

CITY OF DAYTON
Wastewater System Facilities Plan

NPDES Permit
NPDES Permit Evaluation & Fact sheet (11/21/2005)
303d Listings & TMDLS

Appendix B

National Pollutant Discharge
Elimination System
(NPDES)

Fact Sheet & Permit Evaluation Report



State of Oregon
Department of
Environmental
Quality

Water Quality
Western Region
750 Front St. #120
Salem, OR 97301-
1039
(503) 378-8240
(800) 349-7677

City of Dayton STP

Source location	416 Ferry St. Dayton
Permittee	City of Dayton PO Box 339 Dayton, OR 97114 <i>contact:</i> Christy Ellis (503) 864-2221
Proposed action	Renew NPDES permit Application no. 971513 Received date: 6/24/2009
Source category	NPDES Minor Domestic
Permit writer	Mark Hamlin
File number	23458
Permit number	101742
Expires	November 30, 2015

Introduction

The Federal Water Pollution Control Act of 1972, also known as the Clean Water Act, and Oregon Revised Statutes (ORS 468B.050) require a discharger to obtain a National Pollutant Discharge Elimination System (NPDES) permit to discharge wastewater to surface waters. The permit is designed to allow a discharge as long as it protects the designated beneficial uses of the receiving surface waters.

The State of Oregon has developed human health and aquatic life water quality criteria to protect these beneficial uses. The criteria fall into two broad categories, toxic and non-toxic. Toxic criteria deal with chemicals that have poisonous effects. Chlorine, for example, is commonly used to disinfect treated sewage. Chlorine is a powerful oxidizer that kills bacteria but is also harmful to other organisms at high enough levels. Non-toxic criteria deal with conditions or substances that can have harmful effects but are not poisonous. Dissolved oxygen, for example, must be sufficient to maintain aquatic life in a water body. Low enough levels can cause fish kills.

During permit development, DEQ evaluates whether water quality criteria are being or can be met by a discharge. This evaluation takes into account receiving water and effluent conditions. If there is a reasonable potential for a discharged pollutant to exceed a water quality criterion, then the permit sets limits on that pollutant.

There are two categories of effluent limits for NPDES permits: 1) technology based effluent limits, and 2) water quality based effluent limits. Technology based effluent limits require a minimum level of treatment for industrial or municipal sources using available technology. Technology based effluent limits are developed by EPA for domestic and industrial facilities. Water quality based effluent limits are independent of the available treatment technology and are based on levels protective of human health and aquatic life.

Federal regulations and Oregon Administrative Rules allow DEQ to suspend all or part of the water quality standards in small, designated areas within receiving waters around a discharge. These small areas allow treated wastes and receiving waters to thoroughly mix and dilute the treated wastes. These are known as "allocated impact zones" or "mixing zones." Two mixing zones can be developed for each discharge: 1) The acute mixing zone, also known as the "zone of initial dilution" (ZID), and 2) the chronic mixing zone, usually referred to as "the mixing zone." The ZID is a small area where acute criteria can be exceeded but must be designed to prevent lethality to organisms drifting through it. The mixing zone is an area where acute criteria must be met but chronic criteria can be exceeded. The mixing zone must be designed to protect the integrity of the entire water body and may not endanger human health.

In addition to limiting what is discharged into the receiving water, DEQ requires a discharger to monitor the discharge and report the monitoring results. DEQ may require additional studies and set special conditions unique to the discharge. There is also a set of standard requirements included in every NPDES permit that address reporting, the duty to reapply, operation, etc.

Both the permit applicant and the public can review and comment on the draft version of the NPDES permit. DEQ responds to each comment. A NPDES permit has a term of no more than five years from the date it was issued.

Facility

Facility: Background

The City of Dayton (City) owns and operates a Wastewater Treatment Plant (WWTP) located at 416 Ferry St. in Dayton. The WWTP serves approximately 2500 residents. The City treats municipal sewage and discharges treated, disinfected wastewater to the Yamhill River at river mile 5.0 in accordance with National Pollutant Discharge Elimination System (NPDES) Permit number 101742. The current permit was issued on December 28, 2005 and expired on December 31, 2009. The City submitted renewal application number 971513 on June 24, 2009. Because the City made timely application, the current permit will remain in effect until DEQ takes final action on the renewal application. This permit evaluation report describes the basis and methodology used to develop the renewal permit and proposes effluent limits and special conditions necessary to carry out state and federal law.

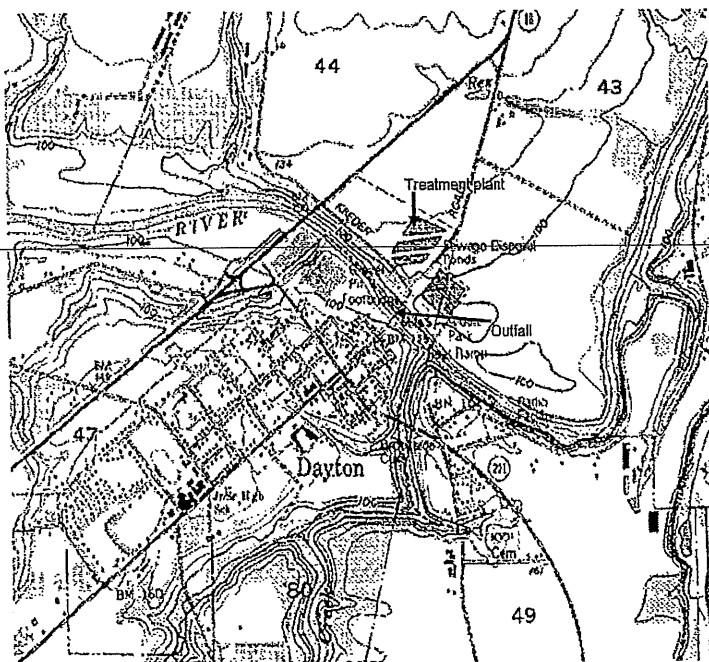
Facility: Description

The WWTP, built in 1980, comprises a Parshall flume with an influent flow meter (Steven's Recorder), a five-cell facultative lagoon having a capacity of approximately 25 million gallons, and a chlorine contact chamber having an approximate capacity of 20,000 gallons. The WWTP has no influent screening for rags, grit, etc. The six inch Parshall Flume/Steven's recorder measures and records influent and a splitter distributes the flow to cells 1, 2, and 3 in a ratio of approximately 40:35:25, respectively. The cells also have gravity transfer pipes between cells 1 and 2 and between cells 2 and 3. Flow is piped to cell 4 after treatment in cells 1, 2, and 3. Cell 4/5, the polishing pond, is bisected by a dike which allows transfer between the two chambers during high water in the winter season by means of a cut in the dike. The treated wastewater flows to the chlorine contact chamber for disinfection. The City uses chlorine gas for disinfection

and began dechlorinating with calcium thiosulfate in 2008. The City installed new influent and effluent flow meters in 2006. A V-notch weir/Steven's Recorder measures and records the effluent discharged to the Yamhill River at river mile 5.0 (see figure left).

During non-flood conditions, the discharge pipe is above the Yamhill River water line and can be easily observed from a nearby, upstream foot-bridge.

There are four lift stations: three stations (Highway 221, Ninth Street, and Palmer Creek) pump to the Footbridge lift station and the Footbridge lift station pumps all flow to the treatment plant on the



other side of the Yamhill River. All have auto-dialer alarm notification. Only the Palmer Creek lift station has an installed back-up power generator.

During the current permit term, the City has upgraded the Palmer Creek lift station, replaced the pump in the Highway 221 lift station, and replaced the pump and motor at the Footbridge lift station. The alarm station floats at the Footbridge lift station have been problematic because they collect large amounts of hair and do not always alarm properly. The City is working to find a different way to alarm the wet well, possibly ultra-sonic alarms. There is a small lift station in the Dayton RV park located across the road from the lagoon. The RV park owns and services the lift station.

The table below summarizes the capacities of the City-owned and -operated pump and lift stations:

Name/location	Pump capacity
Highway 221	1 pump, 10 hp, 4 inch, submersible, constant speed; no backup power
Ninth St.	1 ea. 7 hp, 4 inch pump; 1 ea. 10 hp, 4 inch pump; both submersible, constant speed, no backup power
Palmer Creek	2 pumps, 11 hp, 5 inch, submersible, constant speed; backup generator 40 KW
Footbridge	2 pumps, 30 hp, 6 inch, not submersible, constant speed, backup power

Facility: Treatment Plant Flows

The design average dry weather flow (ADWF) is 0.23 million gallons per day (MGD). The Department is approving a new design average wet weather flow (AWWF) of 0.587 MGD with this permit action. The design population is 2295 while the current service population is 2500. The WWTP is currently over its design capacity and is working on a Facilities Plan to address system deficiencies.

