State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Fact Sheet
Forest Park MHP, LLC

Final: July 16, 2024

Permittee	Forest Park MHP, LLC Forest Park Mobile Village 18830 South Hwy 99E Oregon City, OR 97045
Existing Permit Information	File Number: 30554 Permit Number: 102323 EPA Reference Number: OR-0031267 Category: Domestic Class: Minor Expiration Date: November 30, 2014
Permittee Contact	Matthew Harrell, Owner 971-570-4785 659 NW Pacific Grove Dr. Beaverton, OR 97006
Receiving Water Information	Receiving stream/NHD name: Willamette River NHD Reach Code & % along reach: 17090007000036 - 70% USGS 12-digit HUC: 170900070405 OWRD Administrative Basin: Willamette basin ODEQ LLID & River Mile: 1227618456580 – RM 28.1 Assessment Unit ID: OR_SR_1709000704_88_104020
Proposed Action	Permit Renewal Application Number: 959907 Date Application Received: June 4, 2014
Permit Writer	Matthew Schult 971-806-4857 Date Prepared: May 22, 2024

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1. Introduction

As required by Oregon Administrative Rule 340-045-0035, this fact sheet describes the basis and methodology used in developing the permit. The permit is divided into several sections:

Schedule A – Waste discharge limitations
Schedule B – Minimum monitoring and report requirements
Schedule C – Compliance conditions and schedules
Schedule D – Special conditions
Schedule E – Pretreatment conditions
Schedule F – General conditions

A summary of the major changes to the permit are listed below:

- DEQ changed the definition of the permittee's Outfall 001 to be the initial discharge point on the permittee's property, where the discharge is to a ditch. The previous permit definition for Outfall 001 was the culvert pipe discharge location at the Willamette River.
- **Schedule B**
  - Removed existing permit Schedule B requirement to monitor effluent ammonia.
  - Added new permit Schedule B monitoring requirement for effluent temperature.
  - Influent and effluent monitoring frequencies have been updated to reflect updates to DEQ's Monitoring Matrix.
- **Schedule D – Special Conditions**
  - Removed existing requirement for permittee to connect to approved area-wide sewerage system when one is made available.
  - Added requirement to submit annual Inflow and Infiltration report, as directed in Table B-1.
  - Added requirement to develop and implement a chlorine management plan, as directed in Table B-1.
  - Added requirement to submit a wastewater solids annual report, as directed in Table B-1.
  - Added section on biosolids management plan.
  - Added section on wastewater solids transfers.
  - Added requirement to conduct and report on an outfall inspection, as directed in Table B-1.

2. Facility Description

2.1 Wastewater Facility

Forest Park Mobile Village (FPMV) is a relatively small (42 home) residential modular home park located in unincorporated Clackamas County about a mile from Oregon City toward Canby on Highway 99E along the Willamette River. The average dry weather design flow for this facility was set at 5000 gallons per day (0.005 MGD) based on the original treatment design. This is the estimated maximum flow during May 1 to October 31 (expressed as a daily average flow), at which the design engineer expected the treatment facility can still consistently meet all effluent limits. There are no separate wet weather design flows. The treatment facility is unchanged from the original design. When facility upgrades were constructed in 1983 an easement was granted for the passage of the treated wastewater across the neighboring property. The owner at the time was the Crown Zellerbach Corporation, but in recent years property ownership has transferred to Metro. The easement requires renewal for each subsequent 5-year period.

The wastewater from FPMV is collected and flows by gravity to five septic tanks, each tank serving multiple dwellings. Wastewater and waste solids from these septic tanks are pumped out based on a schedule and monitoring, then transferred to the Tri-Cities sewage treatment plant for final treatment and disposal, as reported in FPMV's annual biosolids report. In 2023, 13,000 gallons of material were transferred to Tri-Cities. The septic tank effluent then flows to the treatment plant on the northeast side of FPMV, where the collection system drains to two 3000-gallon influent equalization tanks. An intermittent recirculating sand filter (IRSF) treats the wastewater to meet secondary treatment standards. The IRSF system was constructed in 1983 to replace the original sanitary sewage drainfields that were built to serve FPMV wastewater disposal needs when FPMV was constructed in the early 1960s. Dosing pumps send the septic tank effluent to the IRSF, which is enclosed in a pole building. Flow leaving the underdrain from the IRSF enters the recirculation tank that sends one portion back over the IRSF bed and the other portion goes to the chlorine contact chamber (CCC) for disinfection. The disinfected effluent is pumped approximately 300 feet via a park underdrain pipe from the CCC to the discharge point on the western side of FPMV.

Treated wastewater eventually reaches the Willamette River, but the initial discharge is to a small swale channel adjacent to FPMV, several hundred yards from the Willamette River. The swale flows about 250 feet through a heavily wooded adjacent tract of private property where it mixes with several small intermittent streams. The combined stream flows about 100 feet before entering an enclosed culvert that carries the flow (mixed with drainage and surface water) about 150 feet under Oregon state highway 99-E and the Southern Pacific railroad to the Willamette River. Because of the overland travel distance (650 feet or more) from the plant and the relatively small discharge flows observed, during dry weather the effluent tends to soak into the ground and typically does not reach the river. During wet weather, effluent flow mixes with surface water runoff from the forested site adjacent to the mobile home park. Treated wastewater enters the Willamette River from a culvert above the river surface at river mile 28.1. The permit identifies a mixing zone that extends five feet from the bank of the Willamette River. It is unlikely that the final effluent from this facility would be detectable in the river. Monitoring,

sampling, and reporting are conducted by a registered and certified technician, currently from Sep-Tech. Monitoring for effluent pH and chlorine are conducted on site, all other monitoring analyses are performed by a contract laboratory. Reporting and record keeping is done by permittee and consultant.

