

Columbia/Snake Rivers Temperature TMDL
Preliminary Draft September 13, 2002
Appendix D General Permits

The National Pollutant Discharge Elimination System authorizes the issuance of general permits to cover the discharge of categories of dischargers (40 CFR 122.28). The general permit may be written to regulate storm water point sources or categories of point sources other than storm water if the sources in the category all:

- involve the same or substantially similar operations;
- discharge the same types of wastes;
- require the same effluent limitations or operating conditions;
- require the same or similar monitoring; and
- in the opinion of the State Director or EPA Regional Administrator, are more appropriately controlled under a general permit than under individual permits.

Table 1 lists the general permits that have been issued in Idaho, Oregon and Washington that could potentially result in discharges to the mainstem of the Columbia or Snake Rivers within this TMDL area. The permits listed as issued by EPA are general permits for facilities in Idaho as well as federal facilities and facilities on Indian lands in all three states.

The discharges allowed by the general permits listed in Table 5-9 are not expected to be a factor influencing temperature in the Columbia and Snake River main stems. We believe that the contribution to temperature load from the sources covered by these general permits is minimal especially when compared to the temperature loads from the large individual permits and the impacts of the dams. Therefore, the wasteload allocations for the general permits are included in the group allocations for each reach as explained in Section 5.6.2 of the TMDL. Under the TMDL, facilities can continue to be covered under the general permits and discharge as authorized by those permits. The nature of the facilities, the relative sizes of the discharges and the main stem, the seasonality of the discharges and the limitations and requirements in the permits all contribute to this finding. However, effluent monitoring for temperature should be included in all of the general permits so that the states can keep track of the loadings allowed to the river via the group allocations. The following sections describe the general permits and discuss the reasons leading to the conclusion that these sources have minimal impacts on water temperature and should be included in the group allocations.

Table 1: General NPDES Permits

Agency	Permit Name and Number	Number of Facilities
EPA	Concentrated Animal Feeding Operation IDG010000 (EPA, 1997)	0
EPA	Aquaculture and On-site Fish Processors IDG130000 (EPA, 1999)	0
EPA	Stormwater Permits for Industries and Municipalities (EPA, 2000)	21
EPA	Stormwater Permits for Construction (EPA, 1998)	20 total/3 current
ODEQ	Cooling Water/Heat Pumps 0100 (ODEQ, 2002)	1
ODEQ	Filter Backwash 0200 (ODEQ, 2002)	0
ODEQ	Fish Hatcheries 0300 (ODEQ, 2002)	5
ODEQ	Log Ponds 0400 (ODEQ, 2002)	0
ODEQ	Boiler Blowdown 0500 (ODEQ, 2002)	0
ODEQ	Suction Dredges 0700 (ODEQ, 2002)	0
ODEQ	Seafood Processing 0900 (ODEQ, 2002)	6
ODEQ	Stormwater Permit for Gravel Mining 1200A (ODEQ, 2002)	1
ODEQ	Construction that Disturbs Five or More Acres 1200C (ODEQ, 2002)	5
ODEQ	Construction that Disturbs Five or More Acres - Government Agencies 1200CA (ODEQ, 2002)	0
ODEQ	Construction Activities, 1200-C Permit Administered by DEQ Agents 1200CM (ODEQ, 2002)	0
ODEQ	Industrial Stormwater 1200Z (ODEQ, 2002)	21
ODEQ	Oily Stormwater Runoff, Oil/Water Separators 1300 (ODEQ, 2002)	1
ODEQ	Tanks Cleanup and Treatment of Groundwater 1500A (ODEQ, 2002)	2
ODEQ	Washwater 1700A (ODEQ, 2002)	0
ODEQ	Non Contact Geothermal 1900 (ODEQ, 2002)	0
Ecology	Boatyard General Permit (Ecology, 2002)	2
Ecology	Dairy General Permit (Ecology, 2002)	0
Ecology	Sand and Gravel General Permit (Ecology, 2002)	3
Ecology	Stormwater General Permits (Ecology, 2002)	39
Ecology	Upland Fin Fish Hatching and Rearing (Ecology, 2002)	8
Ecology	Water Treatment Plant (Ecology, 2002)	3
Ecology	Fruit Packers (Ecology, 2002)	14

Fish Hatcheries and Aquaculture

All three agencies have issued general permits for facilities that hatch and or rear fish and discharge water from the rearing facilities to surface waters. Coldwater facilities are not expected to have an impact on surface water temperature. There is some potential for impact from facilities that rear warm water fishes like catfish or tilapia. The general permit issued by Washington Department of Ecology (Ecology) required facilities to monitor effluent temperature during their first year of operation under the general permit. The finding of that monitoring effort was that the "...facilities do not have a reasonable potential to exceed these parameters" and the subsequent general permit included no temperature monitoring or effluent requirements. The EPA general permit includes a temperature monitoring requirement to ensure that warm water facilities do not effect in stream temperatures. Given the Ecology finding and the small number of these facilities that discharge to the Columbia and Snake River main stems, it is reasonable to include fish hatcheries and aquaculture facilities in the group allocations of the TMDL.