Facility: Outfalls

The City has one permitted outfall (001) at river mile 5.0 of the Yamhill River. It is a 10-inch, concrete pipe, single port outfall that discharges from the bank into the River.

Facility: Pollutants discharged

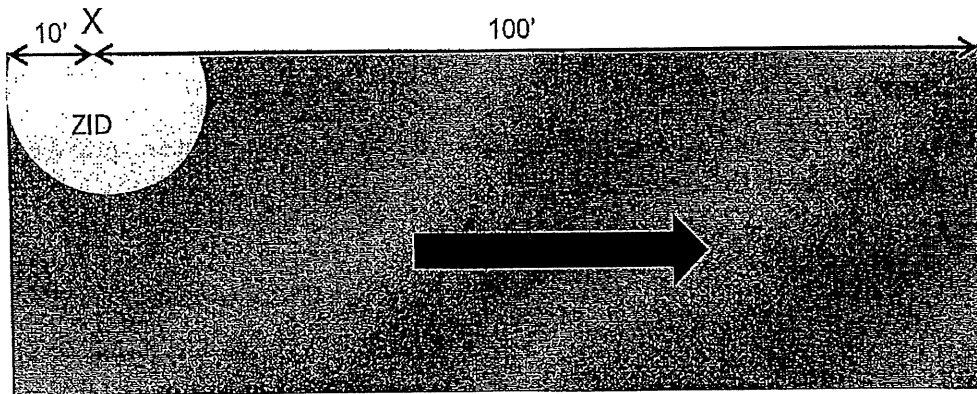
The current permit regulates Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, *E. coli* bacteria, and total residual chlorine in the effluent. The proposed renewal permit regulates the same parameters.

Facility: Regulatory mixing zone and zone of initial dilution

The allowable size of the regulatory mixing zone (RMZ) is based upon the size of the discharge relative to the receiving water, the beneficial uses of the receiving water, location of other discharges nearby, location of drinking water intakes, and other considerations.

DEQ defines the City's regulatory mixing zone as:

...that portion of the Yamhill River where the effluent mixes with 25 percent of the stream flow but in no case will it extend farther than thirty five (35) feet out from the north bank of the river and extending from a point ten (10) feet upstream of the outfall to a point one hundred (100) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) is defined as that portion of the regulatory mixing zone that is within ten (10) feet of the point of discharge.



(not to scale)

The DEQ Laboratory and Assessment Division (LEAD) conducted a field mixing zone study in October, 2009. The field crew collected conductivity data to characterize the RMZ and evaluated the presence of critical habitats, critical resources, and other, beneficial uses of the Yamhill River in the vicinity of the outfall. DEQ regional staff used the conductivity data to estimate dilutions at the edge of the ZID and the RMZ. Calculated dilutions are 10 at the ZID and 37 at the RMZ. DEQ used these dilutions in performing Reasonable Potential Analyses (RPA) for ammonia in the City's effluent, for the effect of effluent pH on the pH of the receiving stream, and for recalculating the existing total residual chlorine limits.

Facility: Sludge and biosolids management

The City does not currently land apply biosolids generated by the treatment process. The City has not yet dredged the lagoons but it is possible they may need to dredge them during this permit cycle. The proposed renewal permit prohibits the City from removing sludge from the lagoon for land application until DEQ has reviewed and approved a Biosolids Management Plan (BMP). DEQ requires that the City submit this plan at least six months prior to dredging. If the City intends to dispose of the sludge in a landfill, then a BMP is not required.

Facility: Inflow and infiltration

DEQ can estimate the extent to which inflow and infiltration (I/I) affect the City's collection system by using flow data reported by the City on monthly DMRs. DEQ uses maximum monthly average influent divided by the average dry weather influent to arrive at a "peaking factor." Peaking factors less than five indicate that the collection system is not significantly affected by

I/I. Local rainfall patterns and groundwater levels play a big role in I/I and a low value peaking factor does not necessarily mean that the collection system is in good condition. In the case of the Dayton WWTP, DEQ does not have sufficient, accurate flow data to make this calculation. Influent flow data reported before November of 2010 were not accurate, so DEQ does not have any accurate dry weather flow data from this facility. Most collection systems in the Willamette Valley have significant I/I and it would be surprising if the City of Dayton did not have similar conditions.

The City has submitted annual reports on its I/I reduction activities. DEQ will review Dayton WWTP flow data at the next permit renewal and should be better able to quantify the I/I in this system.

Facility: Overflows

DEQ has records of the following sanitary sewer overflows from the City’s system since the current permit was renewed in December, 2005:

Date	Amount (gallons)	Reached State waters?
3/17/2011	400000	Yes
1/16/2011	450	No
10/27/2010	3300	No
7/20/2010	200	No
7/15/2010	1200	No
7/5/2010	unk	No
7/4/2010	unk	No
7/3/2010	unk	No
9/18/2009	1500	Yes
6/6/2009	30	No
12/28/2007	unk	Yes
1/30/2007	unk	Yes
12/14/2006	1000	Yes
2/1/2006	unk	Yes

Facility: Groundwater

In 2008, DEQ staff found that sewage was seeping from the dike of the polishing pond (cell 4/5). The City did a geotechnical investigation which concluded that the seepage was not due to seepage through the upper portion of the dike and that the dike was not in danger of catastrophic failure. The City continued to monitor the seepage and the issue is being addressed in the Facilities Plan that the City expects to submit to DEQ in 2011. DEQ has included two conditions in Schedule D

~~of the proposed renewal permit requiring the City to conduct a leak test of all the lagoon cells and take corrective action if warranted.~~

DEQ hydrologist concluded that groundwater monitoring is unnecessary during this permit cycle for the following reasons:

- The area around the treatment lagoons is served by city water (including the nearby large mobile home park);
- The lagoons are not within a drinking water protection area;
- There do not appear to be any private water supply wells in the likely downgradient direction from the lagoons;

- Wells in Section 16 appear to draw from a deep water-bearing zone overlain by silts and clays. These lower-permeability materials protect the zone from surficial contaminants, and the confined nature of the zone supports this observation; and
- The shallowest groundwater below the lagoons discharges to the Yamhill, which is the stream that receives treated effluent.

Facility: Stormwater

This renewal does not address stormwater because a general NPDES stormwater permit is not required for a facility with a design flow of less than 1 MGD, as is the case for the City of Dayton WWTP.

Facility: Pre-treatment

The permittee does not have a DEQ-approved industrial pretreatment program. DEQ has determined that, based on current information, a program is not required for this source.

Facility: Compliance History

DEQ last inspected this facility in September, 2008. DEQ has taken two informal and no formal enforcement actions against the City since the DEQ renewed the current permit in December, 2005. The table below summarizes the violations that were addressed by the enforcement actions.

Enforcement action	Date issued	Violation
WL-WQ/D-WRE-2007-0001	1/8/2007	Non-operational flow monitoring equipment
WLOC-WQ/D-WRS-2008-149	9/22/2008	Composite sampling not done

