorine	NA	0.50 mg/L
Parameter	Monthly Geometric Mean Limit	Weekly Geometric Mean Limit
Fecal Coliform Bacteria	200 organisms/100 mL	400 organisms/100 mL
Parameter	Daily Minimum	Daily Maximum
pH	6.0 standard units	9.0 standard units

Ecology derived the technology-based monthly average limit for chlorine from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, *Wastewater Engineering, Treatment, Disposal and Reuse*, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/L.

The existing permit has a chlorine limit of 0.5 mg/L and the facility is able to comply with it. The proposed permit includes the same limit.

Technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b). Ecology calculated the monthly and weekly average mass limits for BOD₅ and Total Suspended Solids as follows:

$$\text{Mass Limit} = \text{CL} \times \text{DF} \times \text{CF}$$

where:

CL = Technology-based concentration limits listed in the above table

DF = Maximum Monthly Average Design flow (MGD)

CF = Conversion factor of 8.34

Table 12 - Technology-based Flow Based Mass Limits

Parameter	Concentration Limit (mg/L)	Mass Limit (lbs/day)
BOD ₅ Monthly Average	30	2,852
BOD ₅ Weekly Average	45	4,287
TSS Monthly Average	30	2,853
TSS Weekly Average	45	4,278

Technology-based mass limits are based on WAC 173-220-130(3)(b), WAC 173-221-030(11)(b), WAC 173-220-130(1)(a) and (g), and WAC 173-221-040(1). Ecology calculated the monthly and weekly average mass limits for BOD₅ and Total Suspended Solids as follows:

$$\text{Average Monthly Mass Effluent Limit} = \text{Influent Mass Design Loading Criteria (lb/day)} \times 0.15$$

$$\text{Average Weekly Mass Effluent Limit} = 1.5 \times \text{Average Monthly Mass Effluent TSS Limit}$$

Table 13 - Technology-based Mass Limits

Parameter	Influent Loading (lbs/day)	Mass Limit (lbs/day)
BOD ₅ Monthly Average	17,250	2,588
BOD ₅ Weekly Average	-	3,382
TSS Monthly Average	21,200	3,180
TSS Weekly Average	-	4,770

The Technology-based limits calculated via the flow criteria is more restrictive than the technology-based limits derived using 15% of the loading design criteria. Therefore, the permit will limit the discharge loading according to the more restrictive calculation. These limits are identical to the permit issued in 2009.

C. Surface water quality-based effluent limits

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Numerical criteria for the protection of aquatic life and recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical criteria for the protection of human health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA, 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

Description--The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

Facility Specific Requirements--This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.

Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

Facility Specific Requirements--Ecology determined that this facility does not meet Tier II requirements. A Tier II analysis focuses on evaluating feasible alternatives that would eliminate or significantly reduce the level of degradation. The analysis also includes a review of the benefits and costs associated with the lowering of water quality. New discharges and facility expansions are prohibited from lowering water quality without providing overriding public benefits. Implemented upgrades have improved water quality.

The Permittee is planning to submit General Sewer Plan update within the 2015-2016 timeframe.

Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART). Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 4 means the effluent is 25% and the receiving water is 75% of the total volume of water at the boundary of the mixing zone. Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life *acute* criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life *chronic* criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water.
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

1. Ecology must specify both the allowed size and location in a permit.

The proposed permit specifies the size and location of the allowed mixing zone (as specified below).

2. The facility must fully apply “all known, available, and reasonable methods of prevention, control and treatment” (AKART) to its discharge.

Ecology has determined that the treatment provided at the Richland POTW meets the requirements of AKART (see “Technology-based Limits”).

3. Ecology must consider critical discharge conditions.

Surface water quality-based limits are derived for the water body’s critical condition (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated waterbody uses). The critical discharge condition is often pollutant-specific or waterbody-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents, and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water.

Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology’s *Permit Writer’s Manual* describes additional guidance on criteria/design conditions for determining dilution factors. The manual can be obtained from Ecology’s website at: <https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>.

Table 14 - Critical Conditions Used to Model the Discharge

Critical Condition	Value
The seven-day-average low river flow with a recurrence interval of ten years (7Q10)	52,700 cfs
The thirty-day low river flow with a recurrence interval of five years (30Q5)	63,600 cfs
Harmonic mean flow for human health-carcinogenic reasonable potential	102,627 cfs
River depth at the 7Q10 period	34 feet
River depth at the 30Q5 period	35 feet
River depth at the harmonic mean flow	40 feet
River velocity	1.03 ft per second
Maximum average monthly effluent flow for chronic and human health non-carcinogen	6.5 MGD
Annual average flow for human health carcinogen	8.9 MGD
Maximum daily flow for acute mixing zone	6.7 million gallons per day (MGD)
7-DAD MAX Effluent temperature	25.2 degrees C

Ambient data at critical conditions in the vicinity of the outfall was taken from USGS and PNNL studies conducted in the Columbia River at transects near the Richland drinking water pump house, about 2 miles upstream from the discharge's outfall:

4. Supporting information must clearly indicate the mixing zone would not:

- Have a reasonable potential to cause the loss of sensitive or important habitat.
- Substantially interfere with the existing or characteristic uses.
- Result in damage to the ecosystem.
- Adversely affect public health.

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms and set the criteria to generally protect the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for four days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of discharge.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also

avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than two seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing.

Because this is a domestic wastewater discharge, the effluent contains fecal coliform bacteria. Ecology developed the water quality criteria for fecal coliforms (discussed below) to assure that people swimming (primary contact recreation) in water meeting the criteria would not develop gastro enteric illnesses. Ecology has authorized a mixing zone for this discharge; however, the discharge is subject to a performance-based effluent limit of 100 colony forming units/100mL. This means the effluent meets the water quality criteria at the point of discharge and doesn't need dilution to meet the water quality criteria.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics, and the discharge location. Based on this review, Ecology concluded that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem, or adversely affect public health if the permit limits are met.

5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis, using procedures established by the EPA and by Ecology, for each pollutant and concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone if permit limits are met.

6. The size of the mixing zone and the concentrations of the pollutants must be minimized.

At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. The plume mixes as it rises through the water column therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit

the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed, the discharge is more completely mixed with the receiving water in a shorter time. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor, and the lowest flow occurring once in every ten years to perform the reasonable potential analysis.

Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

7. Maximum size of mixing zone.

The authorized mixing zone does not exceed the maximum size restriction.

8. Acute mixing zone.

- **The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.**

Ecology determined the acute criteria will be met at 10% of the distance of the chronic mixing zone at the ten year low flow.

- **The pollutant concentration, duration, and frequency of exposure to the discharge will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.**

As described above, the toxicity of any pollutant depends upon the exposure, the pollutant concentration, and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).

- **Comply with size restrictions.**

The mixing zone authorized for this discharge complies with the size restrictions

published in chapter 173-201A WAC.

9. Overlap of mixing zones.

This mixing zone does not overlap another mixing zone.

D. Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The tables included below summarize the criteria applicable to the receiving water’s designated uses.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

Table 15 - Freshwater Aquatic Life Uses and Associated Criteria

Salmonid Spawning, Rearing, and Migration	
Temperature Criteria – Highest 7-DAD MAX	20.0°C (68.0° F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	8.0 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

The *recreational uses* for this receiving water are identified below.

Table 16 - Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL.

- The *water supply uses* are domestic, agricultural, industrial, and stock watering.
- The *miscellaneous freshwater uses* are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

E. Water quality impairments

The Pacific Northwest National Laboratories (PNNL), operated by Battelle for the U.S. Department of Energy, has conducted extensive water quality monitoring at various locations along the Hanford Reach. PNNL publishes yearly monitoring results entitled, *Hanford Site Environmental Surveillance Data Report*. Also, the USGS has been contracted by PNNL to monitor water quality parameters in the Hanford Reach. Ecology obtained ambient Columbia River parameters for this fact sheet from these two sources.

Columbia River's Excursions from Water Quality Standards

Temperature: 2008 Basis Statement (carried forward from 2004) - Category 5 in 2004 and 2008:

Ecology Ambient Monitoring Station 36A070 (Columbia River near Vernita) showed 1 excursion in August 1997 beyond the criterion out of 50 samples collected between 1993 - 2001.

Grant County PUD station PRXW (downstream from Priest Rapids Dam) had 39 excursions in 2003.

Army Corp of Engineers determined the temperature exceeded criteria in the Columbia River at Lake Wallula (at station PAQW in the vicinity of the Richland outfall pipe) in 2000 and 2001, for 20 days and 17 days respectively.

In September 2002, the U.S. Environmental Protection Agency (EPA) Region 10 issued a Preliminary Draft Temperature TMDL for the Columbia and Snake Rivers. This preliminary draft TMDL identified the Columbia River dams as the primary contributor to thermal loads in the river system. The EPA has not finalized the TMDL or taken any further action.

4,4'-DDE and PCB: 2004 303d carried forward to the 2008 303d list -- Hanford Reach -- for fish tissue exceeding criteria. EVS Environmental Consultants (2000) show an excursion beyond the National Toxic Rule criterion from Largescale Sucker composite of 12 fillet with skin collected in 1997 at River Miles 370 and 373.

Aldrin and Chlordane: 2004 303d carried forward to the 2008 303d list -- Hanford Reach -- for fish tissue exceeding criteria. EVS Environmental Consultants (2000) show an excursion beyond the National Toxic Rule criterion from Mountain Whitefish composite of 35 fillet with skin collected in 1997 at River Mile 391.

Dioxin: Category 1 for the 2004 303d list and Category 5 proposed for the 2008 303d list. EVS Environmental Consultants (2000) show excursions beyond the National Toxic Rule criterion from a Largescale Sucker composite of 12 fillet with skin collected in 1997 at River Mile 373.

Richland sampled for presence of pesticides and dioxin pollutants in its effluent approximately 14 times has not detected these pollutants.

F. Evaluation of surface water quality-based effluent limits for narrative criteria

Ecology must consider the narrative criteria described in WAC 173-201A-160 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

In addition, Ecology considers the toxicity of the wastewater discharge by requiring whole effluent toxicity (WET) testing when there is a reasonable potential for the discharge to contain toxics. Ecology's analysis of the need for WET testing for this discharge is described later in the fact sheet.

G. Evaluation of surface water quality-based effluent limits for numeric criteria

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

Richland's diffuser is 150 feet long with a diameter of 48 inches. The diffuser has a total of four discharging twelve-inch diameter ports and three capped ports of identical size. The average distance between ports is 50 feet. The diffuser depth is 33 feet. Ecology obtained this information from the *Wastewater Facilities Project, Columbia River Outfall, City of Richland* (R.W. Beck and Associates, 1983) and an outfall evaluation entitled *Report of Procedures and Findings, . . . Columbia River Sewer Outfall* (Liquid Technology, Inc., 2005).

The horizontal distance of the chronic mixing zone is 330 feet. The mixing zone extends from the bottom to the top of the water column.

The flow volume restriction resulted in a smaller chronic dilution factor than the distance downstream. The dilution factor below results from the volume restriction.

Acute Mixing Zone--WAC 173-201A-400(8)(a) specifies that in rivers and streams a zone where acute toxics criteria may be exceeded must not extend beyond 10% of the distance towards the upstream and downstream boundaries of the chronic zone, not use greater than 2.5% of the flow and not occupy greater than 25% of the width of the water body.

The horizontal distance of the acute mixing zone is 30 feet. The mixing zone extends from the bottom to the top of the water column. The dilution factor is based on this distance. Appendix D provides a schematic diagram of the outfall and mixing zone in the river.

Ecology determined the dilution factors that occur within these zones at the critical condition using EPA's Visual Plumes mixing zone model. Visual Plumes model output is in Appendix C – Technical Calculations. The dilution factors are listed in Table 18:

Table 17 - Dilution Factors (DF)

Criteria	Acute	Chronic
Aquatic Life	12.4	162
Human Health, Carcinogen		116
Human Health, Non-carcinogen		147

Ecology determined the impacts of dissolved oxygen deficiency, pH, fecal coliform, chlorine, ammonia, metals, other toxics, and temperature as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

Dissolved Oxygen--BOD₅ and Ammonia Effects--Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The 5-day Biochemical Oxygen Demand (BOD₅) of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand potential in the receiving water.

Ecology modeled the impact of BOD₅ on the receiving water using PWSREAD spreadsheet, at critical condition and with the technology-based effluent limit for BOD₅ described under "Technology-Based Effluent Limits" above. The calculations used to determine dissolved oxygen impacts are shown in **Appendix D**.

pH--Ecology modeled the impact of the effluent pH on the receiving water using the calculations from EPA, 1988, and the chronic dilution factor tabulated above. **Appendix D** includes the model results.

Ecology predicts no violation of the pH criteria under critical conditions. Therefore, the proposed permit includes technology-based effluent limits for pH.

Fecal Coliform--Ecology modeled the numbers of fecal coliform by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 162.

Under critical conditions, modeling predicts no violation of the water quality criterion for fecal coliform. In this situation, Ecology generally imposes the technology-based effluent limit for fecal coliform bacteria. Richland has demonstrated it can reliably meet the water quality standard for fecal coliforms for primary contact recreation in the discharge. Therefore, the proposed permit includes the primary contact recreation standard for fecal coliform as a performance-based (technology-based) effluent limit for fecal coliform bacteria.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

The following toxic pollutants are present in the discharge: chlorine, ammonia, and heavy metals, organic toxics and pesticides. Ecology conducted a reasonable potential analysis (See **Appendix D**) on these parameters to determine whether it would require effluent limits in this permit.

Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature and pH in the receiving freshwater. To evaluate ammonia toxicity, Ecology used the available receiving water from United States Geological Service (USGS) and Pacific Northwest National Laboratory (PNNL) reports and Ecology spreadsheet tools.

Valid ambient background data were available for (See Table 2). Ecology used all applicable data to evaluate reasonable potential for this discharge to cause a violation of water quality standards.

Ecology determined that ammonia, residual chlorine, and other compounds contained in Tables 6 & 7 pose no reasonable potential to exceed the water quality criteria at the critical condition using procedures given in EPA, 1991 (**Appendix D**) and as described above.

Ecology's determination assumes that this facility meets the other effluent limits of this permit.