Dairy and Animal Feeding Operations

Ecology and EPA have issued general permits that govern the discharge from agricultural livestock operations. Both permits prohibit discharge to surface waters except during storm events that equal or exceed the 1 in 25 year 24 hour rainfall. Given that the facilities are not authorized to discharge except during unusual rain events it is reasonable to include dairies and combined animal feeding operations in the group allocations of the TMDL.

Sand and Gravel

Ecology has issued a general permit for sand and gravel operations. They found that temperature increases and decreases for process water, mine dewatering water, and stormwater are primarily a result of ambient air temperature and solar influences. Processing by the facilities covered under this permit does not typically transfer significant thermal energy. Temperature decreases have not been identified as a significant environmental concern but there are more than 300 rivers in the state that are listed for water quality temperature excursions as a result of high temperatures. The temperature of discharges to surface water during the warm weather months are therefore a concern. The permit requires monitoring of temperature for all discharges to surface water during the warm weather months. Monitoring results will be used to determine if a temperature limit will be required in the next permit revision. It is reasonable to include sand and gravel operations in the group allocations of the TMDL pending analysis of the required monitoring data.

Cooling water/heat pumps

ODEQ has issued a general permit for discharges of non-contact cooling water, defrost water, heat pump transfer water, and cooling tower blowdown. Also included are cooling and sump water discharges from hydropower facilities. The permit includes daily maximum effluent limitations of 0.5 mgd (millions/day) for flow and 100 °F for temperature. It also includes a minimum dilution requirement:

“During periods of discharge, the receiving stream flow shall be at least four (4) times that of the discharge for each degree Fahrenheit the temperature of the discharge is above that of the receiving stream. The following example illustrates the use of this formula.

Example: If a discharge is 0.1 mgd at 100 degrees F and the receiving stream temperature is 60 degrees F, the receiving stream flow must be at least 16 mgd.

$$(100-60)*(4)*0.1 = 16\text{mgd.}”$$

The permit further states that facilities that discharge to water quality limited streams and meet the dilution requirements and the effluent limitations will be deemed to satisfy the requirement of developing and implementing a surface water temperature management plan. Given the maximum flows authorized by this permit, the minimum dilution requirements and the enormous dilution available in the Columbia and Snake rivers, it is reasonable to include cooling water/heat pumps in the group allocations of the TMDL.

Filter backwash

ODEQ has issued a general permit for the discharge or land application of filter backwash, settling basin, and reservoir cleaning water which have been adequately treated prior to discharge. Flushing of raw water intakes after storm events and spring runoff are also allowed. The permit requires that the stream flow provides a 30:1 minimum dilution ratio with the effluent during periods of discharge. Facilities that do not meet that criterion are not eligible for the permit. The permit further states that facilities that discharge to water quality limited streams and meet the dilution requirements will be deemed to satisfy the requirement of developing and implementing a surface water temperature management plan. Given the minimum dilution requirements and the enormous dilution available in the Columbia and Snake rivers, it is reasonable to include filter backwash in the group allocations of the TMDL.

Log ponds

ODEQ has issued a general permit for discharge from wet storage facilities (log ponds) that receive no sewage and process wastewater; cold deck sprinkling; and log yard runoff where sprinkling occurs. No discharge is permitted from log ponds, log yards and log decks where sprinkling occurs from May 1 to October 31. If due to unseasonable wet weather or other reasons beyond the control of the permittee, it becomes necessary to discharge from a log pond during the May 1 through October 31 period or at a time when a 50:1 dilution is not available, the discharge may be permitted upon written approval by the Department. From November 1 - April 30 discharge is permitted provided that at least a 50:1 dilution is available in the receiving stream. Given that no discharge is allowed in the summer, the minimum dilution requirements and the enormous dilution available in the Columbia and Snake rivers, it is reasonable to include log ponds in the group allocations of the TMDL.

Boiler blowdown

ODEQ has issued a general permit for surface water discharge, discharge to evaporation/detention ponds, and land application of boiler blowdown that does not exceed 40

gallons per minute. The permit contains daily maximum effluent limitations of 0.57 mgd for flow and 100 °F for temperature. It also contains a minimum dilution requirement.