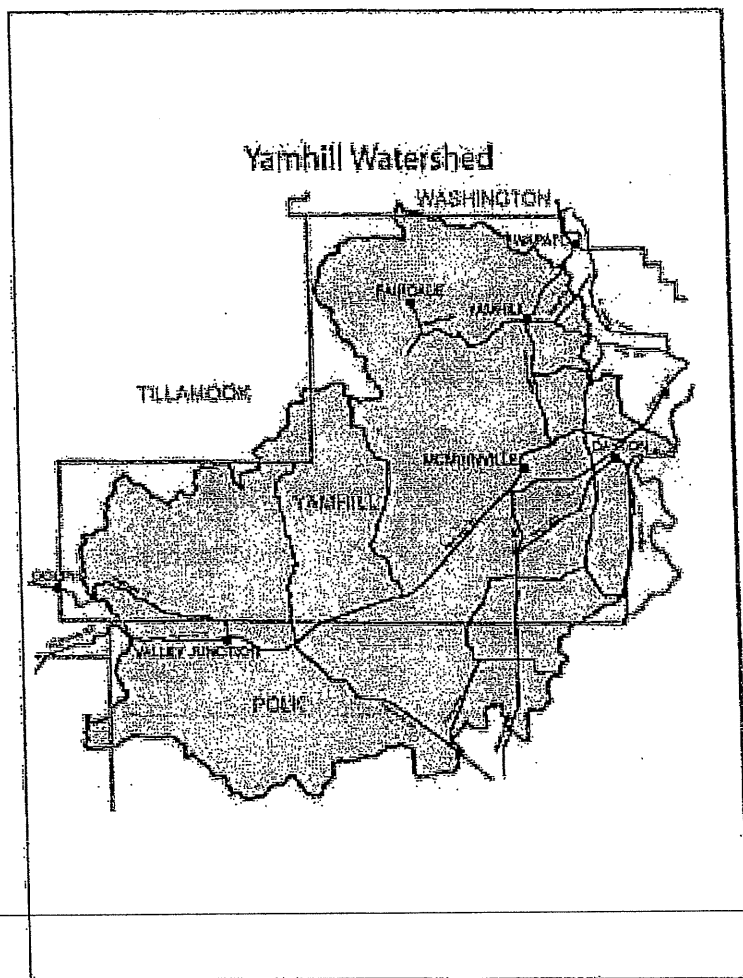
Receiving stream

Receiving Stream: Description

The Yamhill River, a tributary of the Willamette River, flows through Yamhill and northern Polk Counties in the northwest Willamette Valley. The watershed is a sub-basin of the much larger Willamette River basin (see figures below). Agriculture and forestry are the major land uses in these two, mostly rural, counties. The Confederated Tribes of the Grande Ronde Community holds a significant portion of the forestland within the Yamhill River watershed. Agricultural fields share the landscape with floodplains, riparian areas, and wetlands in the lower southern and eastern portions while steep forestland dominates the western portion of the watershed. The Yamhill Basin climate is marine-influenced with extended winter rainy seasons and hot, dry summers. Average annual precipitation amounts vary within the watershed; the higher elevations receive up to 60 inches of precipitation annually while the bottomlands receive about 40 inches annually. As is typical for the west side of the Cascades, precipitation is not spread evenly over

the calendar year. It falls during the winter and spring months in a water year that runs from October to April.

Most of the cultivated areas in the watershed have been tilled and drain into the stream network. This practice, while allowing cultivation during wetter times of the year, has altered the hydrology of the watershed.



Receiving Stream: Anti-degradation

DEQ did not do an in-depth anti-degradation review because this is an existing discharge into an existing mixing zone. Oregon Administrative Rules (OAR 340-041-0004-3 through 5) state that renewal of this permit does not further degrade the water quality of the receiving stream (see Appendix A).

Receiving Stream: 303(d) List

The 2004/2006 DEQ Integrated Report (the 303d list) shows the stream reach of the Yamhill River into which the WWTP discharges is water quality limited for the following parameters: chlorophyll a (year round), dissolved oxygen, *E. coli* (fall-spring), iron, manganese, pH (May-October), phosphorus (May-Oct), and temperature (year round). Appendix B summarizes these conditions and includes information as to whether a TMDL has been approved for a parameter, whether there is a Waste Load Allocation for the City of Dayton for a parameter, and whether the City discharges during a season when the Yamhill River is water quality limited for a parameter.

Receiving Stream: Beneficial Uses

The designated beneficial uses for the Yamhill River are:

- Public domestic water supply
- Private domestic water supply
- Industrial water supply
- Irrigation
- Livestock watering
- Fish & aquatic life*
- Wildlife & hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality
- Hydro-power

* The Yamhill River reach in the vicinity of the outfall supports salmon and steelhead rearing and migration year round.

Receiving Stream: Biological oxygen demand and Total suspended solids

Biological Oxygen Demand (BOD₅) is a measure of the oxygen used by microorganisms when they break down organic matter. If too much organic matter is in the water, then microorganisms use up all the available oxygen in the water. The result is water having less than optimal dissolved oxygen which fish and other organisms require for survival.

Total Suspended Solids (TSS) is a measure of organic and inorganic solid materials that are suspended in the water. High concentrations of suspended solids can lower water quality by absorbing light. Waters then become warmer and, because warmer water holds less oxygen than cooler water, aquatic life can suffer. If aquatic plants live in the water body, the suspended solids allow less light to reach their leaves and they will photosynthesize less. This also reduces the amount of oxygen in the water body because photosynthesis produces oxygen. Suspended solids affect aquatic life in other ways. They can clog fish gills, reduce growth rates, decrease resistance to disease, and prevent egg and larval development. Particles that settle out can smother fish eggs and those of aquatic insects, as well as suffocate newly hatched larvae. The material that settles also fills the spaces between rocks and makes these microhabitats unsuitable

for various aquatic insects. Solids can also reduce visibility which is needed for both predation and predation avoidance.

The Willamette Basin minimum design criteria for wastewater treatment vary depending on the season (receiving stream low flow season of May 1 – October 31, receiving stream high flow season of November 1 – April 30) and the location of the WWTP within the basin. The Dayton WWTP discharges to the Yamhill River, a tributary of the Willamette River, only during the high flow (winter) season for which the design criteria require a minimum of secondary treatment or equivalent control. Secondary treatment, as defined in 40 CFR 133.102, is a monthly average BOD₅ concentration of 30 mg/L and a weekly average BOD₅ concentration of 45 mg/L. DEQ set BOD₅ concentration limits at these levels. For TSS, equivalent control, as defined in 40 CFR 133.103(c), is a monthly average TSS concentration of 50 mg/L. DEQ set a weekly concentration limit of 80 mg/L. These BOD₅ and TSS concentration limits are in the current permit and DEQ proposes to retain these limits in the renewal permit.

BOD₅ and TSS mass load limits for wastewater treatment facilities can be calculated by various methods. DEQ proposes to base the Dayton WWTP mass load limits on average wet weather design flow (ADWWF) in accordance with OAR 340-041-0061(10)(a). The ADWWF for the Dayton WWTP is 0.587 MGD. The BOD₅ and TSS mass load limits are calculated as follows:

Flow × BOD₅ Concentration × Conversion Factor = BOD₅ Mass load limit

$$\left(\frac{0.587 \times 10^6 \text{ gal}}{\text{day}}\right) \times \left(\frac{30 \times 10^{-3} \text{ g}}{\text{L}}\right) \times \left(\frac{2.2 \text{ lbs}}{10^3 \text{ g}}\right) \times \left(\frac{1 \text{ L}}{0.264 \text{ gal}}\right) = 147^* \text{ lbs/day (Monthly average)}$$

$$147 \text{ lbs/day} \times 1.5 = 220 \text{ lbs/day (Weekly average)}$$

$$147 \text{ lbs/day} \times 2 = 290 \text{ lbs/day (Daily maximum)}$$

Flow × TSS Concentration × Conversion Factor = TSS Mass load limit

$$\left(\frac{0.587 \times 10^6 \text{ gal}}{\text{day}}\right) \times \left(\frac{50 \times 10^{-3} \text{ g}}{\text{L}}\right) \times \left(\frac{2.2 \text{ lbs}}{10^3 \text{ g}}\right) \times \left(\frac{1 \text{ L}}{0.264 \text{ gal}}\right) = 244^* \text{ lbs/day (Monthly average)}$$

$$244 \text{ lbs/day} \times 1.5 = 370 \text{ lbs/day (Weekly average)}$$

$$244 \text{ lbs/day} \times 2 = 490 \text{ lbs/day (Daily maximum)}$$

*Note: calculated values rounded to 2 significant figures

The Code of Federal Regulations (CFR) secondary treatment standards (40 CFR, Part 133) require a minimum percent removal of BOD₅ and TSS by municipal dischargers. In accordance with the federally approved standards for Oregon under 40 CFR 133.105, certain types of treatment facilities including waste stabilization ponds, such as the Dayton WWTP, are eligible for lower percent removal limits. The proposed renewal permit requires a minimum monthly average BOD₅ and TSS removal efficiency of 85 and 65 percent respectively – the same as the current permit.

Receiving Stream: Bacteria

The proposed limits are a monthly geometric mean of 126 *E. coli* organisms per 100 mL, with no single sample to exceed 406 *E. coli* organisms per 100 mL. If a single sample exceeds 406 *E. coli* organisms per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four-hour intervals beginning within 28 hours after the original sample was taken. The rule also allows for changing the resampling timeframe if it would pose an undue hardship on the treatment facility. After discussions with the permittee, the Department is proposing that the five re-samples be taken beginning no later than 72 hours after the original sample was taken. This is consistent with OAR 340-041-0009(5)(a).