Ground water seeps are common in FPMV's system, due to the combination of FPMV's location at the base of a steep slope and high groundwater levels in this area. This requires a constant program of sealing leaks in the underground tanks. The owner has had to repair most of the tank risers and pipe joints to keep groundwater out of the treatment plant. The dry weather flows do not include the high levels of infiltration and inflow that are associated with the winter in Oregon. The current actual dry weather (May 1 to October 31) flow from 2018 to 2023 averages 0.003 MGD. The current actual average wet weather (November 1 through April 30) flow for the same time period is 0.0057 MGD. The facility has the capacity to discharge on demand, the effluent flow gauge is located in an enclosure next to the discharge tank. The permit requires that annual calibration records be stored on site.

Figure 2-1: Forest Park Mobile Village, Outfall 001 and discharge to Willamette River

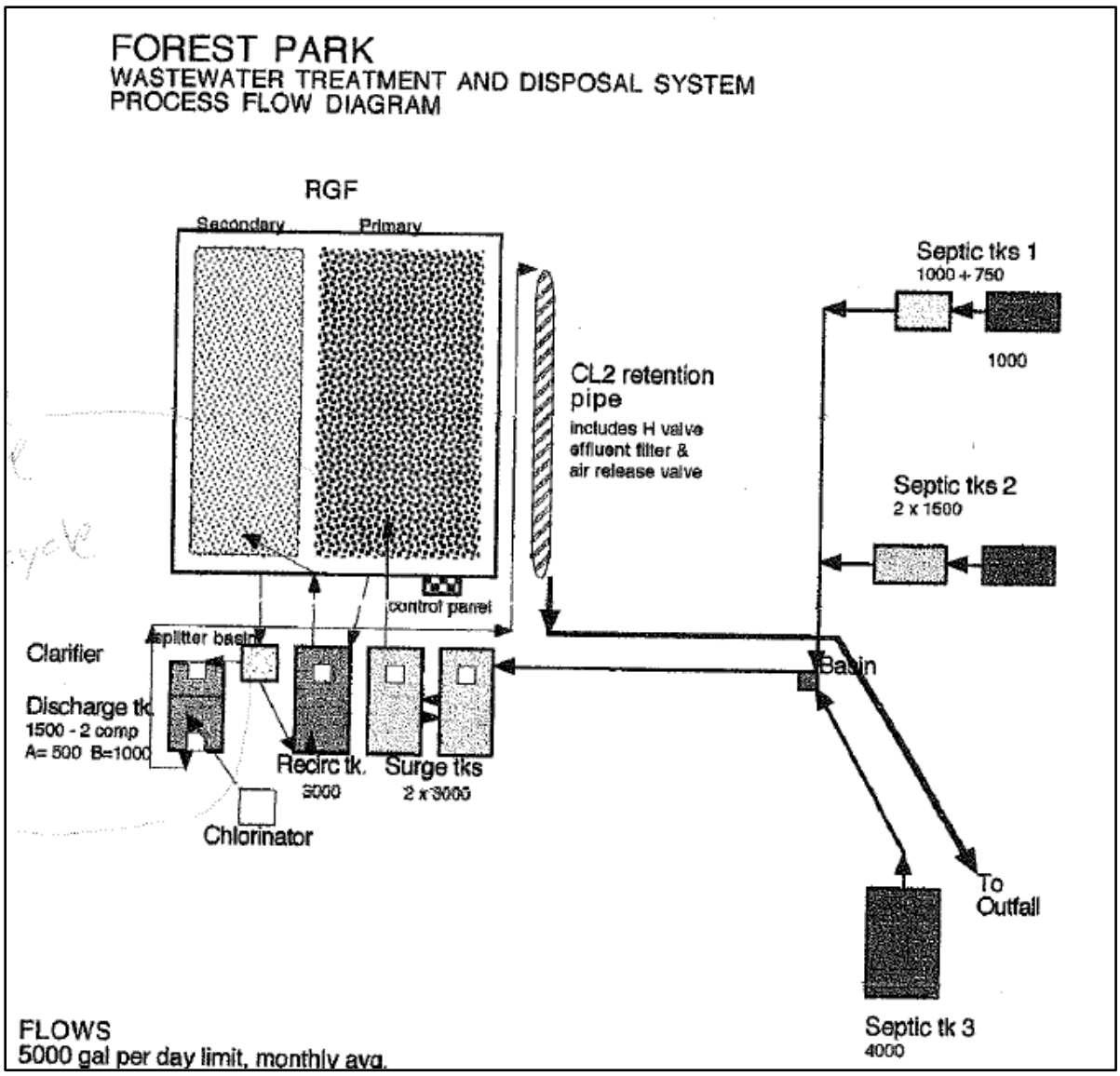

Figure 2-2: Process flow diagram for Forest Park Mobile Village

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long	Design Flow [1] (mgd)	Existing Flow [2] (mgd)
001	Treated Wastewater	45.33787°, -122.64303°	0.005	0.0057

1. Design Flow = design average dry weather flow
2. Existing Flow = existing average effluent flow (Dec-2019 to June-2023)

2.2 Compliance History

The most recent facility inspection was on November 4, 2023. The FPMV facility was in compliance with permit requirements at the time of the inspection. The treatment facility was well cared for and in good operating condition but was lacking an updated Operations & Maintenance manual to reflect upgrades in the control systems and changes to the operating setting to improve performance.