Temperature--The state temperature standards [WAC 173-201A-200-210 and 600-612] include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- Annual summer maximum and supplementary spawning/rearing criteria

Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1)(c), 210(1)(c), and Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows. The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria. At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25% or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

- Protections for temperature acute effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Reasonable Potential Analysis

Annual summer maximum, and incremental warming criteria: Ecology calculated the reasonable potential for the discharge to exceed the annual summer maximum, and the incremental warming criteria at the edge of the chronic mixing zone during critical condition. No reasonable potential exists to exceed the temperature criterion where:

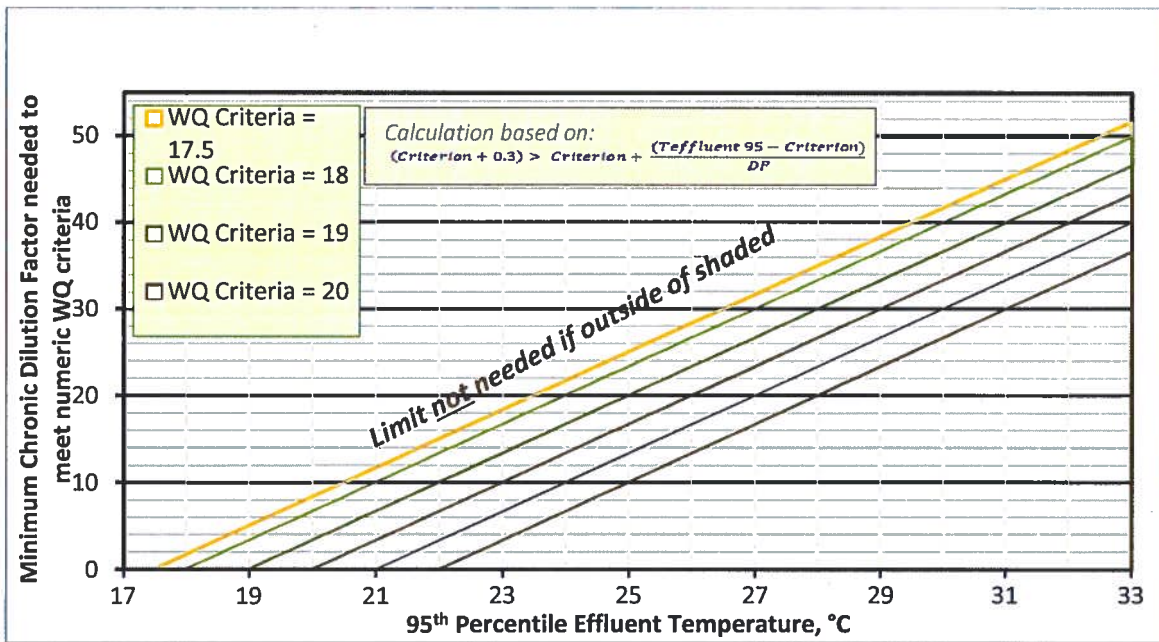
$$(\text{Criterion} + 0.3) > [\text{Criterion} + (\text{Teffluent95} - \text{Criterion})/\text{DF}].$$

$$(20.0 + 0.3) > [20 + (23.3 - 20)/162]$$

$$20.3 > 20.02$$

The figure below graphically portrays the above equation and shows the conditions when a permit limit will apply.

Figure 2 Dilution Necessary to Meet Criteria at Edge of Mixing Zone



The incremental increase for this discharge is within the allowable amount. Therefore, the proposed permit does not include a temperature limit.

General lethality and migration blockage: The receiving water conditions are listed in Table 2 of the fact sheet. The Columbia River’s temperature exceeds a 1DMax of 23°C. However, since the effluent does not warm ambient condition more than the allowable increment (0.3°C), a temperature limit is not indicated.

Instantaneous lethality to passing fish: The discharge does not exceed the instantaneous lethality value of 33°C.

H. Human health

Washington’s water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined the effluent may contain chemicals of concern for human health, based on the facility's status as an EPA major discharger and data or information indicating regulated chemicals occur in the discharge. [see Appendix C]

Ecology evaluated the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d) by following the procedures published in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and Ecology's *Permit Writer's Manual* to make a reasonable potential determination. With the exception of arsenic, the evaluation showed that the discharge has no reasonable potential to cause a violation of water quality standards, and an effluent limit is not needed. The reason the proposed permit will not have an arsenic limit is explained below.

The effluent was tested during the 2004-2005 permit cycle 12 times for arsenic and it was detected 9 times. The 50th percentile effluent concentration was 1.8 $\mu\text{g/L}$. The maximum value was 7.4 $\mu\text{g/L}$. During the 2009 – 2014 permit term arsenic was 13 test were conducted and arsenic was detected 13 times. The 50th percentile was again 1.8 $\mu\text{g/L}$. The maximum value was 2.3 $\mu\text{g/L}$, 5.1 $\mu\text{g/L}$ less than the value used to assess reasonable potential.

In 1992 the USEPA adopted risk-based arsenic criteria for the protection of human health for the State of Washington. Ambient concentration of unfiltered arsenic samples in the Columbia R. near Richland were determined to be 0.9 $\mu\text{g/L}$ (USDOE-PNNL; 2003-2006). The freshwater human health criterion is 0.018 $\mu\text{g/L}$, and is based on exposure from fish and shellfish tissue and water ingestion. These criteria have caused confusion in implementation because they differ from the drinking water maximum contaminant level (MCL) of 10 $\mu\text{g/L}$, which is not risk-based, and because the human health criteria are sometimes exceeded by natural background concentrations of arsenic in surface water and ground water.

In Washington, when a natural background concentration exceeds the criterion, the natural background concentration becomes the criterion, and no dilution zone is allowed. This could result in a situation where natural groundwater or surface water used as a municipal or industrial source-water would need additional treatment to meet numeric effluent limits even though no arsenic was added as waste. Although this is not the case for all dischargers, we do not have data at this time to quantify the extent of the problem.

A regulatory mechanism to deal with the issues associated with natural background concentrations of arsenic in groundwater-derived drinking waters is currently lacking. Consequently, the Water Quality Program, at this time, has decided to use a three-pronged strategy to address the issues associated with the arsenic criteria. The three strategy elements are:

1. Pursue, at the national level, a solution to the regulatory issue of groundwater sources with high arsenic concentrations causing municipal treatment plant effluent to exceed

criteria. The revision of the drinking water MCL for arsenic offered a national opportunity to discuss how drinking water sources can affect NPDES wastewater dischargers, however Ecology was unsuccessful in focusing the discussion on developing a national policy for arsenic regulation that acknowledges the risks and costs associated with management of the public exposure to natural background concentrations of arsenic through water sources. The current arsenic MCL of 10 ug/L could also result in municipal treatment plants being unable to meet criteria-based effluent limits. Ecology will continue to pursue this issue as opportunities arise.

2. Additional and more focused data collection. The Water Quality Program will in some cases require additional and more focused arsenic data collection, will encourage or require dischargers to test for source water arsenic concentrations, and will pursue development of a proposal to have Ecology's Environmental Assessment Program conduct drinking water source monitoring as well as some additional ambient monitoring data. At this time, Washington NPDES permits will contain numeric effluent limits for arsenic based only on treatment technology and aquatic life protection as appropriate.
3. Data sharing. Ecology will share data with EPA as they work to develop new risk-based criteria for arsenic and as they develop a strategy to regulate arsenic.

I. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website.

<http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the sediment management standards. This was visually confirmed by an outfall evaluation conducted by Liquid Vision Diving Services in 2005. The divers found little accumulated sediment in the area downstream of the outfall.

J. Whole effluent toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach

is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

- *Acute toxicity tests measure mortality as the significant response* to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.
- *Chronic toxicity tests measure various sublethal toxic responses*, such as reduced growth or reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure survival.

Laboratories accredited by Ecology for WET testing know how to use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff know how to calculate an NOEC, LC50, EC50, IC25, etc. Ecology gives all accredited labs the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (<https://fortress.wa.gov/ecy/publications/SummaryPages/9580.html>) which is referenced in the permit. Ecology recommends that each regulated facility send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water acute or chronic toxicity. The proposed permit will not include an acute or chronic WET limit. Richland must retest the effluent before submitting an application for permit renewal, as per EPA NPDES application requirements.

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization
- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased. Richland may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing after the process or material changes have been made.

K. Groundwater quality limits

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

Richland does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

L. Comparison of effluent limits with the previous permit issued on June 17, 2009

Table 18 - Comparison of Previous and Proposed Effluent Limits

Parameter	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
		Average Monthly	Average Weekly	Average Monthly	Average Weekly
Biochemical Oxygen Demand (5-day)	Technology	30 mg/L 2,588 lbs/day	45 mg/L 3,882 lbs/day	30 mg/L 2,588 lbs/day	45 mg/L 3,882 lbs/day
Total Suspended Solids	Technology	30 mg/L 2,852 lbs/day	45 mg/L 4,278 lbs/day	30 mg/L 2,852 lbs/day	45 mg/L 4,278 lbs/day
pH	Technology	Daily minimum is equal to or greater than 6 and the daily maximum is less than or equal to 9.		Daily minimum is equal to or greater than 6 and the daily maximum is less than or equal to 9.	
Parameter		Monthly Geometric Mean Limit	Weekly Geometric Mean Limit	Monthly Geometric Mean Limit	Weekly Geometric Mean Limit
Fecal Coliform Bacteria	Technology	200cfu/100 ml	400cfu/100 ml	200cfu/100 ml	400cfu/100ml
Parameter		Limit		Limit	
pH	Technology				
Parameter		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Total Residual Chlorine	Technology	Not Applicable	0.5 mg/L	Not Applicable	0.5 mg/L
Total Ammonia, as N	WQ - Based	18.5 mg/L	27.7 mg/L	18.5 mg/L	27.7 mg/L

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. 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. Wastewater monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, 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 activated sludge plant greater than 5 MGD.

Ecology has included some additional monitoring of nutrients in the proposed permit to establish a baseline for this discharger. It will use this data in the future as it develops TMDLs for dissolved oxygen and establishes WLAs for nutrients.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Biosolids monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

As a pretreatment publicly owned treatment works (POTW), the City of Richland is required to sample influent, primary clarifier effluent, final effluent, and sludge for toxic pollutants in order to characterize the industrial input. Sampling is also done to determine if pollutants interfere with the treatment process or pass-through the plant to the sludge or the receiving water. The Richland will use the monitoring data to develop local limits which commercial and industrial users must meet.

The proposed permit requires Richland to monitor for Nitrite/Nitrate, Total Kjeldahl Nitrogen, Orthophosphate, and Total Phosphate to further characterize the effluent. This/These pollutant(s) could have a significant impact on the quality of the surface water.

B. Lab accreditation

Ecology requires that facilities must 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 laboratory at this facility for the parameter list below in Table 20.

Table 19 - Accredited Parameters

General Chemistry			
Parameter Name	Method	Reference	Matrix ^a
Alkalinity, Total	2320 B(4a)	SM ^b	N
Ammonia	4500-NH3 D	SM 19/20	N
Biochemical Oxygen Demand, BOD/CBOD	5210 B	SM	N
Chlorine Residual, Total	4500-Cl G	SM	N
Dissolved Oxygen	4500-O G	SM	N
Hardness, Total (as CaCO3)	2340 C	SM	N
pH	4500-H	SM	N
Solids, Total Suspended	2540 D	SM	N
Microbiology			
Parameter Name	Method	Reference	Matrix
Fecal Coliform - count	9222 D	SM	N
^a Matrix key: N = non-potable water			
^b SM = Standard Methods			

C. Effluent limits which are near detection or quantitation levels

The water quality-based effluent concentration limits for some priority pollutants are near the limits of current analytical methods to detect or accurately quantify. The method detection level (MDL) also known as detection level (DL) is the minimum concentration of a pollutant that a laboratory can measure and report with a 99 percent confidence that its concentration is greater than zero (as determined by a specific laboratory method). The quantitation level (QL) is the level at which a laboratory can reliably report concentrations with a specified level of error. Estimated concentrations are the values between the DL and the QL. Ecology requires permitted facilities to report estimated concentrations. When reporting maximum daily effluent concentrations, Ecology requires the facility to report “less than X” where X is the required detection level if the measured effluent concentration falls below the detection level.

V. Other Permit Conditions

A. Reporting and record keeping

Ecology based Special Condition S3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Prevention of facility overloading

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require Richland to:

- Take the actions detailed in proposed permit Special Condition S.4.
- Design and construct expansions or modifications before the treatment plant reaches existing capacity.
- Report and correct conditions that could result in new or increased discharges of pollutants.

Special Condition S.4 restricts the amount of flow.

If a municipality intends to apply for Ecology-administered funding for the design or construction of a facility project, the plan must meet the standard of a "Facility Plan", as defined in WAC 173-98-030. A complete "Facility Plan" includes all elements of an "Engineering Report" along with State Environmental Review Process (SERP) documentation to demonstrate compliance with 40 CFR 35.3140 and 40 CFR 35.3145, and a cost effectiveness analysis as required by WAC 173-98-730. The municipality should contact Ecology's regional office as early as practical before planning a project that may include Ecology-administered funding.

C. Operation and maintenance

The proposed permit contains Special Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, chapter 173-230 WAC, and WAC 173-240-080. Ecology included it to ensure proper operation and regular maintenance of equipment, and to ensure that Richland takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

Significant portions of the collection system are more than 60 years old, were constructed using techniques such as concrete pipes with oakum packing and/or have numerous manholes which were not installed using modern materials. The City has documented or suspects

inflow, infiltration, overflows, and failures in its collection system. Ecology also expects leaks are present in the collection system due to its age, materials used and, construction methods for its installation. The City has a Sewer Main Renovation Program in place for repairing or replacing sewer lines that are in poor condition and contribute to high infiltration. The main facets of this program are required to be detailed in the updated O&M manual.

D. Pretreatment

Duty to enforce discharge prohibitions

This provision prohibits the publicly owned treatment works (POTW) from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

- The first section of the pretreatment requirements prohibits the POTW from accepting pollutants which causes “pass-through” or “interference”. This general prohibition is from 40 CFR §403.5(a). **Appendix C** of this fact sheet defines these terms.
- The second section reinforces a number of specific state and federal pretreatment prohibitions found in WAC 173-216-060 and 40 CFR §403.5(b). These reinforce that the POTW may not accept certain wastes, which:
 - a. Are prohibited due to dangerous waste rules.
 - b. Are explosive or flammable.
 - c. Have too high or low of a pH (too corrosive, acidic or basic).
 - d. May cause a blockage such as grease, sand, rocks, or viscous materials.
 - e. Are hot enough to cause a problem.
 - f. Are of sufficient strength or volume to interfere with treatment.
 - g. Contain too much petroleum-based oils, mineral oil, or cutting fluid.
 - h. Create noxious or toxic gases at any point.

40 CFR Part 403 contains the regulatory basis for these prohibitions, with the exception of the pH provisions which are based on WAC 173-216-060.

- The third section of pretreatment conditions reflects state prohibitions on the POTW accepting certain types of discharges unless the discharge has received prior written authorization from Ecology. These discharges include:
 - a. Cooling water in significant volumes.
 - b. Stormwater and other direct inflow sources.
 - c. Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Federal and state pretreatment program requirements

In 1985, the EPA delegated authority to the City for permitting, monitoring, and enforcement over industrial users discharging to its treatment system to provide more direct and effective control of pollutants.

Ecology oversees the delegated Industrial Pretreatment Program to ensure compliance with federal pretreatment regulations (40 CFR Part 403) and categorical standards and state regulations (chapter 90.48 RCW and chapter 173-216 WAC).

According to the most recent NPDES permit application submitted to Ecology, the POTW receives discharges from nine Significant Industrial Users (SIUs) from industries discharging wastewater to Richland's POTW. Three of these nine SIUs are Categorical Industrial Users, although one of the categorical industries has a zero discharge CIU outfall.

As sufficient data becomes available, the City must, in consultation with Ecology, reevaluate its local limits in order to prevent pass-through or interference. If any pollutant causes pass-through or interference, or exceeds established sludge standards, the City must establish new local limits or revise existing local limits as required by 40 CFR 403.5. In addition, Ecology may require revision or establishment of local limits for any pollutant that causes a violation of water quality standards or established effluent limits, or that causes whole effluent toxicity.

Ecology may modify this permit to incorporate additional requirements relating to the establishment and enforcement of local limits for pollutants of concern.

The City's most recent Pretreatment Ordinance dates from November 16 2010.

E. Solid wastes

To prevent water quality problems the facility is required in permit Special Condition S7 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 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under chapter 70.95J RCW, chapter 173-308 WAC "Biosolids Management," and chapter 173-350 WAC "Solid Waste Handling Standards." The disposal of other solid waste is under the jurisdiction of the Benton-Franklin County Health Department.

Requirements for monitoring sewage sludge and record keeping are included in this permit.

Ecology will use this information, required under 40 CFR 503, to develop or update local limits.

F. Outfall evaluation

The proposed permit requires Richland to conduct an outfall inspection and submit a report detailing the findings of that inspection (Special Condition S12). The inspection must evaluate the physical condition of the discharge pipe and diffusers, and evaluate the extent of sediment accumulations in the vicinity of the outfall.

G. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual domestic wastewater NPDES 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 for surface waters, with sediment quality standards, or with water quality standards for groundwaters, based on new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed permit issuance

This proposed permit meets all statutory requirements for Ecology to authorize a wastewater discharge. 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

Environmental Protection Agency (EPA)

- 1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
- 1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.
- 1988. *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling*. USEPA Office of Water, Washington, D.C.
- 1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.
- 1983. *Water Quality Standards Handbook*. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

- 1972. *Characterization of Stream Reaeration Capacity*. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

- December 2011. *Permit Writer's Manual*. Publication Number 92-109 (<https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>)
- September 2011. *Water Quality Program Guidance Manual – Supplemental Guidance on Implementing Tier II Antidegradation*. Publication Number 11-10-073 (<https://fortress.wa.gov/ecy/publications/summarypages/1110073.html>)
- October 2010 (revised). *Water Quality Program Guidance Manual – Procedures to Implement the State's Temperature Standards through NPDES Permits*. Publication Number 06-10-100 (<https://fortress.wa.gov/ecy/publications/summarypages/0610100.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/permits/guidance.html>)

Water Pollution Control Federation.

- 1976. *Chlorination of Wastewater*.

Wright, R.M., and A.J. McDonnell.

- 1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

Appendix A--Public Involvement Information

Ecology proposes to reissue a permit to the Richland POTW. The permit includes wastewater discharge 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 February 2, 2016 in the Tri City Herald to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System 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.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period.
- Tells how to request a public hearing about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

NOTICE: ANNOUNCEMENT OF AVAILABILITY OF DRAFT PERMIT
PERMIT NO.: WA0020419
APPLICANT: CITY OF RICHLAND POTW

The City of Richland POTW has applied for renewal of National Pollutant Discharge Elimination System (NPDES) Permit No. WA0020419 in accordance with the provisions of Chapter 90.48 Revised Code of Washington (RCW), Chapter 173-220 Washington Administrative Code (WAC), and the Federal Clean Water Act.

Following evaluation of the application and other available information, a draft permit has been developed which would allow the discharge of treated domestic wastewater to a maximum of 11.4 million gallons per day (mgd) to the Columbia River at river mile 337.1 from its facility located at 555 Lacy Road, Richland, Washington. All discharges to be in compliance with the Department of Ecology's Water Quality Standards for a permit to be issued.

A tentative determination has been made to issue a proposed permit based on the effluent limitations and special permit conditions that will prevent and control pollution. A final determination will not be made until all timely comments received in response to this notice have been evaluated.

PUBLIC COMMENT AND INFORMATION

Fact Sheet for NPDES Permit No. WA00240419

XX/XX/XXXX (Insert permit effective date upon issuance of the permit)

City of Richland POTW

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The draft permit and fact sheet may be viewed at the Department of Ecology (Department) website: <http://www.ecy.wa.gov/programs/wq/permits/index.html> . The application and other related documents are available at Ecology's Central Regional Office for inspection and copying between the hours of 8:00 a.m. and 4:30 p.m., weekdays. To obtain a copy or to arrange to view copies at the Central Regional Office, please call 509/575-2490 or write to the address below.

Interested persons are invited to submit written comments regarding the proposed permit. All comments must be submitted by March 3, 2016 to be considered for the final determination. E-mail comments should be sent to cynthia.huwe@ecy.wa.gov . Comments should be sent to:

Cindy Huwe, Permit Coordinator
Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009

Any interested party may request a public hearing on the proposed permit within 30 days of the publication date of this notice. The request for a hearing shall state the interest of the party and the reasons why a hearing is necessary. The request should be sent to the above address. Ecology will hold a hearing if it determines that there is significant public interest. If a hearing is to be held, public notice will be published at least 30 days in advance of the hearing date. Any party responding to this notice with comments will be mailed a copy of a hearing public notice.

If you require special accommodations or need this document in a format for the visually impaired, call Cindy Huwe at 509-457-7105. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Publication date of this Notice is February 2, 2016.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting*, which is available on our website at <https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html>.

You may obtain further information from Ecology by telephone, 509-457-7105 or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009

The primary author of this permit and fact sheet is Richard Marcley.

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
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p>
<p>Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501</p>	<p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p>

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).

Ambient water quality -- The existing environmental condition of the water in a receiving water body.

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 -- 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.

Background water quality -- The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-

020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

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 BOD₅ 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.

Categorical pretreatment standards -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

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.

Critical condition -- The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

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.

Early warning value -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

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.

Mixing zone -- An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

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 $(1,2,\text{or } 5) \times 10^n$, 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 years, 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.

Soluble BOD₅ -- Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD₅ test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD₅ test is sufficient to remove the particulate organic fraction.

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 dissolved solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) --A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

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.

Water quality-based effluent limit -- A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

Appendix D--Technical Calculations

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found in the PermitCalc workbook on Ecology's webpage at: <http://www.ecy.wa.gov/programs/wq/permits/guidance.html>.

Visual Plumes Dilution Model Output

VISUAL PLUMES												Richland Chronic Mixing Dilution Modeling			
AQUATIC LIFE DILUTION FACTORS												Files\Plumes\Richland_DF_aquatic_life_chronic.vpp.001.db;			
/ UM3. 1/8/2009 3:13:54 PM												C:\Program Files\Plur Diffuser			
Case	l;	ambient	file	C:\Program Files\Plur Diffuser	table	record						1:00			
Ambient Table:															
Depth m	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn	Density					
	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2	sigma-T					
0	0.328	0	0.01	23.3	0.00001	0.0001	0.328	0	0.0001	-2.463					
3.962	0.314	0	0.01	23.3	0.00001	0.0001	0.314	0	0.0001	-2.463					
10.36	0.3	0	0.01	23.3	0.00001	0.0001	0.3	0	0.0001	-2.463					
Diffuser table:															
P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrcMZ	P-depth	Ttl-flw	Eft-den	Temp	Polunt			
(ft)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(ft)	(m3/s)	(kg/m3)	(C)	(kg/kg)			
1	4	5	0	4	50	33	330	30	0.284	997	25.2	0.00001			
Simulation:															
Froude number:	24.25;	effluent	density	(sigma-T)	-3.0;	effluent	velocity	0.973(m/s);							
Step	Depth	Amb-cur	P-dia	Polunt	Dilun	CL-diln	x-posn								
	(ft)	(m/s)	(ft)	(kg/kg)	()	()	(ft)								
0	30	0.303	1	1.00E-05	1	1	0.0;								
1	29.99	0.303	1.01	1.00E-05	1.02	1.02	0.0712;								
2	29.99	0.303	1.027	1.00E-05	1.04	1.04	0.134;								
3	29.98	0.303	1.044	1.00E-05	1.061	1.061	0.192;								
4	29.98	0.303	1.062	1.00E-05	1.082	1.082	0.248;								
5	29.97	0.303	1.079	1.00E-05	1.104	1.104	0.305;								
254	17.16	0.311	21.83	1.00E-05	152.8	152.7	317.7;								
255	16.99	0.311	22.05	1.00E-05	155.9	155.8	322.7;								
256	16.82	0.311	22.27	1.00E-05	159	158.9	327.9;								
257	16.65	0.311	22.49	1.00E-05	162.2	162.1	333.1;	chronic zone							
258	16.48	0.312	22.71	1.00E-05	165.4	165.3	338.4;								
286	10.88	0.316	29.94	1.00E-05	288	287.7	519.9;								
287	10.65	0.316	30.23	1.00E-05	293.8	293.4	527.6;	matched energy radial vel = 0.222m/s;							
288	10.43	0.317	30.53	1.00E-05	299.7	299.3	535.4;								
289	10.21	0.317	30.83	1.00E-05	305.6	305.2	543.3;								
Plumes not merged, Brooks method may be overly con															
ACUTE DILUTION FACTOR												C:\Program Files\Plumes\Richland_DF_aquatic_life_acute.001.db;			
/ UM3. 11/18/2008 6:04:31 PM												C:\Program Files\Plur Diffuser			
Case	l;	ambient	file	C:\Program Files\Plur Diffuser	table	record						1:00			
Ambient Table:															
Depth m	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn	Density					
	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2	sigma-T					
0	0.287	0	0.01	23.3	0.00001	0	0.287	0	0.0001	-2.463					
3.962	0.28	0	0.01	23.3	0.00001	0	0.28	0	0.0001	-2.463					
7.925	0.27	0	0.01	23.3	0.00001	0	0.27	0	0.0001	-2.463					
Diffuser table:															
P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrcMZ	P-depth	Ttl-flw	Eft-den	Temp	Polunt			
(ft)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(ft)	(m3/s)	(kg/m3)	(C)	(kg/kg)			
1	4	5	0	4	50	30	330	30	0.31	997	25.2	1.00E-05			
Simulation:															
Froude number:	26.47;	effluent	density	(sigma-T)	-3.0;	effluent	velocity	1.062(m/s);							
Step	Depth	Amb-cur	P-dia	Ports	Temp	Polunt	CL-diln	x-posn							
	(ft)	(m/s)	(ft)	()	(C)	(kg/kg)	()	(ft)							
0	30	0.27	1	4	25.2	1.00E-05	1	0							
1	29.99	0.27	1.01	4	25.16	1.00E-05	1.02	0.0657							
2	29.99	0.27	1.028	4	25.13	1.00E-05	1.04	0.126							
3	29.98	0.27	1.045	4	25.09	1.00E-05	1.061	0.181							
4	29.98	0.27	1.064	4	25.06	1.00E-05	1.082	0.235							
5	29.97	0.27	1.082	4	25.02	1.00E-05	1.104	0.291							
125	28.31	0.27	6.109	4	23.46	1.00E-05	11.88	29.24							
126	28.28	0.27	6.182	4	23.46	1.00E-05	12.12	29.9							
127	28.24	0.27	6.256	4	23.45	1.00E-05	12.36	30.56	acute zone						
128	28.21	0.27	6.33	4	23.45	1.00E-05	12.61	31.24							
129	28.17	0.27	6.405	4	23.45	1.00E-05	12.86	31.93							

Visual Plumes Dilution Model Output

VISUAL PLUMES		Richland Chronic Mixing Dilution Modeling								
HUMAN HEALTH-CARCINOGEN DILUTION FACTOR										
/	UM3.	1/13/2009	3:07:58 PM	C:\Program Files\Plumes\Richland DF HH carcinogen.001.db;						
Case	I;	ambient	file	Diffuser	table	record	1:00 -----			

Ambient Table:

Depth	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn	Density
m	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2	sigma-T
0	0.514	0	0.01	23.3	0.00001	0.0001	0.514	0	0.0001	-2.463
6.096	0.457	0	0.01	23.3	0.00001	0.0001	0.457	0	0.0001	-2.463
12.28	0.4	0	0.01	23.3	0.00001	0.0001	0.4	0	0.0001	-2.463

Diffuser table:

P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrcMZ	P-depth	Ttl-flo	Eff-den	Temp	Polutnt
(ft)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(ft)	(m3/s)	(kg/m3)	(C)	(kg/kg)
1	4	5	0	4	50	36	336	36	0.39	997	25.2	1.00E-05

Simulation:

Froude	number:	33.3;	effluent	density	(sigma-T)	-3.0;	effluent	velocity	1.336(m/s);
Step	Depth	Amb-cur	P-dia	Polutnt	Dilutn	CL-diln	x-posn		
	(ft)	(m/s)	(ft)	(kg/kg)	()	()	(ft)		
0	36	0.412	1	1.00E-05	1	1	0.0;		
1	35.99	0.412	1.01	1.00E-05	1.02	1.02	0.0709;		
2	35.99	0.412	1.027	1.00E-05	1.04	1.04	0.134;		
3	35.98	0.412	1.044	1.00E-05	1.061	1.061	0.191;		
4	35.98	0.412	1.062	1.00E-05	1.082	1.082	0.247;		
5	35.97	0.412	1.08	1.00E-05	1.104	1.104	0.304;		
239	25.91	0.44	18.66	1.00E-05	113.6	113.5	332.2;		
240	25.78	0.44	18.85	1.00E-05	115.8	115.8	337.6;	chronic zone;	
241	25.64	0.441	19.03	1.00E-05	118.1	118.1	343.2;		
242	25.5	0.441	19.22	1.00E-05	120.5	120.4	348.8;		
313	13.49	0.475	38.03	1.00E-05	491.6	490.8	962.8;		
314	13.29	0.476	38.39	1.00E-05	501.4	500.6	975.7;	matched energy radial vel = 0.329m/s;	
341	7.665	0.492	49.51	1.00E-05	855.9	854	1387.8;		
342	7.447	0.492	49.98	1.00E-05	873	871	1405.7;		
343	7.229	0.493	50.45	1.00E-05	890.5	888.5	1423.8;	merging;	
344	6.995	0.493	50.95	1.00E-05	908.3	906.2	1443.4;		

HUMAN HEALTH- NON-CARCINOGEN DILUTION FACTOR										
/	UM3.	1/8/2009	4:22:20 PM	C:\Program Files\Plumes\Richland DF HH NONcarcinogen.001.db;						
Case	I;	ambient	file	Diffuser	table	record	1:00 -----			

Ambient Table:

Depth	Amb-cur	Amb-dir	Amb-sal	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn	Density
m	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2	sigma-T
0	0.37	0	0.01	23.3	0.00001	0.0001	0.37	0	0.0001	-2.463
3.962	0.335	0	0.01	23.3	0.00001	0.0001	0.335	0	0.0001	-2.463
10.67	0.3	0	0.01	23.3	0.00001	0.0001	0.3	0	0.0001	-2.463

Diffuser table:

P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrcMZ	P-depth	Ttl-flo	Eff-den	Temp	Polutnt
(ft)	(ft)	(deg)	(deg)	()	(ft)	(ft)	(ft)	(ft)	(m3/s)	(kg/m3)	(C)	(kg/kg)
1	4	5	0	4	50	35	335	31	0.39	997	25.2	1.00E-05

Simulation:

Froude	number:	33.3;	effluent	density	(sigma-T)	-3.0;	effluent	velocity	1.336(m/s);
Step	Depth	Amb-cur	P-dia	Polutnt	Dilutn	CL-diln	x-posn		
	(ft)	(m/s)	(ft)	(kg/kg)	()	()	(ft)		
0	31	0.306	1	1.00E-05	1	1	0.0;		
1	30.99	0.306	1.01	1.00E-05	1.02	1.02	0.0635;		
2	30.99	0.306	1.028	1.00E-05	1.04	1.04	0.122;		
3	30.98	0.306	1.046	1.00E-05	1.061	1.061	0.176;		
4	30.98	0.306	1.064	1.00E-05	1.082	1.082	0.231;		
5	30.98	0.306	1.083	1.00E-05	1.104	1.104	0.286;		
250	17.78	0.327	24.08	1.00E-05	141.2	141.1	327.2;		
251	17.6	0.327	24.32	1.00E-05	144	143.9	332.5;		
252	17.41	0.328	24.56	1.00E-05	146.9	146.8	337.9;	chronic zone	
253	17.22	0.328	24.8	1.00E-05	149.8	149.7	343.4;		

Calculation of pH of a Mixture of Two Flows

Based on the procedure in EPA's DESCONE program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