The proposed limits are taken directly from the Oregon bacteria rule which is found in OAR 340-041-0009. This rule establishes numeric in-stream water quality standards (OAR 340-041-0009(1)), establishes a prohibition against discharging raw sewage, establishes effluent limitations, and the methodology for establishing a violation (OAR 340-041-0009(5)). Regarding the general condition 6 found in Section B of Schedule F in this permit which prohibits overflows from wastewater conveyance systems, the Environmental Quality Commission (EQC) recognizes that it is impossible to design and construct a conveyance system that will prevent overflows under all storm conditions. The applicant is not seeking permit coverage for overflows and the permit does not authorize such discharges. The State of Oregon has determined that all wastewater conveyance systems should be designed to transport storm events up to a specific size to the treatment facility. Therefore, in exercising its enforcement discretion regarding Sanitary Sewer Overflows, the Department will consider the following:

- (1) Whether the permittee has conveyance and treatment facilities adequate to prevent overflows except during a storm event greater than the one-in-five-year, 24-hour duration storm from November 1 through May 21 and except during a storm event greater than the one-in-ten-year, 24-hour duration storm from May 22 through October 31. In addition, DEQ will also consider using enforcement discretion for overflows that occur during a storm event less than the one-in-five-year, 24-hour duration storm from November 1 through May 21 if the permittee had separate sanitary and storm sewers on January 10, 1996, had experienced sanitary sewer overflows due to inflow and infiltration problems, and has submitted an acceptable plan to the Department to address these sanitary sewer overflows by January 1, 2010;
- (2) Whether the permittee has provided the highest and best practicable treatment and/or control of wastes, activities, and flows and has properly operated the conveyance and treatment facilities;
- (3) Whether the permittee has minimized the potential environmental and public health impacts from the overflow; and
- (4) Whether the permittee has properly maintained the capacity of the conveyance system.

DEQ will review the permittee's determination of the one-in-five-year, 24-hour duration winter storm and the one-in-ten year, 24-hour duration summer storm as described above in the permit holder's facilities plan. In the event that a permit holder reports an overflow event associated with a storm event and DEQ does not have information from the permit holder sufficient to determine whether or not the storm event exceeds storm events as specified in OAR 340-041-0009(6) & (7), DEQ will perform the determination using the information contained in Figure 26 of the 1973 NOAA Atlas 2 entitled "Precipitation-Frequency Atlas of the Western United States, Volume X – Oregon". This figure is entitled "Isopluvials of 5-yr 24-hr precipitation in tenths of an inch." The Atlas can be obtained on-line at http://hdsc.nws.noaa.gov/hdsc/pfds/other/or_pfds.html, however the file is very large. A scanned version of Figure 26 is available at <http://www.wrcc.dri.edu/pcpnfreq/or5y24.gif>. DEQ will compare the information in this figure with rainfall data available from the National Weather Service, or other source as necessary.

Receiving Stream: pH

The pH is a measure of how acidic or basic a solution is. A solution is considered neutral at a pH of 7.0 standard units (s.u). The general purpose of an in-stream water quality pH standard is to protect aquatic life because most aquatic organisms can tolerate only a fairly narrow range - around 7.0 s.u.

The Willamette Basin Water Quality Standard for pH, found in OAR 340-041-0345(1)(a), allows a pH range from 6.5 to 8.5 s.u. The proposed permit limits the pH of the effluent to the range of 6.0 to 9.0 s.u. This limit is based on Federal secondary treatment standards for wastewater treatment facilities (40 CFR Part 133.102), and is applied to the majority of domestic NPDES permittees in the state. The water quality standard for pH does not have to be met within the permittee's mixing zone. Mixing with ambient water within the mixing zone will ensure that the pH at the edge of the mixing zone meets the ambient criteria. DEQ analyzed the effects of the City's effluent on pH at the edge of the mixing zone and concluded that the pH would remain within the Willamette Basin Water Quality Standard of 6.5 to 8.5 s.u. as long as the effluent remained within the range of 6.0 to 9.0 s.u. (See Appendix C). Therefore, DEQ considers the current permit limits to be protective of the water quality standard and proposes keeping them in the renewal permit.

Receiving Stream: Ammonia

Ammonia is toxic to fish and aquatic organisms, even in very low concentrations. Ammonia toxicity varies with other water quality parameters: the higher the pH and the temperature, the more toxic the ammonia.

DEQ conducted a RPA for ammonia using background water quality data collected by DEQ, effluent ammonia data collected by the City, dilution available within the mixing zone as described above, and assumed worst-case effluent concentrations of ammonia (See Appendix D). The conservative analysis indicates that there is no reasonable potential to violate either the chronic or acute toxicity standard. Therefore, DEQ does not propose ammonia limits in the renewal permit.

Receiving Stream: Chlorine

Chlorine is a strong chemical oxidizer and is toxic to many aquatic organisms. Its oxidizing properties also make it an effective disinfectant. The DEQ used the RPA workbook and updated dilution information to evaluate the current total residual chlorine limits. The RPA showed that the effluent limits should be set at 0.19 mg/L daily maximum concentration and 0.07 mg/L monthly average concentration (see Appendix E). The limits in the current permit are a daily maximum of 0.04 mg/L and a monthly average of 0.01 mg/L. With some exceptions, the anti-backsliding provisions (described in CFR 122.44(l)) do not allow relaxation of effluent limits in renewed/reissued permits and require that the more stringent of the existing or new limits be included in the renewal permit. The City does not qualify for any of the exceptions, therefore, DEQ proposes to retain the current, more stringent total residual chlorine limits. DEQ will use the quantification level of 0.1 mg/L as the compliance evaluation level.

Receiving Stream: Temperature and excess thermal load

Water temperatures affect the life cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations. The purpose of the temperature criteria in OAR 340-041-0028 is to protect designated, temperature sensitive, beneficial uses (including salmonid life cycle stages) from adverse warming caused by human activities.

The Willamette River and many tributaries are water quality limited for temperature from April through October and DEQ must evaluate whether discharges to Willamette River tributaries, such as the City's to the Yamhill River, have reasonable potential to contribute to temperature exceedances. If there is reasonable potential, then DEQ must include thermal limits in the permit. The City does not discharge from May 1 through October 31, therefore temperature limits are not needed for this period. DEQ evaluated the potential effects of the City's discharge on the receiving stream during the winter discharge season of November 1 through April 30 (cold water protection).

DEQ uses Fish Use Designation maps and Salmon and Steelhead Spawning Use Designation maps to identify applicable temperature criteria for each basin. The Yamhill Basin maps are contained in OAR 340-041, Figures 340A and 340B respectively. According to these maps, salmon and steelhead spawning are not designated uses. The Yamhill River in the vicinity of the City's outfall is designated as salmon and trout rearing and migration habitat for which the applicable numeric temperature criterion is 18 °C during the entire year.

The effluent temperature during the City's winter discharge season is lower than 18°C therefore, there is no reasonable potential for the City's effluent to increase the temperature of the receiving water beyond the criterion.

The DEQ is also required to evaluate the potential for temperature impacts from a thermal plume. There are no active salmonid redds in the vicinity of the discharge. Because the effluent temperature is lower than 18°C, the effluent does not pose reasonable potential to cause acute impairment or instantaneous lethality (32°C), thermal shock (25°C), or migration blockage (21°C) to salmon and steelhead. DEQ conducted a reasonable potential analysis of mixing zone temperature for the winter discharge season (November 1 through April 30). This analysis of the Yamhill WWTP discharge showed no reasonable potential to violate the temperature standard at

the edge of the mixing zone (See Appendix F). Therefore, DEQ does not propose temperature or excess thermal load limits in this renewal permit.

Permit

Permit: Facility classification

The plant operation and collection system classifications were re-evaluated to determine the appropriateness of the current operator certification requirements (Appendix G). The plant is currently classified as Level I and the collection system as Level II. The re-evaluation does not result in any change to these classification levels. The plant must be supervised by one or more operators who hold valid certification at or above Level I (plant) and Level II (collection).

Permit: Limits (Schedule A)

The proposed limits are summarized below:

BOD and TSS (November 1 – April 30; no discharge May 1 – October 31)

Parameter	Average effluent concentration		Average effluent loading		
	Monthly	Weekly	Monthly	Weekly	Daily
BOD ₅	30 mg/L	45 mg/L	150 lb/day	220 lb/day	290 lb/day
TSS	50 mg/L	80 mg/L	240 lb/day	370 lb/day	490 lb/day

Other parameters (year round)

Parameter	Limits
<i>E. coli</i> bacteria	May not exceed a monthly geometric mean of 126 organisms per 100 ml, no single sample may exceed 406 organisms per 100 ml
pH	Must be within the range of 6.0 to 9.0 s.u.
Total chlorine residual	May not exceed a daily maximum of 0.04 mg/L and a monthly average of 0.01 mg/L
Removal efficiency (BOD and TSS)	May not be less than a monthly average of 85% for BOD and 65% for TSS

Permit: Required Monitoring (Schedule B)

The permittee is required to have a laboratory Quality Assurance/Quality Control program. DEQ recognizes that some tests do not accurately reflect the performance of a treatment facility due to quality assurance/quality control problems. These tests should not be considered when evaluating the compliance of the facility with the permit limitations.