On December 3, 2019, DEQ issued a Pre-Enforcement Notice to FPMV (2019-PEN-5155) in relation to TBEL limit exceedances for BOD_5 (weekly maximum and monthly average) in May 2019 and failing to achieve required TSS percent removal efficiency in April 2019. A civil penalty (WQ/D-NWR-2019-314) was assessed for this event.

- Class 1 violation of BOD exceeded by more than 100%
- Class 3 violation of TSS % removal

2.3 Stormwater

Stormwater is not addressed in this permit. General NPDES permits for stormwater are not required for facilities with a design flow of less than 1 MGD.

2.4 Industrial Pretreatment

The permittee does not have a DEQ-approved industrial pretreatment program. Based on current information, no industrial pretreatment program is needed.

2.5 Wastewater Classification

OAR 340-049 requires all permitted municipal wastewater collection and treatment facilities receive a classification based on the size and complexity of the systems. DEQ evaluated the classifications for the treatment and collection system, which are publicly available at: https://www.deq.state.or.us/wq/opcert/Docs/OpcertReport.pdf

3. Schedule A: Effluent Limit Development

Effluent limits serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. Effluent limitations can be based on either the technology available to control the pollutants or limits that are protecting the water quality standards for the receiving water. DEQ refers to these two types of permit limits as technology-based effluent limitations (TBELs) and water quality-based effluent limits (WQBELs) respectively. When a TBEL is not restrictive enough to protect the receiving stream, DEQ must include a WQBEL in the permit.

3.1 Existing Effluent Limits

The table below shows the limits contained in the existing permit.

Table 3-1: Existing Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD_5 (May 1 – October 31) (See note a.)	mg/L	10	15	-
	lb/day	0.4	0.6	0.8
TSS (May 1 – October 31) (See note a.)	mg/L	10	15	-
	lb/day	0.4	0.6	0.8
BOD_5 (November 1 – April 30) (See note a.)	mg/L	20	30	-
	lb/day	0.8	1.3	1.7
TSS (November 1 – April 30) (See note a.)	mg/L	20	30	
	lb/day	0.8	1.3	1.7
BOD_5 and TSS Removal Efficiency	Year-round, shall not be less than 85% monthly average for BOD_5 and 70% monthly for TSS.			
pH	SU	Shall be within the range of 6.0 – 9.0		
E. coli bacteria (See note b.)	#/100 mL	Shall not exceed 126 organisms per 100 mL monthly geometric mean. No single sample shall exceed 406 organisms per 100 mL. (See note b.)		

Notes:

a. Average dry weather design flow to the facility equals 0.005 MGD. Mass load limits are based upon average dry weather design flow to the facility.

b. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.

3.2 Technology-Based Effluent Limit Development

40 CFR 122.44(a)(1) requires that all NPDES permits include technology-based effluent limits (TBELs). Publicly owned treatment works (POTW) are required to meet specific TBELs for five-day biochemical oxygen demand (BOD5), total suspended solids (TSS) and pH (i.e., federal secondary treatment standards). Substitution of 5-day carbonaceous oxygen demand (CBOD5) for BOD5 is allowed. The numeric standards for these pollutants are contained in 40 CFR 133.102. DEQ also uses best professional judgement, as allowed under federal rule (40 CFR 125.3), to apply the secondary treatment standards as TBELs for domestic wastewater treatment facilities that are not publicly owned.

Table 3-2: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria

Parameter	Federal Secondary Treatment Standards		Willamette Basin-Specific Design Criteria (OAR 340-041-0345)
	30-Day Average	7-Day Average	Monthly Average
BOD_5 (mg/L)	30	45	10 mg/L during period of low stream flows (approximately May 1 – Oct. 31). Minimum of secondary treatment or equivalent control during period of high stream flows, (approximately Nov. 1 – Apr. 30).
TSS (mg/L)	30	45	
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable
BOD_5 and TSS % Removal	85%	Not applicable	Not applicable

Federal regulations (40 CFR 133.103(d)) include special considerations for less concentrated influent wastewater from separate sewers. The rule allows substitution of either a lower percent removal requirement or a mass loading limit for the percent removal requirements provided that the permittee satisfactorily demonstrates that:

- The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits, but it's percent removal requirements cannot be met due to less concentrated influent wastewater;
- To meet the percent removal requirements, the treatment works would have to achieve significantly more stringent limits (defined as at least 5 mg/L more stringent than the otherwise applicable federal concentration-based limits) than would otherwise be required by the concentration-based standards; and,
- The less concentrated influent wastewater is not the result of excessive infiltration and inflow (I/I).

DEQ has determined the facility meets all three conditions above. Further, during the previous permit renewal, the percent removal for suspended solids requirement was adjusted to a less stringent level of 70%. This revision accounted for the fact that FPMV's sanitary system relies on septic tanks for collection prior to FPMV's influent sampling point, hence a substantial reduction of suspended solids is observed. DEQ is proposing retaining the existing permit BOD percent removal limits of 85% and TSS percent removal limits of 70%.