OUTPUT

INPUT	Max pH	Min pH
	@ Acute Boundary	@ Chronic Boundary
1. Dilution Factor at Mixing Zone Boundary	12.4	162.0
2. Ambient/Upstream/Background Conditions		
Temperature (deg C):	21.90	21.90
pH:	8.30	7.30
Alkalinity (mg CaCO3/L):	25.00	25.00
3. Effluent Characteristics		
Temperature (deg C):	26.60	26.60
pH:	7.60	6.90
Alkalinity (mg CaCO3/L):	190.00	190.00
OUTPUT		
1. Ionization Constants		
Upstream/Background pKa:	6.37	6.37
Effluent pKa:	6.34	6.34
2. Ionization Fractions		
Upstream/Background Ionization Fraction:	0.99	0.90
Effluent Ionization Fraction:	0.95	0.78
3. Total Inorganic Carbon		
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	25	28
Effluent Total Inorganic Carbon (mg CaCO3/L):	200	242
4. Conditions at Mixing Zone Boundary		
Temperature (deg C):	22.28	21.93
Alkalinity (mg CaCO3/L):	38.31	26.02
Total Inorganic Carbon (mg CaCO3/L):	39.42	29.26
pKa:	6.37	6.37
RESULTS		
pH at Mixing Zone Boundary:	7.90	7.27

Freshwater Temperature Reasonable Potential and Limit Calculation

Based on WAC 173-201A-200(1)(c)(i)-(ii) and the Water Quality Program Guidance. All data inputs must meet WQ guidelines. The Water Quality temperature guidance document may be found at:
<https://fortress.wa.gov/ecy/publications/summarypages/0610100.html>

Highest 7 DADMax effluent and ambient 2014: 26.6 C eff and 21.9C ambient	Core Summer Criteria	Supplemental Criteria
INPUT	July 1-Sept 14	Sept 15-July 1
1. Chronic Dilution Factor at Mixing Zone Boundary	162.0	162.0
2. 7DADMax Ambient Temperature (T) (Upstream Background 90th percentile)	21.9 °C	
3. 7DADMax Effluent Temperature (95th percentile)	26.6 °C	
4. Aquatic Life Temperature WQ Criterion in Fresh Water	20.0 °C	
OUTPUT		
5. Temperature at Chronic Mixing Zone Boundary:	21.9 °C	0.0 °C
6. Incremental Temperature Increase or decrease:	0.0 °C	0.0 °C
7. Maximum Allowable Incremental Temperature Increase:	0.3 °C	0.3 °C
8. Maximum Allowable Temperature at Mixing Zone Boundary:	22.2 °C	0.3 °C
A. If ambient temp is warmer than WQ criterion		
9. Does temp fall within this warmer temp range?	YES	YES
10. Temperature Limit if Required:	NO LIMIT	NO LIMIT
B. If ambient temp is cooler than WQ criterion but within 28/(T_{amb}+7) and within 0.3 °C of the criterion		
11. Does temp fall within this incremental temp. range?	---	---
12. Temp increase allowed at mixing zone boundary, if required:	---	---
C. If ambient temp is cooler than (WQ criterion-0.3) but within 28/(T_{amb}+7) of the criterion		
13. Does temp fall within this Incremental temp. range?	---	---
14. Temp increase allowed at mixing zone boundary, if required:	---	---
D. If ambient temp is cooler than (WQ criterion - 28/(T_{amb}+7))		
15. Does temp fall within this Incremental temp. range?	---	---
16. Temp increase allowed at mixing zone boundary, if required:	---	---
RESULTS		
17. Do any of the above cells show a temp increase?	NO	NO
18. Temperature Limit if Required?	NO LIMIT	NO LIMIT

Fact Sheet for NPDES Permit No. WA00240419

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City of Richland POTW

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Recent effluent data in the 2010-2015 data set is higher than the values with which Reasonable Potential was calculated in the 2009 factsheet. Therefore, a new calculation set was conducted.

Reasonable Potential Calculation

Facility	Richland POTW
Water Body Type	Freshwater
Rec. Water Hardness	25

Dilution Factors:	Acute	Chronic
Aquatic Life	12.4	162.0
Human Health Carcinogenic		116.0
Human Health Non-Carcinogenic		147.0

Pollutant, CAS No. & NPDES Application Ref. No.		AMMONIA, Criteria as Total NH3	MERCURY 7439976 8M	COPPER - 744058 6M Hardness dependent
		60	14	14
Effluent Data	# of Samples (n)	60	14	14
	Coeff of Variation (Cv)	0.6	0.6	0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)	15,300	0.016	18,470
	Calculated 50th percentile Effluent Conc. (when n>10)		0.1	16,350
Receiving Water Data	90th Percentile Conc., ug/L	0.0007	0.0007	0.7528
	Geo Mean, ug/L		0.0006	0.75
Water Quality Criteria	Aquatic Life Criteria, Acute ug/L	17,506	2.1	
	Chronic	1,285	0.012	13000
	WQ Criteria for Protection of Human Health, ug/L	-	0.14	1300
	Metal Criteria Acute	-	0.85	0.995
	Translator, decimal Chronic	-	-	0.995
	Carcinogen?	N	N	N
Aquatic Life Reasonable Potential				
Effluent percentile value		0.950	0.950	0.950
s	$s^2 = \ln(CV^2 + 1)$	0.555	0.555	0.555
Pn	$Pn = (1 - \text{confidence level})^{1/m}$	0.951	0.807	0.807
Multiplier		1.00	1.54	1.54
Max concentration (ug/L) at edge of...	Acute	1,234	0.002	2282.790
	Chronic	94	0.001	175.427
Reasonable Potential? Limit Required?		NO	NO	NO

Fact Sheet for NPDES Permit No. WA00240419

XX/XX/XXXX (Insert permit effective date upon issuance of the permit)

City of Richland POTW

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The 2009 factsheet values or limits are higher than the 2015 data set. Therefore no new analysis was conducted. Except for ammonia which is depicted although a new analysis was conducted above.

AQUATIC LIFE REASONABLE POTENTIAL DETERMINATION

<p>This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)</p>									CALCULATIONS								
Parameter	Metal Criteria		Ambient Concentration	State Water Quality Standard				LIMIT REQ'D?	Effluent percentile value	Pn	Max effluent conc. measured (metals as total recoverable) ug/L	Coeff Variation CV	# of samples n	Multiplier s	Acute Difr Factor	Chronic Difr Factor	
	Translator as decimal Acute	Translator as decimal Chronic	(metals as dissolved) (90th %tile) ug/L	Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L										
AMMONIA (total)			100.0	3539.0	466.0	683.5	144.7	NO	0.95	0.986	10,000	0.60	0.55	216	0.73	12.4	162.
AMMONIA (total) [Limit calculation]			100.0	3539.0	466.0	1748.4	226.2	NO	0.95	0.986	28,000	0.60	0.55	216	0.73	12.4	162.
ARSENIC			0.75	360.0	190.0	1.7	0.8	NO	0.95	0.779	7.40	0.60	0.55	12	1.63	12.4	162.
CADMIUM	0.96	0.93	0.023	2.2	0.7	0.0	0.0	NO	0.95	0.779	0.15	0.60	0.55	12	1.63	12.4	162.
CHROMIUM (TRI)			0.1850	375.9	121.9	2.0	0.3	NO	0.95	0.779	14.00	0.60	0.55	12	1.63	12.4	162.
COPPER	0.996	0.996	0.7528	11.0	7.6	2.6	0.9	NO	0.95	0.779	14.60	0.60	0.55	12	1.63	12.4	162.
CYANIDE				22.0	5.2	3.9	0.3	NO	0.95	0.779	30.00	0.60	0.55	12	1.63	12.4	162.
LEAD	0.86	0.86	0.0913	38.9	1.5	0.2	0.1	NO	0.95	0.779	0.75	0.60	0.55	12	1.63	12.4	162.
MERCURY (total recoverable)	0.85		0.0007	2.1	0.0	0.0	0.0	NO	0.95	0.794	0.23	0.60	0.55	13	1.58	12.4	162.
NICKEL	0.998	0.997	0.793	957.5	106.3	1.9	0.9	NO	0.95	0.779	8.90	0.60	0.55	12	1.63	12.4	162.
SELENIUM			0.50	20.0	5.0	0.9	0.5	NO	0.95	0.779	3.30	0.60	0.55	12	1.63	12.4	162.
SILVER	0.85	0.85	0.01	1.6	1.0	0.3	0.0	NO	0.95	0.779	2.80	0.60	0.55	12	1.63	12.4	162.
ZINC	0.996	0.996	1.73	77.0	71.0	12.3	2.5	NO	0.95	0.779	82.0	0.60	0.55	12	1.63	12.4	162.

Footnote: There is no federal or state Chronic aquatic life criteria. 1.0 was inserted into the cell to allow the formula to work properly.

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HUMAN HEALTH REASONABLE POTENTIAL DETERMINATION

Parameter	Ambient Concentration (Geometric Mean) ug/L	Water Quality Criteria for Protection of Human Health ug/L	Max concentration at edge of chronic mixing zone. ug/L	LIMIT REQ'D?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT ug/L	MAXIMUM DAILY EFFLUENT LIMIT ug/L	Estimated Percentile at 95% Confidence	Pn	Max effluent conc. measured ug/L	Coeff Variation CV	S	# of samples from which # in col. K was taken n	Multiplier	Calculated 50th percentile Effluent Conc. (When n>10)	Dilution Factor	CAR(111)or NonCar(125)??
CHLOROFORM		5.70	0.034	NO	1	NONE	NONE	0.50	0.72	5.42	0.60	0.6	9	0.73	115.8		Y
1,1-DICHLOROETHYLENE		0.27	0.007	NO	1	NONE	NONE	0.50	0.72	1.08	0.60	0.6	9	0.73	115.8		Y
1,2-DICHLOROETHANE		1.80	0.007	NO	1	NONE	NONE	0.50	0.72	1.08	0.60	0.6	9	0.73	115.8		Y
1,2,4-TRICHLOROETHYLENE		0.0028	0.001	NO	1	NONE	NONE	0.50	0.72	0.11	0.60	0.6	9	0.73	115.8		Y
1,2,4-TRICHLOROETHYLENE		0.0028	0.0004	NO	1	NONE	NONE	0.50	0.72	0.06	0.60	0.6	9	0.73	115.8		Y
1,1,1-TRICHLOROETHANE	0.18	14.00	0.187	NO	1	NONE	NONE	0.50	0.74	1.80	0.60	0.6	10	0.70	146.8		N
CYANIDE		700.00	0.051	NO	1	NONE	NONE	0.50	0.78	30.00	0.60	0.6	12	0.65	7.5	146.8	N
MERCURY	0.00058	0.14	0.001	NO	1	NONE	NONE	0.50	0.79	0.23	0.60	0.6	13	0.63	0.1	146.8	N
NICKEL	0.72	610.00	0.743	NO	1	NONE	NONE	0.50	0.78	8.90	0.60	0.6	12	0.65	4.1	146.8	N
PHENOLS		21000.00	0.170	NO	1	NONE	NONE	0.50	0.78	496	0.60	0.6	12	0.65	25.0	146.8	N
SELENIUM	0.23	170.00	0.235	NO	1	NONE	NONE	0.50	0.78	3	0.60	0.6	12	0.65	1.0	146.8	N
THALLIUM	0.01	1.70	0.013	NO	1	NONE	NONE	0.50	0.78	0.225	0.60	0.6	12	0.65	0.2	146.8	N
PYRENE		960.00	0.005	NO	1	NONE	NONE	0.50	0.72	1.08	0.60	0.6	9	0.73	146.8		N
FLUORANTHENE		300.00	0.005	NO	1	NONE	NONE	0.50	0.72	1.08	0.60	0.6	9	0.73	146.8		N

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Appendix E--Response to Comments

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

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Permit No. WA0020419
Effective XX/XX/XXXX

Issuance Date: _?_
Effective Date: _?_
Expiration Date: _?_

**National Pollutant Discharge Elimination System
Waste Discharge Permit No. WA0020419**

State of Washington
DEPARTMENT OF ECOLOGY
Central Regional Office
1250 West Alder Street
Union Gap, WA 98903-0009

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.

**RICHLAND PUBLICLY-OWNED TREATMENT WORKS
PO BOX 190
RICHLAND, WA 99352**

is authorized to discharge in accordance with the Special and General Conditions that follow.

Plant Location:
555 Lacy Road, Richland, WA 99352

Receiving Water: Columbia River Mile 337.1

Treatment Type: Primary clarification, aeration basins (utilizing an activated sludge process), secondary clarification, and chlorination.

Charles McKinney
Section Manager
Water Quality Program
Central Regional Office
Washington State Department of Ecology

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Summary of Permit Report Submittals

Refer to the Special and General Conditions of this permit for additional submittal requirements. The following table is for quick reference only. Enforceable submittal requirements are contained in the permit narrative.

Permit Section	Submittal	Frequency	First Submittal Date
S3.A	Monthly Discharge Monitoring Report (DMR)	Monthly	<u>Enter a specific date</u>
S3.A.	Quarterly DMR	Quarterly	
S3.A	Annual DMR - Priority Pollutant Data - Single Sample Data	Annually	January 15, 2017
S3.F	Reporting Permit Violations	As necessary	
S4.B	Plans for Maintaining Adequate Capacity	As necessary	
S4.D	Notification of New or Altered Sources	As necessary	
S4.E	Infiltration and Inflow Evaluation	1/Permit cycle	September 15, 2018
S4.F	Wasteload Assessment	1/Permit cycle	September 15, 2018
S5.F	Bypass Notification	As necessary	
S5.G	Operations and Maintenance Manual Update	As necessary	July 15, 2019
S6.A.3	Update Accidental Spill Prevention Plan	1/Permit cycle	July 15, 2017
S6.A.6	Pretreatment Report, PP Scan sludge, influent and effluent	1/year	April 15, 2016
S8	Application for Permit Renewal	1/permit cycle	One year prior to permit expiration
S9	Outfall Evaluation	1/permit cycle	October 15, 2018
S10	Acute Toxicity Effluent Test Results	Once	July 31, 2017
S11	Chronic Toxicity Effluent Test Results	Once	July 31, 2017
G1	Notice of Change in Authorization	As necessary	
G4	Reporting Planned Changes	As necessary	
G5	Engineering Report for Construction or Modification Activities	As necessary	
G7	Notice of Permit Transfer	As necessary	
G10	Duty to Provide Information	As necessary	
G20	Compliance Schedules	As necessary	
G21	Contract Submittal	As necessary	

Special Conditions

S1. Discharge limits

S1.A. Effluent limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit violates the terms and conditions of this permit.

Beginning on **the effective date of this permit**, the Permittee may discharge treated domestic wastewater to the Columbia River at the permitted location subject to compliance with the following limits:

Effluent Limits: Outfall 001 Latitude 46.269167 N Longitude -119.263333 W		
Parameter	Average Monthly ^a	Average Weekly ^b
Biochemical Oxygen Demand (5-day) (BOD ₅)	30.0 milligrams/liter (mg/L) 2,588 pounds/day (lbs/day) 85% removal of influent BOD ₅	45 mg/L 3,882 lbs/day
Total Suspended Solids (TSS)	30 mg/L 2,852 lbs/day 85% removal of influent TSS	45 mg/L 4,278 lbs/day
Total Residual Chlorine	not applicable (na)	0.50 mg/L
Total Ammonia (as N)	18.5 mg/L	27.7 mg/L
Parameter	Minimum	Maximum
pH	6.0 standard units	9.0 standard units
Parameter	Monthly Geometric Mean	Weekly Geometric Mean
Fecal Coliform Bacteria ^c Colony forming units (CFUs)	200 CFUs/100 milliliter (mL)	400 CFUs/100 mL
a	Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured. See footnote c for fecal coliform calculations.	
b	Average weekly discharge limit means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges' measured during that week. See footnote c for fecal coliform calculations. Report weekly averages in the appropriate DMR.	
c	Ecology provides directions to calculate the monthly and the weekly geometric mean in publication No. 04-10-020, Information Manual for Treatment Plant Operators available at: http://www.ecy.wa.gov/pubs/0410020.pdf	

S1.B. Mixing zone authorization

Mixing zone for Outfall 001

The paragraph below defines the maximum boundaries of the mixing zones.