“During periods of discharge, the receiving stream flow shall be at least four (4) times that of the discharge for each degree Fahrenheit the temperature of the discharge is above that of the receiving stream. The following example illustrates the use of this formula.

Example: If a discharge is 0.05 mgd at 100 degrees F and the receiving stream temperature is 60 degrees F, the receiving stream flow must be at least 8 mgd (12.4 cfs).

$$(100 - 60) \times (4) \times (0.05) = 8 \text{ mgd.}”$$

The permit further states that facilities that discharge to water quality limited streams and meet the dilution requirements and the effluent limitations will be deemed to satisfy the requirement of developing and implementing a surface water temperature management plan. Given the maximum flows authorized by this permit, the minimum dilution requirements and the enormous dilution available in the Columbia and Snake rivers, it is reasonable to include boiler blowdown in the group allocations of the TMDL.

Suction dredges

ODEQ has issued a general permit for discharges from suction dredges, not to exceed 40 horsepower, used for recovering precious metals or minerals from stream bottom sediments. The suction dredging activity is not allowed to create dams or divert a waterway. Channel alteration is not allowed to result in a wider wet perimeter or shallower water depth within the stream. Suction dredging performed in this manner is not likely to add process heat to the stream. Suction dredging is allowed in streams designated as water quality limited for temperature, provided that all conditions and limitations of the permit are met. Given that the permit does not allow channel alterations that widen or deepen the water in the stream, it is reasonable to include suction dredging in the group allocations of the general permit.

Seafood processing

ODEQ has issued a general permit for discharge of process wastewater and storm water from seafood processing facilities. It also covers the disposal of seafood processing residuals through the fisheries enhancement program. This permit does not cover wastewater discharged from surimi processing activities. Temperature is not considered a parameter of concern for seafood processing. The permit does include a requirement to achieve all water quality standards at the edge of a mixing zone with a radius of 100 feet. Given that seafood processing is not likely to add heat and that the permit requires compliance with all water quality standards at the edge of the mixing it is reasonable to include seafood processing in the group allocations of the general permit.

Tanks cleanup and treatment of groundwater

ODEQ has issued a general permit for discharge of water contaminated with petroleum hydrocarbons from groundwater or surface water cleanup operations. The permit contains a minimum dilution requirement of 10:1 with the receiving stream. The permit further requires that water quality

standards be achieved at the edge of a mixing zone with a radius of 10 meters. Given that the permit requires 10:1 dilution and compliance with all water quality standards at the edge of the mixing zone, it is reasonable to include tanks cleanup and treatment of groundwater in the group allocations of the TMDL.

Washwater

ODEQ has issued a general permit for vehicle, equipment, building, and pavement washing activities that discharge wash water to surface waters or storm sewers. This permit covers discharges from fixed washing operations and mobile washing operations. Individual wash water discharges are not expected to cause a measurable increase in stream temperatures. Facilities that discharge to water quality limited streams and meet the terms and conditions of this permit will be deemed to satisfy the requirement of developing and implementing a surface water temperature management plan. Given that washwater discharges are not likely to increase stream temperatures, it is reasonable to include washwater in the group allocations of the TMDL.

Non contact geothermal

ODEQ has issued a general permit for the following facilities:

Facilities intercepting water from geothermal artesian springs which would have otherwise naturally discharged into surface water; where the intercepted geothermal water is used in non-contact heat exchange processes; and, where the spent geothermal wastewater is returned to the point of interception.

Facilities using a well to intercept geothermal water which would have otherwise naturally discharged into surface water; where the intercepted geothermal water is used for non-contact heat exchange processes; and where the spent geothermal wastewater is discharged into the same surface water body as would have occurred under natural conditions.

Facilities intercepting water from a geothermal well or spring for use in non-contact heat exchange processes where disposal of the spent geothermal wastewater is by land application.

The permit requires that effluent flow and temperature not exceed the natural geothermal source flow and temperature. Given that the permit does not allow the addition of heat and requires the discharge to be back to the stream it would normally have flowed to, it is reasonable to include non contact geothermal uses in the group allocations of the TMDL.

Fruit Packers

Ecology has issued a general permit for the discharge of wastewater from fruit packers to surface water. Discharges to surface waters will not be allowed under this general permit if either 1) the water body is designated as a WQPA, or 2) the effluent exceeds a water quality criterion and the receiving water is on the most current 303(d) list for that criterion. Furthermore, 90% of the facilities discharge less than 0.1 CFS and the discharge reported is 0.4 CFS. Given the

requirements of this permit and the very small discharge flows, it is reasonable include fruit packers in the group allocations of the TMDL.