The limits for BOD_5 and TSS in Table 3-2 above are concentration-based limits. The existing concentration-based BOD_5 and TSS TBELs for the winter period (November through April), as listed in Table 3-1 above are more stringent. DEQ is retaining the existing limits in the proposed permit to meet antidegradation and antibacksliding requirements. Mass-based limits are required in addition to the concentration-based limits per OAR 340-041-0061(9). For any facility that has not expanded their average dry weather treatment capacity after June 30, 1992, OAR 340-041-0061(9)(a) requires that the mass load limits be calculated using the following equations:

Monthly Avg Mass Load = Design Flow* x Monthly Concentration Limit x Unit Conversion factor

Weekly Average Mass Load = 1.5 x Monthly Average Mass Load Limit

Daily Maximum Mass Load = 2 x Monthly Average Mass Load Limit

* Design flow is the design average dry weather flow (DADWF)

The following table lists the effluent flows and concentration limits used for the calculations.

Table 3-3: Design Flows and Concentrations Limits

Season	Design Flow (mgd)	Monthly TSS Concentration Limit (mg/L)	Monthly BOD_5 Concentration Limit (mg/L)
Dry Weather	0.005	10	10
Wet Weather	0.005	20	20
Design flow comments: FPMV does not have wet weather design flows. Mass load limits are based on design average dry weather flow (DADWF).			

Mass Load Calculations (Dry Weather, May 1 – October 31):

Monthly Average: (0.005 mgd) x (10 mg/L) x 8.34 = 0.42 lb/day, rounded to 0.4 lb/day

Weekly Average: (0.42 lbs/day monthly average) x 1.5 = 0.63 lb/day, rounded to 0.6 lb/day

Daily Maximum: (0.42 lbs/day monthly average) x 2 = 0.84 lb/day, rounded to 0.8 lb/day

Mass Load Calculations (Wet Weather, November 1 – April 30):

Monthly Average: (0.005 mgd) x (20 mg/L) x 8.34 = 0.83 lb/day, rounded to 0.8 lb/day

Weekly Average: (0.83 lbs/day monthly average) x 1.5 = 1.245 lb/day, rounded to 1.3 lb/day

Daily Maximum: (0.83 lbs/day monthly average) x 2 = 1.66 lb/day, rounded to 1.7 lb/day

The proposed BOD_5 and TSS limits are listed in the following table.

Table 3-4: Technology Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD_5 (May 1 – October 31)	mg/L	10	15	-
	lbs/day	0.4	0.6	0.8
	% removal	85	-	-
TSS (May 1 – October 31)	mg/L	10	15	-
	lbs/day	0.4	0.6	0.8
	% removal	70	-	-
BOD_5 (November 1 – April 30)	mg/L	20	30	-
	lbs/day	0.8	1.3	1.7
	% removal	85	-	-
TSS (November 1 – April 30)	mg/L	20	30	-
	lbs/day	0.8	1.3	1.7
	% removal	70	-	-

3.3 Water Quality-Based Effluent Limit Development

40 CFR 122.44(d) requires that permits include limitations more stringent than technology-based requirements where necessary to meet water quality standards. Water quality-based effluent limits may be in the form of a wasteload allocation required as part of a Total Maximum Daily Load (TMDL). They may also be required if a site-specific analysis indicates the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion. DEQ establishes effluent limits for pollutants that have a reasonable potential to exceed a criterion. The analyses are discussed below.

3.3.1 Designated Beneficial Uses

NPDES permits issued by DEQ must protect the following designated beneficial uses of the Willamette River. These uses are listed in OAR-340-041-0340 for the mainstem of the Willamette River between Newberg and Willamette Falls.

- Public and private domestic water supply
- Industrial water supply
- Irrigation and livestock watering
- Fish and aquatic life (including salmonid migration)
- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality
- Hydro power

- Commercial navigation and transportation

Based upon the Fish Use Designations – Willamette Basin, Oregon figure contained in OAR 340-041-0340 (Figure 340A), the Lower Willamette River is designated as a salmon and steelhead migration corridor. Referencing OAR 340-041-0340 (Figure 340B), this portion of the river is not designated for salmon or steelhead spawning use.

The applicable numeric water quality criteria are found in OAR 340-041-0345. These include general criteria and Willamette Basin-specific criteria intended to be protective of the beneficial uses for the basin, as listed above.

3.3.2 303(d) Listed Parameters and Total Maximum Daily Loads

The following table lists the parameters that are on the 2022 303(d) list (Category 5) within the discharge's stream reach. The table also lists any parameters with a TMDL wasteload allocation assigned to the facility (Category 4A). According to DEQ's 303(d) list, the section of the Willamette River that FPMV discharges into is impaired for each of the Category 4 and 5 parameters listed below. For those parameters listed without a TMDL (Category 5), FPMV is a domestic minor facility with no industrial influences and is not anticipated to contribute to the impairments for BioCriteria, Aquatic weeds, Aldrin, DDE 4,4', DDT 4,4', Dieldrin nor Polychlorinated Biphenyls (PCBs). Additionally, FPMV is not expected to contribute to the Dioxin nor methylmercury impairments.