Chronic mixing zone

The width of the chronic mixing zone is limited to a distance of 150 feet. The length of the chronic mixing zone extends 100 feet upstream and 334 feet downstream of the outfall. The mixing zone extends from the bottom to the top of the water column. The concentration of pollutants at the edge of the chronic zone must meet chronic aquatic life criteria and human health criteria.

Acute mixing zone

The width of the acute mixing zone is limited to a distance of 15 feet in any horizontal direction from the outfall. The length of the acute mixing zone extends 10 feet upstream and 34 feet downstream of the outfall. The mixing zone extends from the bottom to the top of the water column. The concentration of pollutants at the edge of the acute zone must meet acute aquatic life criteria.

Available Dilution (dilution factor)	
Acute Aquatic Life Criteria	12.4
Chronic Aquatic Life Criteria	162
Human Health Criteria - Carcinogen	116
Human Health Criteria - Non-carcinogen	147

S2. Monitoring requirements

S2.A. Monitoring schedule

The Permittee must monitor in accordance with the following schedule and the requirements specified in Appendix A.

Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
(1) Wastewater influent			
Wastewater Influent means the raw sewage flow from the collection system into the treatment facility. Sample the wastewater entering the headworks of the treatment plant excluding any side-stream returns from inside the plant.			
Biochemical Oxygen Demand (BOD ₅)	mg/L	3/week ^a	24-hour composite ^b
Biochemical Oxygen Demand (BOD ₅)	lbs/day	3/week	Calculation ^c
Total Suspended Solids (TSS)	mg/L	3/week	24-hour composite
Total Suspended Solids (TSS)	lbs/day	3/week	Calculation
Total Ammonia	mg/L	1/week	Grab ^d
Total Ammonia	lbs/day	1/week	Calculation
(2) Final wastewater effluent			
Final Wastewater Effluent means wastewater exiting the last treatment process or operation. Typically, this is after or at the exit from the chlorine contact chamber or other disinfection process. The Permittee may take effluent samples for the BOD ₅ analysis before or after the disinfection process. If taken after, the Permittee must dechlorinate and reseed the sample.			
Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
Flow	MGD	Continuous ^e	Metered
BOD ₅	mg/L	3/week	24-hour composite
BOD ₅	lbs/day	3/week	Calculation
BOD ₅	% removal	3/week	Calculation ^f
TSS	mg/L	3/week	Calculation
TSS	lbs/day	3/week	24-hour composite
TSS	% removal	3/week	Calculation
Total Residual Chlorine ^g	mg/L	3/week	Grab
Total Residual Chlorine	lbs/day	3/week	calculation
Fecal Coliform ^h	Colony Forming Units # /100 ml Membrane filtration SM 9222 D	3/week	Grab

Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
pH ⁱ	Standard Units	3/week	Grab
Temperature ^j	Degrees centigrade (°C)	Continuous	Measurement
Total Ammonia	mg/L	2/week	Grab
Total Ammonia	lbs/day	2/week	Calculation
(3) Whole effluent toxicity testing – final wastewater effluent^k			
As specified in Special Conditions S10 and S11			
(4) Pretreatment Wastewater Influent, Effluent, and Sludge (See appendix A for detection and quantification levels)			
As specified in Special Condition S6.			
Influent, Effluent, Sludge Priority Pollutants (PP) – metals	µg/L	Quarterly	See Permit Condition S6.B.
Influent, Effluent, Sludge PP – Volatile Organic Compounds	µg/L	Once per year	See Permit Condition S6.B.
(5) Permit renewal application requirements – final wastewater effluent			
The Permittee must record and report the wastewater treatment plant flow discharged on the day it collects the sample for priority pollutant testing with the discharge monitoring report.			
Dissolved Oxygen	mg/L	Monthly ^l	Grab
Total Kjeldahl Nitrogen	mg/L as N	Monthly	Grab
Nitrate plus Nitrite	mg/L as N	Monthly	Grab
Phosphorus (Total)	mg/L as P	Monthly	Grab
Total Hardness	mg/L	Monthly	Grab
Alkalinity	mg/L	Monthly	Grab
Oil and Grease	mg/L	Once per year ^m	Grab
Total Dissolved Solids	mg/L	Once per year	Grab
Cyanide	micrograms/liter (µg/L)	Once per year	Grab
Total Phenolic Compounds	µg/L	Once per year	Grab
Priority Pollutants (PP) – Total Metals	µg/L; nanograms(ng/L) for mercury	Once per year	24-Hour composite Grab for mercury
PP – Volatile Organic Compounds	µg/L	Once per year	Grab
PP – Acid-extractable Compounds	µg/L	Once per year	24-Hour composite
PP – Base-neutral Compounds	µg/L	Once per year	24-Hour composite
a	X#/week (1, 2, or 3/week) means (X#) times during each calendar week and on a rotational basis throughout the days of the week, except weekends and holidays.		

Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
b	24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.		
c	Calculation means figured concurrently with the respective sample, using the following formula: Concentration (in mg/L) X Flow (in MGD) X Conversion Factor (8.34) = lbs/day		
d	Grab means an individual sample collected over a fifteen (15) minute, or less, period.		
e	Continuous means uninterrupted except for brief lengths of time for calibration, power failure, or unanticipated equipment repair or maintenance. The time interval for the associated data logger must be no greater than 30 minutes. The Permittee must sample daily when continuous monitoring is not possible.		
f	$\% \text{ removal} = \frac{\text{Influent concentration (mg/L)} - \text{Effluent concentration (mg/L)}}{\text{Influent concentration (mg/L)}} \times 100$ <p>Calculate the percent (%) removal of BOD₅ and TSS using the above equation.</p>		
g	Sample chlorine at the outfall location.		
h	Report a numerical value for fecal coliforms following the procedures in Ecology's <i>Information Manual for Wastewater Treatment Plant Operators</i> , Publication Number 04-10-020 available at: http://www.ecy.wa.gov/programs/wq/permits/guidance.html . Do not report a result as too numerous to count (TNTC).		
i	Report the daily pH and the minimum and maximum for the monitoring period.		
j	Continuous temperature monitoring: the Permittee must determine and report a <u>daily maximum</u> from half-hour measurements in a 24-hour period. Continuous monitoring instruments must achieve an accuracy of 0.2 degrees C and the Permittee must verify accuracy annually. When continuous temperature probe is not operating due to non-routine maintenance, temperature grab sampling must occur when the effluent is at or near its daily maximum temperature which is usually in the late afternoon.		
k	Final Effluent means wastewater which is exiting, or has exited. Typically, this is after or at the exit from the chlorine contact chamber or other disinfection process.		
l	Monthly means once every calendar month during alternating weeks.		
m	Once per year means once per annum rotating quarterly through the permit term. Quarterly sampling periods are January through March, April through June, July through September, and October through December.		

S2.B. Sampling and analytical procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters. The Permittee must conduct representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions that may affect effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136 (or as applicable in 40 CFR subchapters N [Parts 400–471] or O [Parts 501-503]) unless otherwise specified in this permit . Ecology may only specify

alternative methods for parameters without permit limits and for those parameters without an EPA approved test method in 40 CFR Part 136.

S2.C. Flow measurement and continuous monitoring devices

The Permittee must:

1. Select and use appropriate flow measurement, and continuous monitoring devices and methods consistent with accepted scientific practices.
2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard, the manufacturer's recommendation, and approved O&M manual procedures for the device and the wastestream.
3. Calibrate continuous monitoring instruments weekly unless it can demonstrate a longer period is sufficient based on monitoring records. The Permittee:
 - a. May calibrate apparatus for continuous monitoring of dissolved oxygen by air calibration.
 - b. Must calibrate continuous pH measurement instruments using a grab sample analyzed in the lab with a pH meter calibrated with standard buffers and analyzed within 15 minutes of sampling.
 - c. Must calibrate continuous chlorine measurement instruments using a grab sample analyzed in the laboratory within 15 minutes of sampling.
4. Calibrate micro-recording temperature devices, known as thermistors, using protocols from Ecology's Quality Assurance Project Plan Development Tool (*Standard Operating Procedures for Continuous Temperature Monitoring of Fresh Water Rivers and Streams Version 1.0 10/26/2011*). This document is available online at:
http://www.ecy.wa.gov/programs/eap/qa/docs/ECY_EAP_SOP_Cont_Temp_Mon_Ambient_v1_0EAP080.pdf

Calibration as specified in this document is not required if the Permittee uses recording devices certified by the manufacturer.
5. Use field measurement devices as directed by the manufacturer and do not use reagents beyond their expiration dates.
6. Calibrate flow-monitoring devices at a minimum frequency of at least one calibration per year.
7. Maintain calibration records for at least three years.

S2.D. Laboratory accreditation

The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*.

Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement. The Permittee must obtain accreditation for conductivity and pH if it must receive accreditation or registration for other parameters.

S2.E. Request for reduction in monitoring

The Permittee may request a reduction of the sampling frequency after twelve (12) months of monitoring. Ecology will review each request and at its discretion grant the request when it reissues the permit or by a permit modification.

The Permittee must:

1. Provide a written request.
2. Clearly state the parameters for which it is requesting reduced monitoring.
3. Clearly state the justification for the reduction.

S3. Reporting and recording requirements

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

S3.A. Discharge monitoring reports

The first monitoring period begins **on the effective date of the permit** (unless otherwise specified). The Permittee must:

1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic discharge monitoring report (DMR) form provided by Ecology within the Water Quality Permitting Portal. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form. Report a value for each day sampling occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.

To find out more information and to sign up for the Water Quality Permitting Portal go to: <http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html>

2. Enter the “No Discharge” reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant during a given monitoring period.
3. Report single analytical values below detection as “less than the detection level (DL)” by entering < followed by the numeric value of the detection level (e.g. < 2.0) on the DMR. If the method used did not meet the minimum DL and quantitation level (QL) identified in the permit, report the actual QL and DL in the comments or in the location provided.
4. **Not** report zero for bacteria monitoring. Report as required by the laboratory method.
5. Calculate and report an arithmetic average value for each day for bacteria if multiple samples were taken in one day.
6. Calculate the geometric mean values for bacteria (unless otherwise specified in the permit) using:
 - a. The reported numeric value for all bacteria samples measured above the detection value except when it took multiple samples in one day. If the Permittee takes multiple samples in one day it must use the arithmetic average for the day in the geometric mean calculation.
 - b. The detection value for those samples measured below detection.
7. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in the permit and as allowed in Appendix A.
8. Calculate average values and calculated total values (unless otherwise specified in the permit) using:
 - a. The reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.
 - b. One-half the detection value (for values reported below detection) if the lab detected the parameter in another sample from the same monitoring point for the reporting period.

- c. Zero (for values reported below detection) if the lab did not detect the parameter in another sample for the reporting period.
9. Report single-sample grouped parameters (for example: priority pollutants, PAHs, pulp and paper chlorophenolics, TTOs) on the WQWebDMR “single sample” form and include: sample date, concentration detected, detection limit (DL) (as necessary), and laboratory quantitation level (QL) (as necessary).

The Permittee must also submit an electronic copy of the laboratory report as an attachment using WQWebDMR. The contract laboratory reports must also include information on the chain of custody, QA/QC results, and documentation of accreditation for the parameter.

10. Ensure that DMRs are electronically submitted no later than the dates specified below, unless otherwise specified in this permit.
11. Submit DMRs for parameters with the monitoring frequencies specified in S2 (monthly, quarterly, annual, etc.) at the reporting schedule identified below.

The Permittee must:

- a. Submit **monthly** DMRs by the 15th day of the following month.
- b. Submit **quarterly DMRs**, unless otherwise specified in the permit, by the 15th day of the month following the monitoring period. Quarterly sampling periods are January through March, April through June, July through September, and October through December. The Permittee must submit the first quarterly **DMR on DATE for the quarter beginning on 1/1/20XX 4/1/20XX 7/1/20XX 10/1/20XX**.
- c. Submit **annual DMRs**, unless otherwise specified in the permit, by January 15 for the previous calendar year. The annual sampling period is the calendar year.
- d. Submit permit renewal application monitoring data in WQWebDMR as required in Special Condition S2 by **X/X/20XX**.

S3.B. Permit Submittals and Schedules

The Permittee must use the Water Quality Permitting Portal – Permit Submittals application (unless otherwise specified in the permit) to submit all other written permit-required reports by the date specified in the permit.

When another permit condition requires submittal of a paper (hard-copy) report, the Permittee must ensure that it is postmarked or received by Ecology no later

than the dates specified by this permit. Send these paper reports to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
1250 W. Alder St.
Union Gap, WA 98903

S3.C. Records retention

The Permittee must retain records of all monitoring information for a minimum of three (3) years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

S3.D. Recording of results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.
2. The individual who performed the sampling or measurement.
3. The dates the analyses were performed.
4. The individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

S3.E. Additional monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR unless otherwise specified by Special Condition S2.

S3.F. Reporting permit violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

1. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.
2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.

a. Immediate reporting

The Permittee must immediately report to Ecology, the Department of Health, Drinking Water Program, Benton/Franklin County Health Department (at the numbers listed below), all:

- Failures of the disinfection system.
- Collection system overflows discharging to a water body that may be used for drinking water.
- Plant bypasses discharging to a water body used as a source of drinking water.
- Any other failures of the sewage system (pipe breaks, etc.)

Central Regional Office	509-575-2490
Department of Health,	800-521-0323 (business hours)
Drinking Water Program	877-481-4901 (after business hours)
Benton/Franklin County	509 543-3851

b. Twenty-four-hour reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at 509-575-2490, within 24 hours from the time the Permittee becomes aware of any of the following circumstances:

1. Any noncompliance that may endanger health or the environment, unless previously reported under immediate reporting requirements.
2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (See Part S5.F, "Bypass Procedures").
3. Any upset that causes an exceedance of an effluent limit in the permit (See G.15, "Upset").
4. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit.
5. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit.

c. Report within five days

The Permittee must also submit a written report within five days of the time that the Permittee becomes aware of any reportable event under subparts a or b, above. The report must contain:

1. A description of the noncompliance and its cause.
2. The period of noncompliance, including exact dates and times.
3. The estimated time the Permittee expects the noncompliance to continue if not yet corrected.
4. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
5. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

d. Waiver of written reports

Ecology may waive the written report required in subpart c, above, on a case-by-case basis upon request if the Permittee has submitted a timely oral report.

e. All other permit violation reporting

The Permittee must report all permit violations, which do not require immediate or within 24 hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in subpart c, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

S3.G. Other reporting

a. Spills of Oil or Hazardous Materials

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website:
<http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm> .

b. Failure to submit relevant or correct facts

Where the Permittee becomes aware that it failed to submit any relevant facts

in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

S3.H. Maintaining a copy of this permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. Facility loading

S4.A. Design criteria

The flows or waste loads for the permitted facility must not exceed the following design criteria:

Maximum Month Design Flow (MMDF)	11.4 MGD
BOD ₅ Influent Loading for Maximum Month	17,250 lb/day
TSS Influent Loading for Maximum Month	21,200 lb/day
Ammonia influent loading	2,750 lbs/day

S4.B. Plans for maintaining adequate capacity

a. Conditions triggering plan submittal

The Permittee must submit a plan and a schedule for continuing to maintain capacity to Ecology when:

1. The actual flow or waste load reaches 85 percent of any one of the design criteria in S4.A for three consecutive months.
2. The projected plant flow or loading would reach design capacity within five years.

b. Plan and schedule content

The plan and schedule must identify the actions necessary to maintain adequate capacity for the expected population growth and to meet the limits and requirements of the permit. The Permittee must consider the following topics and actions in its plan.