DEQ developed a monitoring matrix for commonly monitored parameters. Proposed monitoring frequencies for all parameters are based on this matrix and, in some cases, may have changed from the current permit. The proposed monitoring frequencies for all parameters correspond to

those of facilities of similar size and complexity in the state. Refer to the table below for a summary of proposed monitoring and reporting requirements.

Parameter	Minimum Frequency	Sample Type
<i>Influent</i>		
Flow total (mgd)	daily	measurement
Flow meter calibration	annual	verification
BOD ₅ concentration	1 per 2 weeks	composite
TSS concentration	1 per 2 weeks	composite
pH	2 per week	grab
<i>Effluent</i>		
Flow total (mgd)	daily	measurement
Flow meter calibration	annual	verification
BOD ₅ concentration	1 per 2 weeks	composite
BOD ₅ pounds discharged	1 per 2 weeks	calculation
BOD ₅ average removal efficiency	monthly	calculation
TSS concentration	1 per 2 weeks	composite
TSS pounds discharged	1 per 2 weeks	calculation
TSS average removal efficiency	monthly	calculation
pH	2 per week	grab
Bacteria <i>E. coli</i>	1 per 2 weeks	grab
Chlorine quantity used	daily	measurement
Chlorine total residual	daily	grab
Temperature maximum	2 per week	measurement
<i>Lagoon</i>		
Sludge depth	1 per permit cycle	measurement
Water level	1 per week	measurement
Perimeter inspection	1 per week	observation

Permit: Compliance Conditions (Schedule C)

None

Permit: Special Conditions (Schedule D)

The proposed renewal includes special conditions requiring the permittee to manage biosolids in accordance with a DEQ approved management plans, to retain DEQ certified staff to supervise the treatment and collection systems, allowing landscape irrigation on WWTP grounds, to leak

test the lagoon cells, to give appropriate notification of malfunctions and overflows, and advising the permittee of potential, future groundwater requirements.

Permit: Pre-treatment (Schedule E)

None

Permit: General Conditions (Schedule F)

All NPDES permits issued in the State of Oregon contain General Conditions that remain the same regardless of the type of discharge and the activity causing the discharge. They can be changed or modified only on a statewide basis.

Section A contains standard conditions which include compliance with the permit, assessment of penalties, mitigation of non-compliance, permit renewal application, enforcement actions, toxic discharges, property rights and referenced rules and statutes. Section B contains requirements for operation and maintenance of the pollution control facilities. This section includes conditions for proper operation and maintenance, duty to halt or reduce activity in order to maintain compliance, bypass of treatment facilities, upset conditions, treatment of single operational events, overflows from wastewater conveyance systems and associated pump stations, public notification of effluent violation or overflow, and disposal of removed substances. Section C contains requirements for monitoring and reporting. This section includes conditions for representative sampling, flow measurement, monitoring procedures, penalties of tampering, reporting of monitoring results, additional monitoring by the permittee, averaging of measurements, records retention, records contents, and inspection and entry. Section D contains reporting requirements and includes conditions for reporting planned changes, anticipated non-compliance, permit transfers, progress on compliance schedules, non-compliance which may endanger public health or the environment, other non-compliances, and other information. Section D also contains signatory requirements and the consequences of falsifying reports. Section E contains the definitions used throughout the permit.

The General Conditions were revised in 2008. A summary of the changes is as follows:

- There are additional citations to the federal Clean Water Act and CFR, including references to standards for sewage sludge use or disposal.
- There is additional language regarding federal penalties.
- Bypass language has been made consistent with the Code of Federal Regulations.
- Overflow language has been modified. Formerly the language stated that overflows in response to the five or ten year event would not violate the permit. Now it states that overflows are prohibited. DEQ will continue to exercise enforcement discretion with respect to overflows consistent with the provisions of the Bacteria Rule (OAR 340-041-0009).

- Reporting requirements regarding overflows have been made more explicit.
 - Requirements regarding emergency response and public notification plans have been made more explicit.
 - Language pertaining to duty to provide information has been made more explicit.
 - Confidentiality of information is addressed.
-

**Appendix A: Anti-degradation Review Worksheet
for a Proposed Individual NPDES Discharge**

Applicant: City of Dayton

1. What is the name of the surface water that receives the discharge? Yamhill River

Briefly describe the proposed activity: The City of Dayton owns and operates a wastewater treatment plant that collects and treats domestic sewage generated by the city residents and businesses. The treatment plant discharges treated, disinfected wastewater into the Yamhill River at river mile 5.0.

This review is for a Renewal New

Go to step 2.

2. Is this surface water an **Outstanding Resource Water** or **upstream** from an **Outstanding Resource Water**?

Yes. Go to Step 5. No. Go to Step 3.

3. Is this surface water a **High Quality Water**?

Yes. Go to Step 8. No. Go to Step 4.

4. Is this surface water a **Water Quality Limited Water**?

Yes. Go to Step 14. No. Go to Step 2.

14. Will the proposed activity lowering water quality in the **Water Quality Limited Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from anti-degradation review; otherwise see "Is an Activity Likely to Lower Water Quality?" in *Anti-degradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications.*]

Yes, go to Step 15.

No, proceed with Permit Application. Applicant should provide basis for conclusion: This is an existing discharge into an existing mixing zone. Oregon Administrative Rules (OAR 340-041-0004-3 through 5) state that renewal of this permit does not further degrade the water quality of the receiving stream. Go to Step 21.

21. On the basis of the Anti-degradation Review, the following is recommended:

Proceed with Application to Interagency Coordination and Public Comment Phase.

Deny Application; return to applicant and provide public notice

Action Approved

Review prepared by DEQ, go to DEQ info Other, go to Other info

DEQ info

Section: WR-Salem

Name: Mark Hamlin

Phone: (503) 378-5319

Date Prepared: 8/25/2011

**Appendix B
Water Quality Limited Status
Yamhill River, Dayton WWTP**

Parameter	Season	Beneficial Uses	Status	Assessment Year	Notes
Chlorophyll <i>a</i>	Year Around	Aesthetics, Fishing, Livestock watering, Water contact recreation, Water supply	Cat 4A: Water quality limited, TMDL approved	2004	No Waste Load Allocation for this source in approved TMDL
Dissolved Oxygen	January 1 - May 15	Resident trout spawning	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004	Not shown on ODFW maps (Figs. 340A, 340B) as spawning(OAR340-041); no dissolved oxygen TMDL approved
<i>E coli</i>	Fall/Winter/Spring	Water contact recreation	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004	
Fecal Coliform	Fall/Winter/Spring	Water contact recreation	303(d)	1998	Old standard; <i>E. coli</i> standard now applies
Flow Modification	Undefined	Resident fish and aquatic life, Salmonid fish rearing, Salmonid fish spawning	Water quality limited not needing a TMDL	2002	
Iron	Year Around	Aquatic life, Drinking water, Fishing, Human health	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004	No approved TMDL
Manganese	Year Around	Drinking water, Fishing, Human health	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004	No approved TMDL
pH	May 1 - October 31	Anadromous fish passage, Resident fish and aquatic life, Salmonid fish rearing, Salmonid fish spawning, Water contact recreation	TMDL approved	1998	Source does not discharge between these dates.
Phosphorus	May 1 - October 31	Aesthetics	TMDL approved	1998	Source does not discharge between these dates; no Waste Load Allocation for this source in approved TMDL
Temperature	Year Around (Non-spawning)	Salmon and trout rearing and migration	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004	TMDL in progress

Appendix C
pH Evaluation Worksheet - Dayton WWTP

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.)