Table 3-5: Category 5 and Category 4A Parameters

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_SR_1709000704_88_104020
AU Name:	Willamette River
AU Status:	Impaired
Year Listed	1998
Year Last Assessed	2022
303d Parameters (Category 5)	BioCriteria; Aquatic Weeds; Temperature (year-round); Human Health Toxics: Aldrin; DDE 4,4'; DDT 4,4'; Dieldrin; Polychlorinated Biphenyls (PCBs)
Category 4A Parameters	
Human Health Toxics: Dioxin (2,3,7,8-TCDD); Methylmercury TMDLs: Temperature (2006); Bacteria (2006); Mercury (2019).	

DEQ has developed Total Maximum Daily Loads (TMDLs) in the Willamette Basin to address impairment for temperature and bacteria. These TMDLs were approved by EPA in September 2006. DEQ issued a TMDL for mercury as a pollutant of concern in the Willamette basin that was replaced in 2019. These TMDL parameters are discussed below. A TMDL can be thought of as an estimate of the total amount of pollution a waterbody can assimilate without exceeding water quality standards. For more information on TMDLs in general, and on the TMDLs developed for the Willamette in particular, go to:
https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Willamette-Basin.aspx

3.3.3 TMDL Wasteload Allocations

DEQ issued a temperature TMDL for the mainstem Willamette River in 2006. The wasteload allocation from this TMDL that is applicable to the permittee falls under the "bubble allocations" portion of the Willamette River TMDL. Discussion of this can be found in section 3.3.7. In 2019 the Environmental Protection Agency (EPA) issued a revised Willamette Basin mercury TMDL for DEQ to implement. This is discussed in section 3.3.9.2.

3.3.4 Pollutants of Concern

To ensure that a permit is protecting water quality, DEQ must identify pollutants of concern. These are pollutants that are expected to be present in the effluent at concentrations that could adversely impact water quality. DEQ uses the following information to identify pollutants of concern:

- Effluent monitoring data.
- Knowledge about the permittee's processes.
- Knowledge about the receiving stream water quality.
- Pollutants identified by applicable federal effluent limitation guidelines.

Based on EPA's NPDES permit application requirements, toxic pollutants of concern for domestic facilities are listed in the following table.

Table 3-6: Domestic Toxic Pollutants of Concern

Flow Rate	Pollutants
< 0.1 mgd	Total Residual Chlorine
≥ 0.1 mgd and < 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen
≥ 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen, Metals, Volatile Organic Compounds, Acid Extractable Compounds, Base Neutral Compounds

DEQ identified the following pollutants of concern for this facility listed in the following table.

Table 3-7: Pollutants of Concern

Pollutant	How was pollutant identified?
pH	Effluent Monitoring
Temperature	Effluent Monitoring
E. coli	Effluent Monitoring
Total Residual Chlorine	Effluent Monitoring

The sections below discuss the analyses that were conducted for the pollutants of concern to determine if water quality based effluent limits are needed to meet water quality standards.

3.3.5 Regulatory Mixing Zone

The proposed permit contains an updated regulatory mixing zone description which is described as follows. The size of the RMZ has not changed. The description was updated to include a zone of initial dilution to be consistent with other permits.

> *The allowable mixing zone extends from the outfall to that portion of the Willamette River contained within five feet downstream from the culvert outfall. The allowable zone of initial dilution extends from the outfall to that portion of the Willamette River contained within two feet downstream from the culvert outfall.*

The dilution factors at the edge of the Regulatory Mixing Zone and Zone of Initial Dilution are shown in Table 3-8. These dilutions are based on a 2024 mixing zone analysis conducted by DEQ. The mixing zone memo documenting this analysis and the dilutions is contained in a January 24, 2024 Mixing Zone Memo which is part of the administrative record. DEQ's analysis relied on conservative estimates of Willamette River ambient conditions within the mixing zone to then simulate the discharge using the mixing zone modeling software, CORMIX v12.0. This discharge is extremely small relative to the size of the Willamette River. The size of the zone of initial dilution and mixing zone are also extremely small (2 feet and 5 feet respectively).

The outfall pipe (approximately 3-inch diameter PVC pipe) discharges to a ditch at 45.337873°, -122.643032°. The mixing zone begins where the effluent is discharged and extends the length of a ditch and culvert into the Willamette River. The RMZ boundary in the Willamette River is 5 ft downstream of the coordinates 45.338090°, -122.644323° ("culvert outfall"). The ZID boundary in the Willamette River is 2 ft downstream of the coordinates 45.338090°, -122.644323° ("culvert outfall"). The RMZ and ZID are visualized in Figure 3-1 below for clarity.

Table 3-8: FPMV Mixing Zone Dilution Summary

Dilution Summary						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	5600	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	0.0061	29	ZID (2 ft)
Aquatic Life, Chronic	7Q10	6330	☒ ADWDF ☐ Max Monthly Avg ☐ Other	0.005	128	RMZ (5 ft)
ADWDF = Average dry weather design flow *PF = Peaking factor (1.5)*						
Comments: The maximum monthly average flow during November was 0.0046 mgd and the maximum daily average flow was 0.0061 mgd. The ADWDF is 0.005 mgd. Since the maximum monthly average flow is almost equal to the ADWDF, the maximum monthly average flow is being used as an estimate of the ADWDF x PF.						