1. Analysis of the present design and proposed process modifications
2. Reduction or elimination of excessive infiltration and inflow of uncontaminated ground and surface water into the sewer system
3. Limits on future sewer extensions or connections or additional waste loads
4. Modification or expansion of facilities
5. Reduction of industrial or commercial flows or waste loads

Engineering documents associated with the plan must meet the requirements of WAC 173-240-060, "Engineering Report," and be approved by Ecology prior to any construction.

S4.C. Duty to mitigate

The Permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

S4.D. Notification of new or altered sources

1. The Permittee must submit written notice to Ecology whenever any new discharge or a substantial change in volume or character of an existing discharge into the wastewater treatment plant is proposed which:
 - a. Would interfere with the operation of, or exceed the design capacity of, any portion of the wastewater treatment plant.
 - b. Is not part of an approved general sewer plan or approved plans and specifications.
 - c. Is subject to pretreatment standards under 40 CFR Part 403 and Section 307(b) of the Clean Water Act.
2. This notice must include an evaluation of the wastewater treatment plant's ability to adequately transport and treat the added flow and/or waste load, the quality and volume of effluent to be discharged to the treatment plant, and the anticipated impact on the Permittee's effluent [40 CFR 122.42(b)].

S4.E. Infiltration and inflow evaluation

1. The Permittee must conduct an infiltration and inflow evaluation. Refer to the U.S. EPA publication, I/I Analysis and Project Certification, available as Publication No. 97-03 at:
<http://www.ecy.wa.gov/programs/wq/permits/guidance.html>
2. The Permittee may use monitoring records to assess measurable infiltration and inflow.

3. The Permittee must prepare a report summarizing any measurable infiltration and inflow. If infiltration and inflow have increased by more than 15 percent from that found in the previous report based on equivalent rainfall, the report must contain a plan and a schedule to locate the sources of infiltration and inflow and to correct the problem.
4. The Permittee must submit a report summarizing the results of the evaluation and any recommendations for corrective actions by **September 15, 2018**.

S4.F. Wasteload assessment

The Permittee must conduct an assessment of its influent flow and waste load and submit a report to Ecology by **September 15, 2018**, and annually thereafter. The report must contain:

1. A description of compliance or noncompliance with the permit effluent limits.
2. A comparison between the existing and design:
 - a. Monthly average dry weather and wet weather flows.
 - b. Peak flows.
 - c. BOD₅ loading.
 - d. Total suspended solids loadings.
3. The percent change in the above parameters since the previous report (except for the first report).
4. The present and design population or population equivalent.
5. The projected population growth rate.
6. The estimated date upon which the Permittee expects the wastewater treatment plant to reach design capacity, according to the most restrictive of the parameters above.

Ecology may modify the interval for review and reporting if it determines that a different frequency is sufficient.

S5. Operation and maintenance

The Permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes keeping a daily operation logbook (paper or electronic), adequate laboratory controls, and appropriate quality assurance procedures. This provision of the permit requires the Permittee to operate backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of this permit.

S5.A. Certified operator

This permitted facility must be operated by an operator certified by the state of Washington for at least a Class IV plant. This operator must be in responsible charge of the day-to-day operation of the wastewater treatment plant. An operator certified for at least a Class III plant must be in charge during all regularly scheduled shifts.

S5.B. Operation and maintenance program

The Permittee must:

1. Institute an adequate operation and maintenance program for the entire sewage system.
2. Keep maintenance records on all major electrical and mechanical components of the treatment plant, as well as the sewage system and pumping stations. Such records must clearly specify the frequency and type of maintenance recommended by the manufacturer and must show the frequency and type of maintenance performed.
3. Make maintenance records available for inspection at all times.

S5.C. Short-term reduction

The Permittee must schedule any facility maintenance, which might require interruption of wastewater treatment and degrade effluent quality, during non-critical water quality periods and carry this maintenance out according to the approved O&M manual or as otherwise approved by Ecology.

If a Permittee contemplates a reduction in the level of treatment that would cause a violation of permit discharge limits on a short-term basis for any reason, and such reduction cannot be avoided, the Permittee must:

1. Give written notification to Ecology, if possible, thirty (30) days prior to such activities.
2. Detail the reasons for, length of time of, and the potential effects of the reduced level of treatment.

This notification does not relieve the Permittee of its obligations under this permit.

S5.D. Electrical power failure

The Permittee must ensure that adequate safeguards prevent the discharge of

untreated wastes or wastes not treated in accordance with the requirements of this permit during electrical power failure at the treatment plant and/or sewage lift stations. Adequate safeguards include, but are not limited to, alternate power sources, standby generator(s), or retention of inadequately treated wastes.

The Permittee must maintain Reliability Class I (EPA 430-99-74-001) at the wastewater treatment plant. Reliability Class I requires a backup power source sufficient to operate all vital components and critical lighting and ventilation during peak wastewater flow conditions.

S5.E. Prevent connection of inflow

The Permittee must strictly enforce its sewer ordinances and not allow the connection of inflow (roof drains, foundation drains, etc.) to the sanitary sewer system.

S5.F. Bypass procedures

This permit prohibits a bypass, which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

2. Bypass which is unavoidable, unanticipated, and results in noncompliance of this permit.

This permit authorizes such a bypass only if:

- a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

- b. No feasible alternatives to the bypass exist, such as:
- The use of auxiliary treatment facilities.
 - Retention of untreated wastes.
 - Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
 - Transport of untreated wastes to another treatment facility.
- c. Ecology is properly notified of the bypass as required in Special Condition S3.F of this permit.
3. If bypass is anticipated and has the potential to result in noncompliance of this permit.
- a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:
- A description of the bypass and its cause.
 - An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
 - A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
 - The minimum and maximum duration of bypass under each alternative.
 - A recommendation as to the preferred alternative for conducting the bypass.
 - The projected date of bypass initiation.
 - A statement of compliance with SEPA.
 - A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
 - Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.
- b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during the project planning and design process. The project-specific engineering report or facilities plan as well as the plans and specifications must include details of probable construction bypasses to the extent practical. In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction

period in an effort to minimize or eliminate the bypass.

- c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:
- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
 - If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
 - If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

S5.G. Operations and maintenance (O&M) manual

a. O&M manual submittal and requirements

The Permittee must:

1. Update the Operations and Maintenance (O&M) Manual that meets the requirements of 173-240-080 WAC and submit it to Ecology for approval by **July 15, 2019**
2. Review the O&M Manual at least annually.
3. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual.
4. Keep the approved O&M Manual at the permitted facility.
5. Follow the instructions and procedures of this manual.

b. O&M manual components

In addition to the requirements of WAC 173-240-080(1) through (5), the O&M Manual must be consistent with the guidance in Table G1-3 in the *Criteria for Sewage Works Design* (Orange Book), 2008. The O&M Manual must include:

1. Emergency procedures for cleanup in the event of wastewater system upset or failure.
2. A review of system components which if failed could pollute surface water or could impact human health. Provide a procedure for a routine schedule of checking the function of these components.
3. Wastewater system maintenance procedures that contribute to the generation of process wastewater.
4. Reporting protocols for submitting reports to Ecology to comply with the reporting requirements in the discharge permit.
5. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).
6. The treatment plant process control monitoring schedule.
7. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit.
8. The manual must include as an appendix, details and an accounting of how the City implements the responsibilities given in the delegated Pretreatment Program.
9. As an appendix, details of the City's Sewer Main Renovation Program.

S6. Pretreatment

S6.A. General requirements

1. The Permittee must implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the Permittee's approved pretreatment program submittal entitled "City of Richland Industrial Pretreatment Program" and dated December 1983; any approved revisions thereto; and the General Pretreatment Regulations (40 CFR Part 403).
2. At a minimum, the Permittee must undertake the following pretreatment implementation activities:
 - a. Enforce categorical pretreatment standards under Section 307(b) and (c) of the Federal Clean Water Act (hereinafter, the Act), prohibited discharge standards as set forth in 40 CFR 403.5, local limits specified in Section 2.4 of Pretreatment Ordinance Exhibit A to Title 17.30, or state standards, whichever are most stringent or apply at the time of issuance or modification of a local industrial waste discharge permit. Locally-derived

limits are defined as pretreatment standards under Section 307(d) of the Act and are not limited to categorical industrial facilities.

- b. Issue industrial waste discharge permits to all significant industrial users [SIUs, as defined in 40 CFR 403.3(v)(i)(ii)] contributing to the treatment system, including those from other jurisdictions. Industrial waste discharge permits must contain, as a minimum, all the requirements of 40 CFR 403.8 (f)(1)(iii). The Permittee must coordinate the permitting process with Ecology regarding any industrial facility that may possess a State Waste Discharge Permit issued by Ecology. Once issued, an industrial waste discharge permit takes precedence over a state-issued waste discharge permit.
- c. Maintain and update, as necessary, records identifying the nature, character, and volume of pollutants contributed by industrial users to the POTW. The Permittee must maintain records for at least a three-year period.
- d. Perform inspections, surveillance, and monitoring activities on industrial users to determine or confirm compliance with pretreatment standards and requirements. The Permittee must conduct a thorough inspection of SIUs annually. The Permittee must conduct regular local monitoring of SIU wastewaters commensurate with the character and volume of the wastewater but not less than once per year. The Permittee must collect and analyze samples in accordance with 40 CFR Part 403.12(b)(5)(ii)-(v) and 40 CFR Part 136.
- e. Enforce and obtain remedies for noncompliance by any industrial users with applicable pretreatment standards and requirements. Once it identifies violations, the Permittee must take timely and appropriate enforcement action to address the noncompliance. The Permittee's action must follow its enforcement response procedures and any amendments, thereof.
- f. Publish, at least annually in the largest daily newspaper in the Permittee's service area, a list of all non-domestic users which, at any time in the previous 12 months, were in significant noncompliance as defined in 40 CFR 403.8(f)(2)(vii).
- g. If the Permittee elects to conduct sampling of an SIU's discharge in lieu of requiring user self-monitoring, it must satisfy all requirements of 40 CFR Part 403.12. This includes monitoring and record keeping requirements of Sections 403.12(g) and (o). For SIUs subject to categorical standards (CIUs), the Permittee may either complete baseline and initial compliance reports for the CIU (when required by 403.12(b) and (d)) or require these of the CIU. The Permittee must ensure that it provides SIUs the results of sampling in a timely manner, inform SIUs of their right to sample, their obligations to report any sampling they do, to respond to non-compliance, and to submit other notifications. These include a slug load report

- (403.12(f)), notice of changed discharge (403.12(j)), and hazardous waste notifications (403.12(p)). If sampling for the SIU, the Permittee must not sample less than once in every six-month period unless the Permittee's approved program includes procedures for reduction of monitoring for Middle-Tier or Non-Significant Categorical Users per 403.12(e)(2) and (3) and those procedures have been followed.
- h. Develop and maintain a data management system designed to track the status of the Permittee's industrial user inventory, industrial user discharge characteristics, and compliance status.
 - i. Maintain adequate staff, funds, and equipment to implement its pretreatment program.
 - j. Establish, where necessary, contracts or legally binding agreements with contributing jurisdictions to ensure compliance with applicable pretreatment requirements by commercial or industrial users within these jurisdictions. These contracts or agreements must identify the agency responsible to perform the various implementation and enforcement activities in the contributing jurisdiction. In addition, the Permittee must develop a Memorandum of Understanding (or Inter-local Agreement) that outlines the specific roles, responsibilities, and pretreatment activities of each jurisdiction.
3. The Permittee must develop and submit to Ecology for approval, an updated Accidental Spill Prevention Program by **July 15, 2017**. The program must include a schedule for implementation. The Ecology-approved program becomes an enforceable part of these permit conditions.
 4. The Permittee must evaluate, at least once every two years, whether each Significant Industrial User needs a plan to control slug discharges. For purposes of this section, a slug discharge is any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge. The Permittee must make the results of this evaluation available to Ecology upon request. If the Permittee decides that a slug control plan is needed, the plan must contain, at a minimum, the following elements:
 - a. Description of discharge practices, including non-routine batch discharges.
 - b. Description of stored chemicals.
 - c. Procedures for immediately notifying the Permittee of slug discharges, including any discharge that would violate a prohibition under 40 CFR 403.5(b), with procedures for follow-up written notification within five days.
 - d. If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and

transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment necessary for emergency response.

5. Whenever Ecology determines that any waste source contributes pollutants to the Permittee's treatment works in violation of Section (b), (c), or (d) of Section 307 of the Act, and the Permittee has not taken adequate corrective action, Ecology will notify the Permittee of this determination. If the Permittee fails to take appropriate enforcement action within 30 days of this notification, Ecology may take appropriate enforcement action against the source or the Permittee.

6. Pretreatment Report

The Permittee must provide to Ecology an annual report that briefly describes its program activities during the previous calendar year.

The Permittee must submit the annual **report to Ecology by April 15th each year**. The report must include the following information:

- a. An updated non-domestic inventory.
- b. Results of wastewater sampling at the treatment plant as specified in Special Conditions S2.A and S6.B. The Permittee must calculate removal rates for each pollutant and evaluate the adequacy of the existing local limits in Section 2.4 of the 2004 Pretreatment Ordinance in prevention of treatment plant interference, pass through of pollutants that could affect receiving water quality, and sludge contamination.
- c. Status of program implementation, including:
 - Any substantial modifications to the pretreatment program as originally approved by Ecology, including staffing and funding levels.
 - Any interference, upset, or permit violations experienced at the POTW that are directly attributable to wastes from industrial users.
 - Listing of industrial users inspected and/or monitored, and a summary of the results.
 - Listing of industrial users scheduled for inspection and/or monitoring for the next year, and expected frequencies.
 - Listing of industrial users notified of promulgated pretreatment standards and/or local standards as required in 40 CFR 403.8(f)(2)(iii). The list must indicate which industrial users are on compliance schedules and the final date of compliance for each.
 - Listing of industrial users issued industrial waste discharge permits.

- Planned changes in the approved local pretreatment program. (See Subsection A.7. below)
- d. Status of compliance activities, including:
- Listing of industrial users that failed to submit baseline monitoring reports or any other reports required under 40 CFR 403.12 and in Section 4 of the Permittee's pretreatment program, dated October 2004.
 - Listing of industrial users that were at any time during the reporting period not complying with federal, state, or local pretreatment standards or with applicable compliance schedules for achieving those standards, and the duration of such noncompliance.
 - Summary of enforcement activities and other corrective actions taken or planned against non-complying industrial users. The Permittee must supply to Ecology a copy of the public notice of facilities that were in significant noncompliance.
7. The Permittee must request and obtain approval from Ecology before making any significant changes to the approved local pretreatment program. The Permittee must follow the procedure in 40 CFR 403.18 (b) and (c).

S6.B. Monitoring requirements

The Permittee must:

1. Monitor its influent, effluent, and sludge for the priority pollutants identified in Tables II and III of Appendix A of 40 CFR Part 122 as amended, any compounds identified because of Special Condition S6.B.4, and any other pollutants expected from non-domestic sources using U.S. EPA-approved procedures for collection, preservation, storage, and analysis.
2. Test influent, effluent, and sludge samples for the priority pollutant metals (Table III, 40 CFR 122, and Appendix A) on a quarterly basis throughout the term of this permit.
3. Test influent, effluent, and sludge samples for the organic priority pollutants (Table II, 40 CFR 122, and Appendix A) on an annual basis. The Permittee may use the data collected for application purposes using Appendix A test methods to meet this requirement.
4. Sample POTW influent and effluent on a day when industrial discharges are occurring at normal-to-maximum levels.
5. Obtain 24-hour composite samples for the analysis of acid and base/neutral extractable compounds and metals.
6. Collect grab samples at equal intervals for a total of four grab samples per day for the analysis of volatile organic compounds. The laboratory may run a

single analysis for volatile pollutants (Method 624) for each monitoring day by compositing equal volumes of each grab sample directly in the GC purge and trap apparatus in the laboratory, with no less than 1 ml of each grab included in the composite.