INPUT	RPA for pH	
	Lower pH	Upper pH
	Criteria	Criteria
1. DILUTION FACTOR AT MZ BOUNDARY - $(Q_e+Q_r)/Q_e$	37	37
2. UPSTREAM/BACKGROUND CHARACTERISTICS		
Temperature (deg C):	11.7	11.7
pH:	7.3	7.3
Alkalinity (mg CaCO ₃ /L):	52.0	52.0
3. EFFLUENT CHARACTERISTICS		
Temperature (deg C):	15.5	15.5
pH:	6.0	9.0
Alkalinity (mg CaCO ₃ /L):	238.0	52.0
4. APPLICABLE PH CRITERIA	6.5	8.5
OUTPUT		
1. IONIZATION CONSTANTS		
Upstream/Background pKa:	6.45	6.45
Effluent pKa:	6.42	6.42
2. IONIZATION FRACTIONS		
Upstream/Background Ionization Fraction:	0.88	0.88
Effluent Ionization Fraction:	0.28	1.00
3. TOTAL INORGANIC CARBON		
Upstream/Background Total Inorganic Carbon (mg CaCO ₃ /L):	59.32	59.32
Effluent Total Inorganic Carbon (mg CaCO ₃ /L):	858.16	52.14
4. CONDITIONS AT MIXING ZONE BOUNDARY		
Temperature (deg C):	11.80	11.80
Alkalinity (mg CaCO ₃ /L):	57.03	52.00
Total Inorganic Carbon (mg CaCO ₃ /L):	80.91	59.12
pKa:	6.45	6.45
pH at Mixing Zone Boundary:	6.8	7.3
Is there Reasonable Potential?	No	No

Appendix F
Temperature RPA - Human Use Allowance
Dayton STP

<p>Enter data into white cells below:</p> <p>Mixing Zone Dilution = 37</p> <p>7Q10 = 139 cfs</p> <p>Effluent Flow = 0.23 mgd</p> <p>Applicable Temperature Criterion = 18 °C</p> <p>Effluent Temperature = 15.2 °C</p> <p>Allowable increase = 0.3 °C</p>	<p>Equation used to calculate ΔT at edge of MZ</p> $\Delta T_{mz} = \frac{T_e + (S-1)T_a - T_a}{S}$ <p>Equation used to calculate thermal load limit</p> $TLL = 3.7854 Q_e S \Delta T_{all} C_p \rho$ <p>Where:</p> <p>Q_e = Effluent Flow in mgd</p> <p>S = Dilution</p> <p>ΔT_{all} = Allowable temperature increase at edge of MZ (°C)</p> <p>C_p = Specific Heat of Water (1 cal/g °C)</p> <p>ρ = Density of Water (1 g/cm³)</p> <p>3.7854 = Flow conversion from mgd to m³/day</p>
<p>Dilution at 25% Stream Flow = 99</p>	
<p>ΔT at edge of MZ = -0.08 °C</p>	
<p>ΔT at 25% Stream Flow = -0.03 °C</p>	
<p>Thermal Load Limit = N/A Million Kcals</p>	<p>No Reasonable Potential</p>

Appendix G Operator Certification Worksheet Dayton STP

General Requirements (OAR 340-049-0015) - Each owner of a regulated wastewater system must have its system supervised by one or more operators who hold a valid certificate for the type of system, wastewater treatment or collection, at a grade equal to or greater than the wastewater system classification as defined in OAR-340-049-0020 and 0025. **Because classification establishes the operator certificate type and grade required for compliance, it must be determined prior to start-up of a new or upgraded facility.**

Wastewater treatment system classifications are derived from the total points assigned based on criteria shown in OAR 340-049-0025 (see Step 1 of the worksheet). Pursuant to OAR 340-049-0020(4), if the complexity of a treatment system is not reflected in -0025, DEQ may classify a system higher as long as the designation is consistent with the intent of the classification system (see Step 2 of the worksheet).

Collection system classifications are based on a service area design population to be handled by the wastewater treatment facility (see footnote on page 1 of worksheet). Like treatment, if deemed appropriate, DEQ may classify the system higher than by population alone (OAR 340-049-0020(5)). For example, the design service area population for "X" Sanitary District is 1350 (Class I), but there are 280 city-maintained STEP or STEG units and a chemical feed system for control of hydrogen sulfide. A Class II designation may be appropriate to meet the intent of the classification system to establish minimum operator requirements for experience and knowledge.

Upon written notice to the wastewater system owner, DEQ may change the classification of a wastewater system and give the owner reasonable time to comply with requirements of the new classification (OAR 340-049-0020(6)). If you have any questions, please contact the Operator Certification Program office in The Dalles at (541) 298-7255 x35.

Classification of Wastewater Systems (OAR 340-049-0020) All wastewater systems regulated under OAR 340-049 will be classified by DEQ as wastewater treatment systems and/or wastewater collection systems, as appropriate, in accordance with the following classification system:

Wastewater Treatment Systems	Wastewater Collection Systems
Class I - 30 total points or less	Class I - 1,500 or less design population
Class II - 31-55 total points	Class II - 1,501 to 15,000 design population
Class III - 56-75 total points	Class III - 15,001 to 50,000 design population
Class IV - 76 or more points	Class IV - 50,001 or more design population

Definitions used in these regulations unless otherwise required by context (see OAR 340-049-0010):

"Average Dry Weather Flow" (ADWF) means the design average dry weather flow capacity of the wastewater treatment system in gallons per day or Million Gallons per Day (MGD), as approved by the Department.

"Industrial Waste" means liquid wastes from an industrial or commercial process discharged into a wastewater system for conveyance and treatment.

"NPDES Permit" means a waste discharge permit issued in accordance with requirements and procedures of the National Pollutant Discharge Elimination System authorized by Section 402 of the Federal Clean Water Act and OAR 340, Division 45.

"Population" means the design population of the wastewater system represented as the number of people or the population equivalent the system is designed to serve. Equivalent population ordinarily is determined based on 70 gallons per person per day average dry weather flow (ADWF) or 0.17 lbs. BOD5 per person per day, whichever is greater.

"Wastewater" or "sewage" means the water-carried human or animal waste from residences, buildings, industrial establishments or other places, together with such groundwater infiltration and surface water as may be present. The admixture of domestic and industrial waste or other by-products, such as sludge, is also considered wastewater or sewage.

"Wastewater Treatment System" or "Sewage Treatment System" means any structure, equipment or process for treating and disposing of, or recycling or reusing wastewater and sludge (including industrial waste) that is discharged to the wastewater system.

"Wastewater Collection System" or "Sewage Collection System" means the trunks, arterials, pumps, pump/lift stations, piping and other appurtenances necessary to collect and carry away wastewater or other liquid waste treatable in a community or private wastewater treatment facility.

"Wastewater System" means "Sewage Treatment Works" defined in ORS 448.405 as any structure, equipment or process required to collect, carry away and treat domestic waste and dispose of sewage as defined in ORS 454.010. Typically, components of a wastewater system include a wastewater collection system and a wastewater treatment system.

"WPCF Permit" means a Water Pollution Control Facilities permit to construct and operate a collection, treatment and/or disposal system with no discharge to navigable waters.

**Appendix G
Operator Certification Worksheet
Dayton STP**

WW System Common Name: Dayton STP

Facility ID: 23458 Location: 416 Ferry St., Dayton

Total Points (from page 3): 24 WWT Class (check): I II III IV

Design Population¹: 2295 WWC Class (check): I II III IV

Design ADWF load (Influent MGD) 0.23 Design BOD load (Influent lbs./day) _____

Classified by: Mary Pfauth Date: 4/21/2011

Date this classification filed with the Operator Certification Office: _____

System start-up date for this classification (new, upgrade or expansion): _____

Is this a change from a prior classification? (check): Yes No

STEP 1 - Criteria for Classifying Wastewater Treatment Systems (OAR 340-049-0025)

(1) Design Population or Population Equivalent Points (10 Points Maximum)

- | | |
|--|---------------------------------|
| <input type="checkbox"/> Less than 750 | 0.5 points |
| <input type="checkbox"/> 751 to 2000 | 1 point |
| <input checked="" type="checkbox"/> 2001 to 5000 | 1.5 points |
| <input type="checkbox"/> 5001 to 10,000 | 2 points |
| <input type="checkbox"/> Greater than 10,000 | 3 points+1 pt. for ea. add. 10k |
| Part 1 Subtotal | <u>1.5 points</u> |

(2) Average Dry Weather Flow (Design Capacity) Points (10 points Maximum)

- | | |
|---|---------------------------------|
| <input type="checkbox"/> Less than 0.075 MGD | 0.5 point |
| <input type="checkbox"/> Greater than 0.075 to 0.1 MGD | 1 point |
| <input checked="" type="checkbox"/> Greater than 0.1 to 0.5 MGD | 1.5 points |
| <input type="checkbox"/> Greater than 0.5 to 1.0 MGD | 2 points |
| <input type="checkbox"/> Greater than 1.0 MGD | 3 points+1 pt. for ea. add. MGD |
| Part 2 Subtotal | <u>1.5 points</u> |