Figure 3-1: FPMV Outfall, Regulatory Mixing Zone (RMZ) and Zone of Initial Dilution (ZID) location.

3.3.6 pH

The pH criterion for this basin is 6.5 – 8.5 per OAR 340-041-0345. DEQ determined there is no reasonable potential for FPMV's discharge to exceed the pH criterion at the edge of the mixing zone. The proposed pH limit for Outfall 001 is maintained from the previous permit at 6.0 – 9.0. These pH limits are TBELs, since they are the secondary treatment standards for pH, 6.0 – 9.0. The following provides a summary of the data used for the analysis.

Table 3-9: pH Reasonable Potential Analysis

INPUT	Lower pH Criteria	Upper pH Criteria
1. Dilution at mixing zone boundary	128.0	128.0
2. Upstream characteristics		
a. Temperature (ºC)	23.0	7.6
b. pH	6.9	7.6
c. Alkalinity (mg $CaCO_3$/L)	23.1	23.1
3. Effluent characteristics		
a. Temperature (° C)	13.9	4.6
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg $CaCO_3$/L)	134.6	134.6
4. Applicable pH criteria	6.5	8.5
pH at mixing zone boundary	**6.8**	**7.6**
Is there reasonable potential?	**No**	**No**
Proposed effluent limits	**6.0**	**9.0**
Effluent data source: ICIS data pull covering July-2019 through August-2023. Effluent Temperature was not a monitoring requirement in existing permit, thus not reported in ICIS. Data from facility-submitted Gap Analysis request from winter season 2021. Applied alkalinity defaults.		
Ambient data source: AWQMS data pull on 2-October-2023 for 2013-2022. Stations upstream of facility (~6 miles): 10339-ORDEQ, 26102-ORDEQ, 31545-ORDEQ, Canby_Ambient (City of Canby).		

3.3.7 Temperature

3.3.7.1 Temperature Criteria OAR 340-041-0028

The following table summarizes the temperature criteria that apply at the discharge location along with whether the receiving stream is water quality-limited for temperature and whether a TMDL wasteload allocation has been assigned. Using this information, DEQ performed several analyses to determine if effluent limits were needed to comply with the temperature criteria.

Table 3-10: Temperature Criteria Information

Applicable Temperature Criterion	Migration Corridor 20ºC (OAR 340-041-0028(4)(d)
Applicable dates: Year-round	
Salmon/Steelhead Spawning 13°C? OAR 340-041-0028(4)(a)	☐Yes ☒No
Applicable dates: NA	
WQ-limited?	☒Yes ☐No
TMDL wasteload allocation assigned?	☐Yes ☒No
Applicable dates: NA	
TMDL based on natural conditions criterion?	☐Yes ☒No
Cold water summer protection criterion applies?	☐Yes ☒No
Cold water spawning protection applies?	☐Yes ☒No
Comments: The Willamette TMDL established a wasteload allocation under the TMDL's "bubble allocation" portion. The TMDL did not designate specific effluent limit for individual small point sources in the "bubble".	

Located at river mile 28.2 in Oregon City, FPMV discharges to a segment of the Willamette River designated as a salmonid migration corridor, according to the Fish Use Designation map for the Willamette Basin, found in OAR 340-041, Figure 340A. OAR 340-041-0028(4)(d) states that the 7-day average maximum temperature of a stream identified as a migration corridor may not exceed 20.0 ºC. As previously noted, this segment of the Willamette River does not meet water quality standards for temperature during the summer months. For streams with a TMDL that do not meet water quality standards, OAR 340-041-0028(12)(b)(B) states the following:

> Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.

The Mainstem Willamette Waste Load Allocation (WLA) chapter of the Willamette TMDL contains a subsection, "Bubble Allocations for Small Point Sources". The intent of this WLA subsection is to address the cumulative effects of small point sources, such as FPMV, on the Willamette system. Under the TMDL's "bubble allocation", no individual effluent limit is assigned (the facility was deemed small enough that its temperature discharge is not required to be regulated at this time).

Based on these analyses, no temperature limit associated with the applicable temperature criteria is included in the proposed permit.

Final effluent limits are listed in the following table.

Table 3-11: Temperature Criterion Effluent Limits

Effluent limit needed? ☐Yes ☒No
TMDL WLA Limit: NA
Applicable time period: Dates ☒NA
Temperature Criterion Limit: NA
Applicable time period: Dates ☒NA
Comments:

3.3.7.2 Thermal Plume OAR 340-041-0053(2)(d)

In addition to compliance with the temperature criteria, OAR 340-041-0053(2)(d) contains thermal plume limitation provisions designed to prevent or minimize adverse effects to salmonids that may result from thermal plumes. The discharge was evaluated for compliance with these provisions as follows:

- OAR 340-041-0053(2)(d)(A): Impairment of an active salmonid spawning area where spawning redds are located or likely to be located. This adverse effect is prevented or minimized by limiting potential fish exposure to temperatures of 13ºC or more for salmon and steelhead, and 9ºC or more for bull trout.

  FPMV Discharge: Referencing the Willamette Basin salmonid spawning use map contained in OAR 340-041 (Figure 340B), the Willamette River at the discharge location is not designated as a salmonid and steelhead spawning waterbody. Since there are no active salmonid spawning areas within the mixing zone, the impairment of an active spawning area is prevented or minimized, and this provision does not apply.