Water Treatment Plants

Ecology has issued a general permit for discharge of filter backwash from water treatment plants. Since there are more than 300 rivers in the state that are listed for water quality temperature excursions as a result of high temperatures the temperature of discharges to surface water during the warm weather months are a concern. The permit requires monitoring of temperature in the effluent. Monitoring results will be used to determine if a temperature limit will be required in the next permit revision. It is reasonable to include water treatment plants in the group allocations of the TMDL pending analysis of the required monitoring data.

Stormwater

All three agencies have issued general permits for the discharge of stormwater from municipalities, industries and construction activities. Typically the stormwater pollutants of most concern have been total suspended solids, oil and grease, nutrients, pesticides, other organics, pathogens, biochemical oxygen demand, heavy metals and salts (Ecology, 2001). The general permits require the development of pollution prevention plans and the use of best management practices to control the discharge of pollutants to surface waters.

Direct stormwater flows, as well as, effluent from stormwater ponds can impact receiving stream temperature. For example, Johnson et al (1995) reported rapidly-increasing stream temperatures at locations downstream from storm water outfalls during summer rainfalls, and storm water temperatures exceeding 80 °F in River Falls, Wisconsin. Schueler and Holland (2000) reported that permanent stormwater ponds can act as a heat sink during the summer and discharge warmer water during storms and base flow conditions.

In River Falls, stormwater temperature during 10 days in June varied from 59.5 to 82.6 °F. Factors contributing to the variation in temperature appeared to be temperature of the impervious surface drained, the time of day when rainfall occurs, amount of rainfall, and intensity and duration of rainfall. For example, a 0.65-inch rainfall beginning at 6:30 in the morning, with air temperature near the daily minimum of 59 °F, resulted in a peak stormwater temperature of 64.6 °F; and a 0.33-inch rainfall beginning at 9:00 in the evening, with air temperature somewhat lower than the daily maximum of 85 degrees F, resulted in a peak stormwater temperature of 74.8 °F (Schueler and Holland, 2000).

Summer stormwater may be a significant issue in the Midwest where hot temperatures mingle with the wettest months of the year. Historical data from the Midwest Regional Climate Center for Minneapolis, MN (near River Falls, WI) shows average monthly rainfall of 4.34 inches in June, 4.04 inches in July and 4.05 inches in August (Midwest Regional Climate Center, 2002). In the Columbia Basin, on the other hand, the summer months have the lowest rainfall. Table shows the average monthly precipitation at various locations within the basin as provided by the Western Regional Climate Center (2002).

Table : Average monthly precipitation in inches within the Columbia Basin.

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Coulee Dam	1.09	0.94	0.86	0.78	1.15	0.94	0.56	0.50	0.52	0.66	1.31	1.44	10.75
Wenatchee	1.25	0.92	0.62	0.53	0.56	0.74	0.21	0.40	0.39	0.60	1.23	1.45	8.91
Priest Rapids	0.85	0.68	0.64	0.48	0.42	0.38	0.19	0.25	0.31	0.47	1.02	1.15	6.86
Lewiston	1.24	0.91	1.06	1.20	1.49	1.40	0.64	0.71	0.78	1.00	1.20	1.15	12.78
Ice Harbor	1.21	0.98	0.99	0.76	0.94	0.72	0.24	0.46	0.48	0.81	1.43	1.38	10.40
Kennewick	1.10	0.75	0.67	0.49	0.61	0.47	0.23	0.29	0.33	0.59	1.03	1.12	7.69
Hood River	5.23	3.78	3.11	1.64	1.05	0.79	0.20	0.39	0.94	2.40	4.95	5.75	30.21
Portland	6.62	4.6	4.71	2.7	2.01	1.58	0.37	0.73	1.78	3.68	6.02	7.74	42.51
Longview	6.24	4.98	4.64	3.27	2.51	2.12	0.89	1.30	2.11	4.15	6.75	7.37	46.33

Precipitation is very low throughout the basin during the summer months. The greatest probability of precipitation during the summer is west of the Cascade Mountains. Limited stormwater temperature data from Seattle, WA shows August stormwater temperatures of 19 °C (~66 °F). The chances for sudden storm events during hot days onto hot pavements, the conditions that cause 80 °F stormwater runoff in the Midwest appear to be rare west of the Cascade Mountains. East of the mountains, rainfall events are rare during the hot summer months. Given the low rainfall in the Columbia Basin, especially during the summer and the large flows in the Columbia and Snake Rivers it is reasonable to include stormwater in the group allocations of the TMDL.

We believe, for the reasons discussed above, that the contribution to temperature load from the sources covered by these general permits is minimal especially when compared to the temperature loads from the large individual permits and the impacts of the dams. However, effluent monitoring for temperature should be included in all of the general permits so that the States can keep track of the loadings allowed to the river via the group allocations.

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