(3) Unit Process Points (Check all that apply)

Preliminary Treatment and Plant Hydraulics: See also STEP 2

- | | |
|--|------------------------|
| <input type="checkbox"/> Comminution (cutter, shredder, grinder, barminutor, etc.) | 1 point |
| <input type="checkbox"/> Grit Removal, gravity | 1 point |
| <input type="checkbox"/> Grit Removal, mechanical | 2 points |
| <input type="checkbox"/> Screen(s), in-situ or mechanical (coarse solids only) | 1 point |
| <input checked="" type="checkbox"/> Pump/Lift Station(s) (pumping of main flow) | 2 points |
| <input type="checkbox"/> Flow Equalization (any type) | 1 point |
| Subtotal | <u>2 points</u> |

Primary Treatment: _____

- | | |
|---|------------------------|
| <input type="checkbox"/> Community Septic Tank(s) (STEP, STEG, etc) | 2 points |
| <input type="checkbox"/> Clarifier(s) | 5 points |
| <input type="checkbox"/> Flotation Clarifier(s) | 7 points |
| <input type="checkbox"/> Chemical Addition System | 2 points |
| <input type="checkbox"/> Imhoff Tanks, (large septic tank or similar sedimentation & digestion) | 3 points |
| Subtotal | <u>0 points</u> |
| Page 1 Subtotal | <u>5 points</u> |

¹ See "Population" definition. Use the design average daily equivalent load per person for Influent Flow or Influent BOD₅, whichever is greater. This value is used to determine the Collection System Classification.

Unit Process Points – Continued (Check all that apply) _____**Secondary, Advanced, and Tertiary Treatment****See also STEP 2:**

<input type="checkbox"/> Low Rate Trickling Filter(s) (no recirculation)	7 points
<input type="checkbox"/> High Rate Trickling Filter(s) (recirculation)	10 points
<input type="checkbox"/> Trickling Filter - Solids Contact System	12 points
<input type="checkbox"/> Activated Sludge (includes SBR & basic MBR process)	15 points
<input type="checkbox"/> Pure Oxygen Activated Sludge	20 points
<input type="checkbox"/> Activated Bio Filter Tower less than 0.1 MGD	6 points
<input type="checkbox"/> Activated Bio Filter Tower greater than 0.1 MGD	12 points
<input type="checkbox"/> Rotating Biological Contactors 1 to 4 shafts	7 points
<input type="checkbox"/> Rotating Biological Contactors, 5 or more shafts	12 points
<input checked="" type="checkbox"/> Stabilization Lagoons, 1 to 3 cells without aeration	5 points
<input type="checkbox"/> Stabilization Lagoons, 1 or more cells with primary aeration	7 points
<input type="checkbox"/> Stabilization Lagoons, 2 or more cells with full aeration	9 points
<input type="checkbox"/> Recirculating Gravel Filter	7 points
<input type="checkbox"/> Chemical Precipitation Unit(s)	3 points
<input type="checkbox"/> Gravity Filtration Unit(s)	2 points
<input type="checkbox"/> Pressure Filtration Unit(s)	4 points
<input type="checkbox"/> Nitrogen Removal, Biological (BNR) or Chemical/Biological System	4 points
<input type="checkbox"/> Nitrogen Removal, Designed Extended Aeration Only (Nitrification)	2 points
<input type="checkbox"/> Phosphorus Removal Unit(s)	4 points
<input type="checkbox"/> Effluent Microscreen(s)	2 points
<input type="checkbox"/> Chemical Flocculation Unit(s)	3 points
<input type="checkbox"/> Chemical Addition System @ 2 points (describe): _____	_____ points
Subtotal	<u>5</u> points

Solids Handling (Excludes long-term storage in lagoons above) **See also STEP 2:**

<input type="checkbox"/> Anaerobic Primary Sludge Digester(s) w/o Mixing and Heating	5 points
<input type="checkbox"/> Anaerobic Primary Sludge Digester(s) with Mixing and Heating	7 points
<input type="checkbox"/> Anaerobic Primary and Secondary Sludge Digesters	10 points
<input type="checkbox"/> Sludge Digester Gas reuse	3 points
<input type="checkbox"/> Aerobic Sludge Digester(s)	8 points
<input type="checkbox"/> Sludge Storage Lagoon(s) (List Basin(s) or Tank(s) under STEP 2)	2 points
<input type="checkbox"/> Sludge Lagoon(s) with aeration	3 points
<input type="checkbox"/> Sludge Drying Bed(s)	1 point
<input type="checkbox"/> Sludge Air or Gravity Thickening	3 points
<input type="checkbox"/> Sludge Composting, In Vessel	12 points
<input type="checkbox"/> Sludge Belt(s) or Vacuum Press/Dewatering	5 points
<input type="checkbox"/> Sludge Centrifuge(s)	5 points
<input type="checkbox"/> Sludge Incineration	12 points
<input type="checkbox"/> Sludge Chemical Addition Unit(s) (alum, polymer, alkaline stab. etc.)	2 points
<input type="checkbox"/> Non-Beneficial Sludge Disposal (landfill or burial)	1 point
<input type="checkbox"/> Beneficial Sludge Utilization (see also STEP 2)	3 points
Subtotal	<u>0</u> points

Disinfection:

<input type="checkbox"/> Liquid Chlorine Disinfection	2 points
<input checked="" type="checkbox"/> Gas Chlorine Disinfection	5 points
<input checked="" type="checkbox"/> Dechlorination System	4 points
<input type="checkbox"/> Other disinfection systems including ultraviolet and ozonation	5 points
Subtotal	<u>9</u> points

Page 2 Subtotal 14 points

(4) Effluent Permit Requirement Points (Check as applicable) See also STEP 2:

- Minimum of secondary effluent limitations for BOD and/or TSS 2 points
 - Minimum of 20 mg/L BOD and/or Total Suspended Solids 3 points
 - Minimum of 10 mg/L BOD and/or Total Suspended Solids 4 points
 - Minimum of 5 mg/L BOD and/or Total Suspended Solids 5 points
 - Effluent limitations for effluent oxygen (For other limits see Step 2) 1 point
- Part 4 Subtotal 2 points

(5) Variation in Raw Waste Points. Points in this category will be awarded only when conditions are extreme to the extent that operation and handling procedure changes are needed to adequately treat waste due to variation of raw waste (strength or flow)

- Recurring deviations or excessive variations 100% to 200% 2 points
 - Recurring deviations or excessive variations of more than 200%, or conveyance and treatment of industrial wastes by pretreatment program 4 points
 - Septage or truck-hauled waste 2 points
- Part 5 Subtotal 0 points

(6) Sampling and Laboratory Testing Points (check as applicable)

- Sample for BOD, Total Suspended Solids performed by outside lab or 2 points
 - BOD or Total Suspended Solids analysis performed at treatment plant 4 points
 - Bacteriological analysis performed by outside lab or 1 point
 - Bacteriological analysis performed at WWT plant lab 2 points
 - Nutrient, Heavy Metals or Organics analysis performed by outside lab or 3 points (≤1/mo. 1 pt)
 - Nutrient, Heavy Metals or Organics analysis performed at WWT plant 5 points
- Part 6 Subtotal 3 points
- Parts 4-6 Total 5 points*

OAR 340-049-0025 Accumulated Points, pg1 5, pg2 14 & pg3* 5 = 24 Go to Step 2

STEP 2 - Complexity Not Reflected Above (OAR 340-049 0020(4))

Note: This step may justify a higher classification. Points shown are given as guidance.