7. Ensure that all reported test data for metals represents the total amount of the constituents present in all phases, whether solid, suspended, or dissolved elemental or combined, including all oxidation states unless otherwise indicated.
8. Handle, prepare, and analyze all wastewater samples taken for GC/MS analysis in accordance with the U.S. EPA Methods 624 and 625 (October 26, 1984).
9. Collect a sludge sample concurrently with a wastewater sample as a single grab of residual sludge. Sludge organic priority pollutant sampling and analysis must conform to U.S. EPA Methods 624 and 625 unless the Permittee requests an alternate method and Ecology has approved. Sludge metals priority pollutant sampling and analysis must conform to U.S. EPA SW 846 6000/7000 Series Methods unless the Permittee requests an alternate method and Ecology has approved.
10. Collect grab samples for cyanide, phenols, and oils. Measure hexane soluble oils (or equivalent) only in the influent and effluent.
11. Make a reasonable attempt to identify all other substances and quantify all pollutants shown to be present by gas chromatograph/mass spectrometer (GC/MS) analysis per 40 CFR 136, Appendix A, Methods 624 and 625, in addition to quantifying pH, oil and grease, and all priority pollutants.

The Permittee should attempt to make determinations of pollutants for each fraction, which produces identifiable spectra on total ion plots (reconstructed gas chromatograms). The Permittee should attempt to make determinations from all peaks with responses 5% or greater than the nearest internal standard.

The 5% value is based on internal standard concentrations of 30 µg/l, and must be adjusted downward if higher internal standard concentrations are used or adjusted upward if lower internal standard concentrations are used. The Permittee may express results for non-substituted aliphatic compounds as total hydrocarbon content.

12. Use a laboratory whose computer data processing programs are capable of comparing sample mass spectra to a computerized library of mass spectra, with visual confirmation by an experienced analyst.
13. Conduct additional sampling and appropriate testing to determine concentration and variability, and to evaluate trends for all detected substances determined to be pollutants.

S6.C. Reporting of monitoring results

The Permittee must include a summary of monitoring results in the Annual Pretreatment Report. The first report is due April 15, 2016.

S6.D. Local limit development

As sufficient data become available, the Permittee, in consultation with Ecology, must reevaluate its local limits in order to prevent pass through or interference. The last version was created and adopted in November 16, 2010. If Ecology determines that any pollutant present causes pass through or interference, or exceeds established sludge standards, the Permittee must establish new local limits or revise existing local limits as required by 40 CFR 403.5. Ecology may also require the Permittee to revise or establish local limits for any pollutant discharged from the POTW that has a reasonable potential to exceed the Water Quality Standards, Sediment Standards, or established effluent limits, or causes whole effluent toxicity. Ecology makes this determination in the form of an Administrative Order.

Ecology may modify this permit to incorporate additional requirements relating to the establishment and enforcement of local limits for pollutants of concern. Any permit modification is subject to formal due process procedures under state and federal law and regulation.

S7. Solid wastes

S7.A. Solid waste handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

S7.B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

S8. Application for permit renewal or modification for facility changes

The Permittee must submit an application for renewal of this permit by Insert Date at least one year prior to expiration date.

The Permittee must also submit a new application or supplement at least one hundred eighty (180) days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

S9. Outfall evaluation

The Permittee must inspect, the submerged portion of the outfall line and diffuser to document its integrity and continued function. If conditions allow for a photographic verification, the Permittee must include such verification in the report. By **October 15, 2018** the Permittee must submit the inspection report to Ecology through the Water Quality Permitting Portal – Permit Submittals application. The Permittee must submit hard-copies of any video files to Ecology as required by Permit Condition S3.B. The Portal does not support submittal of video files.

The inspector must at minimum:

- Assess the physical condition of the outfall pipe, diffuser, and associated couplings.
- Determine the extent of sediment accumulation in the vicinity of the diffuser.
- Ensure diffuser ports are free of obstructions and are allowing uniform flow.
- Confirm physical location (latitude/longitude) and depth (at MLLW) of the diffuser section of the outfall.
- Assess physical condition of the submarine line.
- Assess physical condition of anchors used to secure the submarine line.

S10. ACUTE TOXICITY

A. Testing When There Is No Permit Limit for Acute Toxicity

The Permittee must:

1. Conduct acute toxicity testing on final effluent during **July 2016 and January 2017.**
2. Submit the results to Ecology by **July 31, 2017.**

3. Conduct acute toxicity testing on a series of at least five concentrations of effluent, including 100% effluent, and a control.
4. Use each of the following species and protocols for each acute toxicity test:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	<i>Pimephales promelas</i>	EPA-821-R-02-012
Daphnid 48-hour static test	<i>Ceriodaphnia dubia</i> , <i>Daphnia pulex</i> , or <i>Daphnia magna</i>	EPA-821-R-02-012

B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.
2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.
3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*.
4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in Subsection C and the Department of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.
5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in Subsection A or pristine natural water of sufficient quality for good control performance.

6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.
7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the acute critical effluent concentration (ACEC). **The ACEC equals 8.1% effluent.**
8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing must comply with the acute statistical power standard of 29% as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.
9. Reports of individual characterization or compliance test results must be submitted to Ecology within sixty (60) days after each sample date.
10. The Acute Toxicity Summary Report must be submitted to Ecology **within sixty (60) days following testing.**

S11. Chronic toxicity

A. Testing When There Is No Permit Limit for Chronic Toxicity

The Permittee must:

1. Conduct chronic toxicity testing on final effluent during **April 2016 and October 2017.**
2. Submit the results to Ecology **within sixty (60) days following testing.**
3. Conduct chronic toxicity testing on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 8.1% effluent.
4. Compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.
5. Perform chronic toxicity tests with all of the following species and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method
Fathead minnow	<i>Pimephales promelas</i>	EPA-821-R-02-013
Water flea	<i>Ceriodaphnia dubia</i>	EPA-821-R-02-013

B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.
2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.
3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*.
4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.
5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection C. or pristine natural water of sufficient quality for good control performance.
6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.
7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series

must have a minimum of five effluent concentrations and a control. The series of concentrations must include the CCEC and the ACEC. The CCEC and the ACEC may either substitute for the effluent concentrations that are closest to them in the dilution series or be extra effluent concentrations. **The CCEC equals 0.6% effluent. The ACEC equals 8.1% effluent.**

8. All whole effluent toxicity tests that involve hypothesis testing must comply with the chronic statistical power standard of 39% as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.
9. Reports of individual characterization or compliance test results must be submitted to Ecology within 60 days after each sample date.
10. The Chronic Toxicity Summary Reports must be **submitted to Ecology within sixty (60) days following testing, and no later than July 31, 2017 for the first test in April and no later than January 31, 2018.**

General Conditions

G1. Signatory requirements

1. All applications, reports, or information submitted to Ecology must be signed and certified.
 - a. In the case of corporations, by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - 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, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - b. In the case of a partnership, by a general partner.
 - c. In the case of sole proprietorship, by the proprietor.

- d. In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

Applications for permits for domestic wastewater facilities that are either owned or operated by, or under contract to, a public entity shall be submitted by the public entity.

2. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to Ecology.
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to authorization. If an authorization under paragraph G1.2, above, is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph G1.2, above, must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section must make the following certification:

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

G2. Right of inspection and entry

The Permittee must allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

1. To enter upon the premises where a discharge is located or where any records must be kept under the terms and conditions of this permit.
2. To have access to and copy, at reasonable times and at reasonable cost, any records required to be kept under the terms and conditions of this permit.
3. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required under this permit.
4. To sample or monitor, at reasonable times, any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G3. Permit actions

This permit may be modified, revoked and reissued, or terminated either at the request of any interested person (including the Permittee) or upon Ecology's initiative. However, the permit may only be modified, revoked and reissued, or terminated for the reasons specified in 40 CFR 122.62, 40 CFR 122.64 or WAC 173-220-150 according to the procedures of 40 CFR 124.5.

1. The following are causes for terminating this permit during its term, or for denying a permit renewal application:
 - a. Violation of any permit term or condition.
 - b. Obtaining a permit by misrepresentation or failure to disclose all relevant facts.
 - c. A material change in quantity or type of waste disposal.
 - d. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations and can only be regulated to acceptable levels by permit modification or termination.
 - e. A change in any condition that requires either a temporary or permanent reduction, or elimination of any discharge or sludge use or disposal practice controlled by the permit.
 - f. Nonpayment of fees assessed pursuant to RCW 90.48.465.
 - g. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.
2. The following are causes for modification but not revocation and reissuance except when the Permittee requests or agrees:
 - a. A material change in the condition of the waters of the state.
 - b. New information not available at the time of permit issuance that would have justified the application of different permit conditions.
 - c. Material and substantial alterations or additions to the permitted facility or activities which occurred after this permit issuance.
 - d. Promulgation of new or amended standards or regulations having a direct bearing

- upon permit conditions, or requiring permit revision.
- e. The Permittee has requested a modification based on other rationale meeting the criteria of 40 CFR Part 122.62.
 - f. Ecology has determined that good cause exists for modification of a compliance schedule, and the modification will not violate statutory deadlines.
 - g. Incorporation of an approved local pretreatment program into a municipality's permit.
3. The following are causes for modification or alternatively revocation and reissuance:
- a. When cause exists for termination for reasons listed in 1.a through 1.g of this section, and Ecology determines that modification or revocation and reissuance is appropriate.
 - b. When Ecology has received notification of a proposed transfer of the permit. A permit may also be modified to reflect a transfer after the effective date of an automatic transfer (General Condition G7) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new Permittee.

G4. Reporting planned changes

The Permittee must, as soon as possible, but no later than one hundred eighty (180) days prior to the proposed changes, give notice to Ecology of planned physical alterations or additions to the permitted facility, production increases, or process modification which will result in:

1. The permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b).
2. A significant change in the nature or an increase in quantity of pollutants discharged.
3. A significant change in the Permittee's sludge use or disposal practices. Following such notice, and the submittal of a new application or supplement to the existing application, along with required engineering plans and reports, this permit may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation.

G5. Plan review required

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications must be submitted to Ecology for approval in accordance with chapter 173-240 WAC. Engineering reports, plans, and specifications

must be submitted at least one hundred eighty (180) days prior to the planned start of construction unless a shorter time is approved by Ecology. Facilities must be constructed and operated in accordance with the approved plans.

G6. Compliance with other laws and statutes

Nothing in this permit excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. Transfer of this permit

In the event of any change in control or ownership of facilities from which the authorized discharge emanate, the Permittee must notify the succeeding owner or controller of the existence of this permit by letter, a copy of which must be forwarded to Ecology.

1. Transfers by Modification

Except as provided in paragraph (2) below, this permit may be transferred by the Permittee to a new owner or operator only if this permit has been modified or revoked and reissued under 40 CFR 122.62(b)(2), or a minor modification made under 40 CFR 122.63(d), to identify the new Permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

2. Automatic Transfers

This permit may be automatically transferred to a new Permittee if:

- a. The Permittee notifies Ecology at least thirty (30) days in advance of the proposed transfer date.
- b. The notice includes a written agreement between the existing and new Permittees containing a specific date transfer of permit responsibility, coverage, and liability between them.
- c. Ecology does not notify the existing Permittee and the proposed new Permittee of its intent to modify or revoke and reissue this permit. A modification under this subparagraph may also be minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the written agreement.

G8. Reduced production for compliance

The Permittee, in order to maintain compliance with its permit, must control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until

the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

G9. Removed substances

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

G10. Duty to provide information

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. Other requirements of 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G12. Additional monitoring

Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G13. Payment of fees

The Permittee must submit payment of fees associated with this permit as assessed by Ecology.

G14. Penalties for violating permit conditions

Any person who is found guilty of willfully violating the terms and conditions of this permit is deemed guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars (\$10,000) and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit may incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars (\$10,000) for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is deemed to be a separate and distinct violation.

G15. Upset

Definition – “Upset” means 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, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limits if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that the Permittee can identify the cause(s) of the upset.
2. The permitted facility was being properly operated at the time of the upset.
3. The Permittee submitted notice of the upset as required in Special Condition S3.E.
4. The Permittee complied with any remedial measures required under S3.E of this permit.

In any enforcement action the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G16. Property rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

G17. Duty to comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G18. Toxic pollutants

The Permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G19. Penalties for tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two (2) years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this condition, punishment shall be a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or by both.

G20. Compliance schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than fourteen (14) days following each schedule date.

G21. Service agreement review

The Permittee must submit to Ecology any proposed service agreements and proposed revisions or updates to existing agreements for the operation of any wastewater treatment facility covered by this permit. The review is to ensure consistency with chapters 90.46 and 90.48 RCW as required by RCW 70.150.040(9). In the event that Ecology does not comment within a thirty-day (30) period, the Permittee may assume consistency and proceed with the service agreement or the revised/updated service agreement.

Appendix A

LIST OF POLLUTANTS WITH ANALYTICAL METHODS, DETECTION LIMITS AND QUANTITATION LEVELS

The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for permit and application required monitoring unless:

- Another permit condition specifies other methods, detection levels, or quantitation levels.
- The method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136.

If the Permittee uses an alternative method, not specified in the permit and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL) and a quantitation limit (QL) to Ecology with appropriate laboratory documentation.

When the permit requires the Permittee to measure the base neutral compounds in the list of priority pollutants, it must measure all of the base neutral pollutants listed in the table below. The list includes EPA required base neutral priority pollutants and several additional polynuclear aromatic hydrocarbons (PAHs). The Water Quality Program added several PAHs to the list of base neutrals below from Ecology's Persistent Bioaccumulative Toxics (PBT) List. It only added those PBT parameters of interest to Appendix A that did not increase the overall cost of analysis unreasonably.

Ecology added this appendix to the permit in order to reduce the number of analytical "non-detects" in permit-required monitoring and to measure effluent concentrations near or below criteria values where possible at a reasonable cost.

The lists below include conventional pollutants (as defined in CWA section 502(6) and 40 CFR Part 122.), toxic or priority pollutants as defined in CWA section 307(a)(1) and listed in 40 CFR Part 122 Appendix D, 40 CFR Part 401.15 and 40 CFR Part 423 Appendix A), and nonconventionals. 40 CFR Part 122 Appendix D (Table V) also identifies toxic pollutants and hazardous substances which are required to be reported by dischargers if expected to be present. This permit appendix A list does not include those parameters . . .