- OAR 340-041-0053(2)(d)(B): Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32ºC or more to less than 2 seconds.

  FPMV Discharge: Under the current permit, FPMV was not required to monitor effluent temperature, so no effluent temperature data is available for this analysis. However, their effluent temperature is certainly below 32 ºC and their discharge flows relative to Willamette River flows are minimal. FPMV discharge is not expected to cause an acute impairment or instantaneous lethality due to an effluent thermal plume. The proposed permit includes effluent temperature monitoring requirements.

- OAR 340-041-0053(2)(d)(C): Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25ºC or more to less than 5% of the cross-section of 100% of the 7Q10 flow of the water body.

FPMV Discharge: Under the current permit, FPMV was not required to monitor effluent temperature, so no effluent temperature data is available for this analysis. However, FPMV's maximum effluent flow rate during the period December 2018 to July 2023 was 0.016 MGD. Flows this minor, combined with typical domestic system effluent temperatures, are not expected to adversely affect temperatures in the Willamette River. After mixing with the Willamette River, FPMV's effluent will almost certainly not result in in a sudden increase in water temperature causing thermal shock. The proposed permit includes effluent temperature monitoring requirements.

- OAR 340-041-0053(2)(d)(D): Unless ambient temperature is 21ºC or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21ºC or more to less than 25% of the cross-section of 100% of the 7Q10 flow of the water body.

  FPMV Discharge: Under the current permit, FPMV was not required to monitor effluent temperature, so no effluent temperature data is available for this analysis. However, FPMV's maximum effluent flow rate during the period December 2018 to July 2023 was 0.016 MGD. Flows this minor, combined with typical domestic system effluent temperatures, are not expected to adversely affect temperatures in the Willamette River. After mixing with the Willamette River, FPMV's effluent will almost certainly not result in water temperature increases causing migration blockage. The proposed permit includes effluent temperature monitoring requirements.

Effluent limits needed to comply with the thermal plume requirements are shown in the following table.

Table 3-12: Thermal Plume Effluent Limit

Effluent limit needed? ☐Yes ☒No
Calculated limit: NA
Applicable timeframe: NA
Comments:

3.3.8 Bacteria

OAR 340-041-0009(6)(b) requires discharges of bacteria into freshwaters meet a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the geometric 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 following table includes the proposed permit limits and apply year-round.

Table 3-13: Proposed *E. coli* Limits

E. coli (#/100 ml)	Geometric Mean	Maximum
Existing Limit	126	406
Proposed Limit	126	406

3.3.9 Toxic Pollutants

DEQ typically performs the reasonable potential analysis for toxics according to EPA guidance provided in the Technical Support Document for Water Quality-Based Toxics Control (TSD) (Office of Water Enforcement and Permits, U.S. EPA, March 1991). The factors incorporated into this analysis include:

1. Effluent concentrations and variability
2. Water quality criteria for aquatic life and human health
3. Receiving water concentrations
4. Receiving water dilution (if applicable)

DEQ performs these analyses using spreadsheets that incorporate EPA's statistical methodology. The following sections describe the analyses for various toxic pollutants below.

3.3.9.1 Total Residual Chlorine

An analysis was conducted to determine if the facility had the reasonable potential to exceed the chlorine criteria. The maximum chlorine concentration of 0.40 mg/L was used for the analysis; FPMV does not have an existing chlorine limit. The analysis indicates the discharge does not have the potential to exceed the chlorine criteria; therefore, no chlorine limits are included in the proposed permit. However, to address potential adverse impacts within the mixing zone, the permittee is required to develop a Best Management Practices (BMP) plan to reduce the level of total residual chlorine in their effluent during this permit cycle. DEQ's Level of Quantitation value of 0.05 mg/L for chlorine analysis will be used as a benchmark for BMP effectiveness. This is presented in the permit Schedule D.

3.3.9.2 Mercury – Human Health Criterion

A Willamette Basin Mercury TMDL was established by EPA on December 30, 2019. According to the EPA TMDL and the State of Oregon Water Quality Management Plan, the potential mercury load from minor domestic wastewater treatment plant discharges is very small. The TMDL states that no additional controls or monitoring will be required for minor domestic treatment plants. No additional controls or monitoring for mercury are required in this permit.

3.4 Antibacksliding

The proposed permit complies with the antibacksliding provisions of CWA sections 402(o) and 303(d)(4) and 40 CFR 122.44(l). The proposed limits are the same or more stringent than the existing permit so the antibacksliding provision is satisfied.

3.5 Antidegradation

DEQ must ensure the permit complies with Oregon's antidegradation policy found in OAR 340-041-0004. This policy is designed to protect water quality by limiting unnecessary degradation from new or increased sources of pollution.

DEQ has performed an antidegradation review for this discharge. The proposed permit contains the same or more stringent discharge loadings as the existing permit. Permit renewals with the same or more stringent discharge loadings as the previous permit are not considered to lower water quality from the existing condition. DEQ is not aware of any information that existing limits are not protecting the receiving stream's designated beneficial uses. DEQ is also not aware of any existing uses present within the water body that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ's antidegradation policy. DEQ's antidegradation worksheet for this permit renewal is available upon request.

3.6 Whole Effluent Toxicity

DEQ does not require whole effluent toxicity testing (WET) for minor domestic facilities because concentrations of toxics are typically very low and WET testing is not warranted.