- Fine Screen Preliminary Treatment (includes washing & compaction) 2 points
 - SCADA or similar instrumentation providing data w/ process op. (2-4 pts) _____ points
 - Post aeration, includes mechanical and diffused aeration (not cascade) 1 point
 - Class A recycled water (storage, distribution & monitoring) 6 points
 - Class B, C, D and non-disinfected recycle (surface & subsurface) 3 points
 - Sludge dewatering using bag or tube system 1 point
 - Composting, ASP or windrow 6 points
 - Land application of biosolids by system operator (add to BSU pts. Pg. 2) 5 points
 - Odor or corrosion control (separate or combined) 2 points
 - Chemical/Physical advanced waste treatment (10 -15 points) _____ points
 - Reverse Osmosis or Electro-dialysis 15 points
 - Other Effluent Requirements @ 1 pt (describe): _____ point(s)
 - Other (describe): _____ point(s)
- OAR 340-049-0020(4) points 0 points

Accumulated Point Total - Steps 1 and 2 (enter here and on page 1) 24 points

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Water Quality

Wastewater Permits

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Wastewater Permits Database Pending Permit Applications

Pending Permit Applications for DAYTON, CITY OF WQ File Number: 23458

Field	Record
Legal Name	DAYTON, CITY OF
Street Address	416 FERRY STREET
City	DAYTON
County	YAMHILL
DEQ Region	WR
Application Number	971513
Permit Type	NPDES-DOM-Db
Application Type	Renewal without eff modified
Date Filed	6/24/2009
Months Pending	6
Application Disposition	Application sent to lead worker/manager
Disposition Date	6/24/2009

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Oregon Department of Environmental Quality
 Headquarters: 811 Sixth Ave., Portland, OR 97204-1390
 Phone: 503-229-5696 or toll free in Oregon 1-800-452-4011
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Oregon Department of Environmental Quality

Oregon DEQ: Water Quality - Wastewater Permits Database - Facility Details

Active Permits for DAYTON, CITY OF - WQ File Number: 23458

The permits listed below are the currently active permits for this facility. If you wish to see details on the applications that led to these permits click on the application number below.

If you wish to see the details on any pending applications for this facility click [here](#).

Field	Record
Legal Name	DAYTON, CITY OF
Common Name	DAYTON STP
Street Address	416 FERRY STREET
City	DAYTON
Zip Code	97114
County	YAMHILL
DEQ Region	WR
Primary SIC Code	4952
Facility Type Description	SEWERAGE SYSTEMS
Latitude	45.1899
Longitude	-123.07
Permit Type	NPDES-DOM-Db
Permit Description	Sewage - less than 1 MGD with lagoons
Category	DOM
Class	MINOR
Start Date	11/3/1999
Expiration Date	12/31/2009
Active Permit	True
UIC Facility	False
Administrative Agent	Salem Office
Last Action Date	6/24/2009
Last Action Description	Admin extended
Permit Writer	
Compliance Inspector	Hamlin
DMR Reviewer	Hamlin
Permit Application Number	971513
EPA Number	OR0023639



Oregon Department of Environmental Quality

Oregon DEQ: Water Quality - Water Quality Assessment - Oregon's 2004/2006 Integrated Report Database

12/9/2009 4:28:51 PM

(Page 1 of 1)

Oregon's 2004/2006 Integrated Report

To select new search criteria [click here](#) - **DO NOT USE THE BACK ARROW**

Refresh Report Show All Records Records per page: 100

Lookup LASAR Station data

Link to LASAR Web

Watershed Name 4th Field HUC Record ID	Parameter LLID River Mile	Season	Criteria	Beneficial Uses	Status	Assessment: Year Action	[Data Source] Supporting Data
YAMHILL 17090008 16917	Yamhill River 1229962452299 a 0 to 11.2	Fall/Winter/Spring	Reservoir, river, estuary, non-thermally stratified lake: 0.015 mg/l	Aesthetics Fishing Livestock watering Water contact recreation Water supply	Cat 4A: Water quality limited, TMDL approved	2004 No status change	TMDL Approved: 3/16/1992 2004 Data: [DEQ/ODA - Salem] TMDL Approved: 3/16/1992 LASAR 10363 River Mile 5: From 5/23/1995 to 5/31/1995, average Chlorophyll a of 0.013 for 1 samples in 1 months.
YAMHILL 17090008 6247	Yamhill River 1229962452299 a 0 to 11.2	Summer	Reservoir, river, estuary, non-thermally stratified lake: 0.015 mg/l	Aesthetics Fishing Livestock watering Water contact recreation Water supply	Cat 4A: Water quality limited, TMDL approved	2004 No status change	TMDL Approved: 3/16/1992 2004 Data: [DEQ/ODA - Salem] LASAR 10363 River Mile 5: From 7/5/1995 to 9/30/1995, average Chlorophyll a of 0.079 for 3 samples in 3 months. Previous Data: DEQ Data (2 Sites: 402031, 402601; RM 5.0, 8.0):

								31% (22 of 72), 25% (4 of 16) Summer values respectively exceeded chlorophyll a standard (15 ug/l) with maximum values of 61, 47 between WY 1986 - 1995. Previous Assessment Year: 1998
YAMHILL 17090008 20950	Yamhill River 1229962452299 0 to 11.2	Dissolved Oxygen	January 1 - May 15	Spawning: Not less than 11.0 mg/L or 95% of saturation	Resident trout spawning	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004 Added to database	2004 Data: [ODA] LASAR 10363 River Mile 5: From 1/24/1994 to 4/29/2003, 9 out of 27 samples (33%) < 11 mg/l and applicable % saturation.
YAMHILL 17090008 16919	Yamhill River 1229962452299 0 to 11.2	E Coli	Fall/Winter/Spring	30-day log mean of 126 E. coli organisms per 100 ml; no single sample > 406 organisms per 100 ml	Water contact recreation	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004 Added to database	2004 Data: [DEQ/ODA - Salem] LASAR 10363 River Mile 5: From 1/16/1996 to 12/22/2003, 7 out of 41 samples (17%) > 406 organisms; maximum 30- day log mean of 0
YAMHILL 17090008 6079	Yamhill River 1229962452299 0 to 11.2	Fecal Coliform	Fall/Winter/Spring	Fecal coliform log mean of 200 organisms per 100 ml; no more than 10% > 400 per 100 ml	Water contact recreation	303(d)	1998 Added to database	Previous Data: DEQ Data (Site 402031; RM 5.0): 46% (33 of 71) FWS values exceeded fecal coliform standard (400) with a maximum value of 2400 between WY 1986 - 1995.
YAMHILL 17090008 6339	Yamhill River 1229962452299 0 to 11.2	Flow Modification	Undefined	The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking	Resident fish and aquatic life Salmonid fish rearing Salmonid fish spawning	Water quality limited not needing a TMDL	2002 Delisted - Water quality limited, not a pollutant	Previous Data:

YAMHILL 17090008 8385	Yamhill River 1229962452299 0 to 11.2	Iron	Year Around	Table 20 Toxic Substances	Aquatic life Drinking water Fishing Human health	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004 No status change	2004 Data: [DEQ/ODA - Salem] LASAR 10363 River Mile 5: From 1/24/1994 to 8/13/2001, 9 out of 63 samples > applicable Table 20 criterion. Previous Data: LASAR 10363 RM 5.0: 2/4 samples > 300 ug/L. Previous Assessment Year: 2002
YAMHILL 17090008 8392	Yamhill River 1229962452299 0 to 11.2	Manganese	Year Around	Table 20 Toxic Substances	Drinking water Fishing Human health	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004 No status change	2004 Data: [DEQ/ODA - Salem] LASAR 10363 River Mile 5: From 1/24/1994 to 8/13/2001, 1 out of 63 samples > applicable Table 20 criterion. Previous Data: LASAR 10363 RM 5.1: 2/4 samples > 50 ug/L. Previous Assessment Year: 2002
YAMHILL 17090008 6507	Yamhill River 1229962452299 0 to 11.2	pH	May 1 - October 31	pH 6.5 to 8.5	Anadromous fish passage Resident fish and aquatic life Salmonid fish rearing Salmonid fish spawning Water contact recreation	TMDL approved	1998 Added to database	Previous Data: DEQ Data (Site 402031; RM 5.0): 0% (0 of 12) May through October values exceeded pH maximum standard (6.5 - 8.5) between WY 1994 - 1995.
YAMHILL 17090008 6419	Yamhill River 1229962452299 0 to 11.2	Phosphorus	May 1 - October 31	Biocriteria: Waters of the state must be of sufficient quality to support	Aesthetics	TMDL approved	1998 Added to database	Previous Data: DEQ Data (Site 402031; RM 5.0): 80% (8 of 10) May through

				aquatic species without detrimental changes in the resident biological communities.				October values exceeded phosphorus TMDL standard (70 ug/l) with a maximum value of 2.7 ug/l between 6/94 - 10/95.
YAMHILL	Yamhill River	Temperature	Year Around	Salmon and trout rearing and migration:	Salmon and trout rearing and migration	Cat 5: Water quality limited, 303(d) list, TMDL needed	2004 Added to database	2004 Data: [DEQ/SECOR] LASAR 10363 River Mile 5: From 6/5/2001 to 9/30/2002, 218 days with 7-day-average maximum > 18 degrees Celsius.
17090008	1229962452299		(Non-spawning)	18.0 degrees Celsius 7-day-average maximum				
13037	0 to 11.2							

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