CONVENTIONAL POLLUTANTS

Pollutant	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL) ¹ µg/L unless specified	Quantitation Level (QL) ² µg/L unless specified
Biochemical Oxygen Demand		SM5210-B		2 mg/L
Biochemical Oxygen Demand, Soluble		SM5210-B ³		2 mg/L
Fecal Coliform		SM 9221E,9222	N/A	Specified in method - sample aliquot dependent
Oil and Grease (HEM) (Hexane Extractable Material)		1664 A or B	1,400	5,000
pH		SM4500-H ⁺ B	N/A	N/A
Total Suspended Solids		SM2540-D		5 mg/L

NONCONVENTIONAL POLLUTANTS

Pollutant & CAS No. (if available)	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL) ¹ µg/L unless specified	Quantitation Level (QL) ² µg/L unless specified
Alkalinity, Total		SM2320-B		5 mg/L as CaCO ₃
Aluminum, Total	7429-90-5	200.8	2.0	10
Ammonia, Total (as N)		SM4500-NH ₃ -B and C/D/E/G/H		20
Barium Total	7440-39-3	200.8	0.5	2.0
BTEX (benzene +toluene + ethylbenzene + m,o,p xylenes)		EPA SW 846 8021/8260	1	2
Boron, Total	7440-42-8	200.8	2.0	10.0
Chemical Oxygen Demand		SM5220-D		10 mg/L
Chloride		SM4500-Cl B/C/D/E and SM4110 B		Sample and limit dependent
Chlorine, Total Residual		SM4500 Cl G		50.0
Cobalt, Total	7440-48-4	200.8	0.05	0.25
Color		SM2120 B/C/E		10 color units
Dissolved oxygen		SM4500-OC/OG		0.2 mg/L

NONCONVENTIONAL POLLUTANTS

Pollutant & CAS No. (if available)	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL) ¹ µg/L unless specified	Quantitation Level (QL) ² µg/L unless specified
Flow		Calibrated device		
Fluoride	16984-48-8	SM4500-F E	25	100
Hardness, Total		SM2340B		200 as CaCO3
Iron, Total	7439-89-6	200.7	12.5	50
Magnesium, Total	7439-95-4	200.7	10	50
Manganese, Total	7439-96-5	200.8	0.1	0.5
Molybdenum, Total	7439-98-7	200.8	0.1	0.5
Nitrate + Nitrite Nitrogen (as N)		SM4500-NO3- E/F/H		100
Nitrogen, Total Kjeldahl (as N)		SM4500-N _{org} B/C and SM4500NH ₃ -B/C/D/EF/G/H		300
NWTPH Dx ⁴		Ecology NWTPH Dx	250	250
NWTPH Gx ⁵		Ecology NWTPH Gx	250	250
Phosphorus, Total (as P)		SM 4500 PB followed by SM4500-PE/PF	3	10
Salinity		SM2520-B		3 practical salinity units or scale (PSU or PSS) Sample and limit dependent
Settleable Solids		SM2540 -F		10
Soluble Reactive Phosphorus (as P)		SM4500-P E/F/G	3	0.2 mg/L
Sulfate (as mg/L SO ₄)		SM4110-B		0.2 mg/L
Sulfide (as mg/L S)		SM4500-S ² F/D/E/G		2 mg/L
Sulfite (as mg/L SO ₃)		SM4500-SO3B		0.2 mg/L
Temperature (max. 7-day avg.)		Analog recorder or Use micro-recording devices known as thermistors		0.2° C
Tin, Total	7440-31-5	200.8	0.3	1.5
Titanium, Total	7440-32-6	200.8	0.5	2.5
Total Coliform		SM 9221B, 9222B, 9223B	N/A	Specified in method - sample aliquot dependent

NONCONVENTIONAL POLLUTANTS

Pollutant & CAS No. (if available)	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL) ¹ µg/L unless specified	Quantitation Level (QL) ² µg/L unless specified
Total Organic Carbon		SM5310-B/C/D		1 mg/L
Total dissolved solids		SM2540 C		20 mg/L

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL) ¹ µg/L unless specified	Quantitation Level (QL) ² µg/L unless specified
METALS, CYANIDE & TOTAL PHENOLS					
Antimony, Total	114	7440-36-0	200.8	0.3	1.0
Arsenic, Total	115	7440-38-2	200.8	0.1	0.5
Beryllium, Total	117	7440-41-7	200.8	0.1	0.5
Cadmium, Total	118	7440-43-9	200.8	0.05	0.25
Chromium (hex) dissolved	119	18540-29-9	SM3500-Cr EC	0.3	1.2
Chromium, Total	119	7440-47-3	200.8	0.2	1.0
Copper, Total	120	7440-50-8	200.8	0.4	2.0
Lead, Total	122	7439-92-1	200.8	0.1	0.5
Mercury, Total	123	7439-97-6	1631E	0.0002	0.0005
Nickel, Total	124	7440-02-0	200.8	0.1	0.5
Selenium, Total	125	7782-49-2	200.8	1.0	1.0
Silver, Total	126	7440-22-4	200.8	0.04	0.2
Thallium, Total	127	7440-28-0	200.8	0.09	0.36
Zinc, Total	128	7440-66-6	200.8	0.5	2.5
Cyanide, Total	121	57-12-5	335.4	5	10
Cyanide, Weak Acid Dissociable	121		SM4500-CN I	5	10
Cyanide, Free Amenable to Chlorination (Available Cyanide)	121		SM4500-CN G	5	10
Phenols, Total	65		EPA 420.1		50

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
ACID COMPOUNDS					
2-Chlorophenol	24	95-57-8	625	1.0	2.0
2,4-Dichlorophenol	31	120-83-2	625	0.5	1.0
2,4-Dimethylphenol	34	105-67-9	625	0.5	1.0
4,6-dinitro-o-cresol (2-methyl-4,6,-dinitrophenol)	60	534-52-1	625/1625B	1.0	2.0
2,4 dinitrophenol	59	51-28-5	625	1.0	2.0
2-Nitrophenol	57	88-75-5	625	0.5	1.0
4-Nitrophenol	58	100-02-7	625	0.5	1.0
Parachlorometa cresol (4-chloro-3-methylphenol)	22	59-50-7	625	1.0	2.0
Pentachlorophenol	64	87-86-5	625	0.5	1.0
Phenol	65	108-95-2	625	2.0	4.0
2,4,6-Trichlorophenol	21	88-06-2	625	2.0	4.0

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
VOLATILE COMPOUNDS					
Acrolein	2	107-02-8	624	5	10
Acrylonitrile	3	107-13-1	624	1.0	2.0
Benzene	4	71-43-2	624	1.0	2.0
Bromoform	47	75-25-2	624	1.0	2.0
Carbon tetrachloride	6	56-23-5	624/601 or SM6230B	1.0	2.0
Chlorobenzene	7	108-90-7	624	1.0	2.0
Chloroethane	16	75-00-3	624/601	1.0	2.0
2-Chloroethylvinyl Ether	19	110-75-8	624	1.0	2.0
Chloroform	23	67-66-3	624 or SM6210B	1.0	2.0

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
VOLATILE COMPOUNDS					
Dibromochloromethane (chloridibromomethane)	51	124-48-1	624	1.0	2.0
1,2-Dichlorobenzene	25	95-50-1	624	1.9	7.6
1,3-Dichlorobenzene	26	541-73-1	624	1.9	7.6
1,4-Dichlorobenzene	27	106-46-7	624	4.4	17.6
Dichlorobromomethane	48	75-27-4	624	1.0	2.0
1,1-Dichloroethane	13	75-34-3	624	1.0	2.0
1,2-Dichloroethane	10	107-06-2	624	1.0	2.0
1,1-Dichloroethylene	29	75-35-4	624	1.0	2.0
1,2-Dichloropropane	32	78-87-5	624	1.0	2.0
1,3-dichloropropene (mixed isomers) (1,2-dichloropropylene) ⁶	33	542-75-6	624	1.0	2.0
Ethylbenzene	38	100-41-4	624	1.0	2.0
Methyl bromide (Bromomethane)	46	74-83-9	624/601	5.0	10.0
Methyl chloride (Chloromethane)	45	74-87-3	624	1.0	2.0
Methylene chloride	44	75-09-2	624	5.0	10.0
1,1,2,2-Tetrachloroethane	15	79-34-5	624	1.9	2.0
Tetrachloroethylene	85	127-18-4	624	1.0	2.0
Toluene	86	108-88-3	624	1.0	2.0
1,2-Trans-Dichloroethylene (Ethylene dichloride)	30	156-60-5	624	1.0	2.0
1,1,1-Trichloroethane	11	71-55-6	624	1.0	2.0
1,1,2-Trichloroethane	14	79-00-5	624	1.0	2.0
Trichloroethylene	87	79-01-6	624	1.0	2.0
Vinyl chloride	88	75-01-4	624/SM6200B	1.0	2.0

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)					
Acenaphthene	1	83-32-9	625	0.2	0.4
Acenaphthylene	77	208-96-8	625	0.3	0.6
Anthracene	78	120-12-7	625	0.3	0.6
Benzidine	5	92-87-5	625	12	24
Benzyl butyl phthalate	67	85-68-7	625	0.3	0.6
Benzo(a)anthracene	72	56-55-3	625	0.3	0.6
Benzo(b)fluoranthene (3,4-benzofluoranthene) ⁷	74	205-99-2	610/625	0.8	1.6
Benzo(j)fluoranthene⁷		205-82-3	625	0.5	1.0
Benzo(k)fluoranthene (11,12-benzofluoranthene) ⁷	75	207-08-9	610/625	0.8	1.6
Benzo(r,s,t)pentaphene		189-55-9	625	0.5	1.0
Benzo(a)pyrene	73	50-32-8	610/625	0.5	1.0
Benzo(ghi)perylene	79	191-24-2	610/625	0.5	1.0
Bis(2-chloroethoxy)methane	43	111-91-1	625	5.3	21.2
Bis(2-chloroethyl)ether	18	111-44-4	611/625	0.3	1.0
Bis(2-chloroisopropyl)ether	42	39638-32-9	625	0.3	0.6
Bis(2-ethylhexyl)phthalate	66	117-81-7	625	0.1	0.5
4-Bromophenyl phenyl ether	41	101-55-3	625	0.2	0.4
2-Chloronaphthalene	20	91-58-7	625	0.3	0.6
4-Chlorophenyl phenyl ether	40	7005-72-3	625	0.3	0.5
Chrysene	76	218-01-9	610/625	0.3	0.6
Dibenzo (a,h)acridine		226-36-8	610M/625M	2.5	10.0
Dibenzo (a,j)acridine		224-42-0	610M/625M	2.5	10.0
Dibenzo(a-h)anthracene (1,2,5,6-dibenzanthracene)	82	53-70-3	625	0.8	1.6
Dibenzo(a,e)pyrene		192-65-4	610M/625M	2.5	10.0
Dibenzo(a,h)pyrene		189-64-0	625M	2.5	10.0
3,3-Dichlorobenzidine	28	91-94-1	605/625	0.5	1.0
Diethyl phthalate	70	84-66-2	625	1.9	7.6

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)					
Dimethyl phthalate	71	131-11-3	625	1.6	6.4
Di-n-butyl phthalate	68	84-74-2	625	0.5	1.0
2,4-dinitrotoluene	35	121-14-2	609/625	0.2	0.4
2,6-dinitrotoluene	36	606-20-2	609/625	0.2	0.4
Di-n-octyl phthalate	69	117-84-0	625	0.3	0.6
1,2-Diphenylhydrazine (as Azobenzene)	37	122-66-7	1625B	5.0	20
Fluoranthene	39	206-44-0	625	0.3	0.6
Fluorene	80	86-73-7	625	0.3	0.6
Hexachlorobenzene	9	118-74-1	612/625	0.3	0.6
Hexachlorobutadiene	52	87-68-3	625	0.5	1.0
Hexachlorocyclopentadiene	53	77-47-4	1625B/625	0.5	1.0
Hexachloroethane	12	67-72-1	625	0.5	1.0
Indeno(1,2,3-cd)Pyrene	83	193-39-5	610/625	0.5	1.0
Isophorone	54	78-59-1	625	0.5	1.0
3-Methyl cholanthrene		56-49-5	625	2.0	8.0
Naphthalene	55	91-20-3	625	0.3	0.6
Nitrobenzene	56	98-95-3	625	0.5	1.0
N-Nitrosodimethylamine	61	62-75-9	607/625	2.0	4.0
N-Nitrosodi-n-propylamine	63	621-64-7	607/625	0.5	1.0
N-Nitrosodiphenylamine	62	86-30-6	625	0.5	1.0
Perylene		198-55-0	625	1.9	7.6
Phenanthrene	81	85-01-8	625	0.3	0.6
Pyrene	84	129-00-0	625	0.3	0.6
1,2,4-Trichlorobenzene	8	120-82-1	625	0.3	0.6

PRIORITY POLLUTANT	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
DIOXIN					
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin (2,3,7,8 TCDD)	129	1746-01-6	1613B	1.3 pg/L	5 pg/L

PRIORITY POLLUTANTS	PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
PESTICIDES/PCBs					
Aldrin	89	309-00-2	608	0.025	0.05
alpha-BHC	102	319-84-6	608	0.025	0.05
beta-BHC	103	319-85-7	608	0.025	0.05
gamma-BHC (Lindane)	104	58-89-9	608	0.025	0.05
delta-BHC	105	319-86-8	608	0.025	0.05
Chlordane ⁸	91	57-74-9	608	0.025	0.05
4,4'-DDT	92	50-29-3	608	0.025	0.05
4,4'-DDE	93	72-55-9	608	0.025	0.05
4,4' DDD	94	72-54-8	608	0.025	0.05
Dieldrin	90	60-57-1	608	0.025	0.05
alpha-Endosulfan	95	959-98-8	608	0.025	0.05
beta-Endosulfan	96	33213-65-9	608	0.025	0.05
Endosulfan Sulfate	97	1031-07-8	608	0.025	0.05
Endrin	98	72-20-8	608	0.025	0.05
Endrin Aldehyde	99	7421-93-4	608	0.025	0.05
Heptachlor	100	76-44-8	608	0.025	0.05
Heptachlor Epoxide	101	1024-57-3	608	0.025	0.05
PCB-1242 ⁹	106	53469-21-9	608	0.25	0.5
PCB-1254	107	11097-69-1	608	0.25	0.5

PRIORITY POLLUTANTS		PP #	CAS Number (if available)	Recommended Analytical Protocol	Detection (DL)¹ µg/L unless specified	Quantitation Level (QL)² µg/L unless specified
PESTICIDES/PCBs						
PCB-1221		108	11104-28-2	608	0.25	0.5
PCB-1232		109	11141-16-5	608	0.25	0.5
PCB-1248		110	12672-29-6	608	0.25	0.5
PCB-1260		111	11096-82-5	608	0.13	0.5
PCB-1016 ⁹		112	12674-11-2	608	0.13	0.5
Toxaphene		113	8001-35-2	608	0.24	0.5

1. Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.
2. 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 10ⁿ, 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).
3. Soluble Biochemical Oxygen Demand method note: First, filter the sample through a Millipore Nylon filter (or equivalent) - pore size of 0.45-0.50 um (prep all filters by filtering 250 ml of laboratory grade deionized water through the filter and discard). Then, analyze sample as per method 5210-B.
4. NWTPH Dx - Northwest Total Petroleum Hydrocarbons Diesel Extended Range – see <http://www.ecy.wa.gov/biblio/97602.html>

5. NWTPH Gx - Northwest Total Petroleum Hydrocarbons Gasoline Extended Range – see <http://www.ecy.wa.gov/biblio/97602.html>
6. 1, 3-dichloropropylene (mixed isomers) You may report this parameter as two separate parameters: cis-1, 3-dichloropropene (10061-01-5) and trans-1, 3-dichloropropene (10061-02-6).
7. Total Benzofluoranthenes - Because Benzo(b)fluoranthene, Benzo(j)fluoranthene and Benzo(k)fluoranthene co-elute you may report these three isomers as total benzofluoranthenes.
8. Chlordane – You may report alpha-chlordane (5103-71-9) and gamma-chlordane (5103-74-2) in place of chlordane (57-74-9). If you report alpha and gamma-chlordane, the DL/PQLs that apply are 0.025/0.050.
9. PCB 1016 & PCB 1242 – You may report these two PCB compounds as one parameter called PCB 1016/1242.