3.7 Groundwater

High groundwater levels in this area require a constant program of sealing leaks that develop in the underground tanks in the park. The owner has had to repair most of the tank risers and pipe joints to keep groundwater out of the treatment plant. The treatment facility does not have any basins, ponds or lagoons that have the potential to leach into the groundwater. Due to the overland travel distance from the treatment plant discharge point and the relatively small discharge flows, the treated effluent often soaks into the ground before reaching the direct discharge point to the Willamette River.

To assess risk to groundwater, DEQ consulted drinking water well maps provided by Oregon Water Resources Department and confirmed there are no wells in the vicinity of FPMV's discharge. Given FPMV's location near the Willamette River, any potential groundwater contamination would likely attenuate to background levels and discharge to the river.

No groundwater monitoring or limits are required.

4. Schedule A: Other Limitations

4.1 Mixing Zone

Schedule A describes the regulatory mixing zone as discussed above in section 3. Schedule D requires the permittee to develop and submit a chlorine management plan by the dates specified in permit Table B-1.

4.2 Biosolids

The permit holder has the capability and/or intends to develop a new biosolids program to land apply biosolids or produce biosolids for sale and distribution during the term of this permit. The permit holder will develop a comprehensive biosolids management plan and land application plan. DEQ will review the plans and provide an opportunity for public comment on the proposed land application activity. Once approved, conditions in the biosolids management plan and land application plan become permit conditions.

4.3 Recycled Water

The permit holder does not currently operate a recycled water program but may develop one during the term of this permit. If the permit holder chooses to develop a recycled water program, a comprehensive recycled water use plan meeting the requirements in OAR 340-055 will be submitted to DEQ for review and approval; appropriate actions must also be made to OHA and WRD. The recycled water use plan, including the locations of any proposed irrigation projects will be made available for public comment.

5. Schedule B: Monitoring and Reporting Requirements

Schedule B of the permit describes the minimum monitoring and reporting necessary to demonstrate compliance with the proposed effluent limits. In addition, monitoring for other parameters is required to better characterize the effluent quality. This data will be used during the next permit renewal. Detailed monitoring frequency and reporting requirements are in Schedule B of the proposed permit. The required monitoring, reporting and frequency for many of the parameters are based on DEQ's monitoring and reporting matrix guidelines, permit writer judgment, and to ensure the needed data is available for the next permit renewal.

The permittee requested a reduction in monitoring frequency for BOD_5, TSS and bacteria (*E. coli*), to be less than the 2/month frequency specified in DEQ's monitoring matrix. Using EPA's 1996 Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies it was determined that the monitoring frequency could be reduced to 1/month for *E. coli* (year-round) and for BOD_5 and TSS during winter months (November 1 – April 30). A monitoring reduction was not approved for BOD_5 or TSS during summer months (May 1 – October 31) because the long-term average monitoring results were too close to the summer-time permit limits to allow a reduction. The standard frequency of 2/month will be retained for BOD_5 and TSS during summer months (May 1 – October 31).

6. Schedule C: Compliance Schedule

The permittee is expected to meet all effluent limits once the permit becomes effective and therefore a compliance schedule is not needed.

7. Schedule D: Special Conditions

The proposed permit contains the following special conditions. The conditions include the following:

7.1 Inflow and Infiltration

A requirement to submit an updated inflow and infiltration report in order to reduce groundwater and stormwater from entering the collection system.

7.2 Chlorine Management Plan

This condition requires the permittee to develop and submit for DEQ approval a Chlorine Management Plan to reduce total residual chlorine levels in their effluent. The permittee is also required to implement the approved plan.

7.3 Emergency Response and Public Notification Plan

A requirement to develop and submit an emergency and spill response plan or ensure the existing one is current per General Condition B.8 in Schedule F.

7.4 Exempt Wastewater Reuse at the Treatment System

A condition that exempts the permit holder from the recycled water requirements in OAR 340-055, when recycled water is used for landscape irrigation at the treatment facility or for in-plant processes, such as in plant maintenance activities.

7.5 Wastewater Solids Annual Report

This condition requires the permittee to submit a Wastewater Solids Annual Report each year documenting removal of wastewater solids from the facility during the previous calendar year.

7.6 Biosolids Management Plan

A requirement to manage all biosolids in accordance with a DEQ-approved biosolids management plan and land application plan. The biosolids management plan and the land application plan must meet the requirements in OAR 340-050-0031 and describe where and how the land application of biosolids is managed to protect public health and the environment.

7.7 Wastewater Solids Transfers

A condition that allows the facility to transfer treated or untreated wastewater solids to other in-state or out-of-state facilities that are permitted to accept the wastewater solids.

7.8 Operator Certification

The permit holder is required to have a certified operator consistent with the size and type of treatment plant covered by the permit per OAR 340-049-0005. This special condition describes the requirements relating to operator certification.

7.9 Outfall Inspection

A condition that requires the permittee to inspect the outfall and submit a report regarding its condition.

8. Schedule F: NPDES General Conditions

Schedule F contains the following general conditions that apply to all NPDES permittees. These conditions are reviewed by EPA on a regular basis.

- Section A. Standard Conditions
- Section B. Operation and Maintenance of Pollution Controls
- Section C. Monitoring and Records
- Section D. Reporting Requirements
- Section E. Definitions