

Fact Sheet for NPDES Permit WA0991010

Town of Spangle

Date of Public Notice: October 17, 2024

Permit Effective Date: April 1, 2025

Purpose of this fact sheet

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

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

Ecology makes the draft permit and fact sheet available for public review and comment at least 30-days before issuing the final permit. Copies of the fact sheet and draft permit for Spangle, NPDES permit WA0991010, are available for public review and comment from October 17, 2024 until November 16, 2024. For more details on preparing and filing comments about these documents, please see Appendix A - Public Involvement Information.

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

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as Appendix E - Response to Comments and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

Summary

The Town of Spangle operates a Biolac wastewater treatment plant that discharges to Spangle Creek. The previous permit, effective January 1, 2017, expired on December 31, 2021. The proposed permit includes limits from the previous permit and added final limits for dissolved oxygen and corrected TMDL final temperature limits. Additionally, technology specific performance-based limits for total phosphorous will limit phosphorus to current concentrations. This will prevent an increase in the total phosphorous discharged, allowing Ecology time to address and reduce other sources of pollution in the watershed.

The proposed permit includes two compliance schedules. The enforcement compliance schedule requires the facility to address monitoring issues, identify collection system issues, develop a collection system repair schedule and requires engineering planning documents needed to meet water quality based effluent limit and includes an AKART evaluation for waste sludge and biosolids that the facility is currently discharging to the unlined lagoon adjacent to the treatment facility.

The water quality-based limits compliance schedule requires Spangle to report annually the steps that they are taking to meet the water quality limits for temperature and dissolved oxygen as quickly as possible but no longer than 10 years.

Steps discussed in the fact sheet include engineering planning, plans and specifications, and construction of infrastructure required to meet the water quality temperature TMDL, and dissolved oxygen water quality based effluent limit.

The proposed permit also requires Spangle to collect receiving water data for temperature, pH, ammonia, and dissolved oxygen upstream of the outfall. Additionally, the Permittee is required to develop an updated operations and maintenance manual that includes all components of the permitted system, including the collection system.

The proposed permit does not require implementation of the E.coli indicator but does require Spangle to complete split samples for fecal coliforms and E. coli providing data for a reasonable potential evaluation for E. coli in the next permit cycle.

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I. Introduction

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

The following regulations in the Washington Administrative Code (WAC) apply to domestic wastewater NPDES permits:

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

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

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See Appendix A - Public Involvement Information for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix E**.

II. Background information

Table 1: Facility Information

Applicant:	
Facility name and address	Town of Spangle WWTP 675 N. Old SR 195 Spangle, WA 99031
Contact at facility	Logan Billington, Public Works Director (509) 981-5331 spanglepublicworks@outlook.com
Responsible official	The Honorable Melissa Holling, Mayor PO Box 147, Spangle, WA 99031 (509) 951-0149 townofspangle@centurytel.net
Type of treatment	Biolac, Extended Aeration Activated Sludge System
Facility location (NAD83/WGS84 reference datum)	Latitude: 47.4341°N Longitude: -117.3845°W
Discharge waterbody name and location (NAD83/WGS84 reference datum)	Spangle Creek Latitude: 47.43444°N Longitude: -117.3817°W

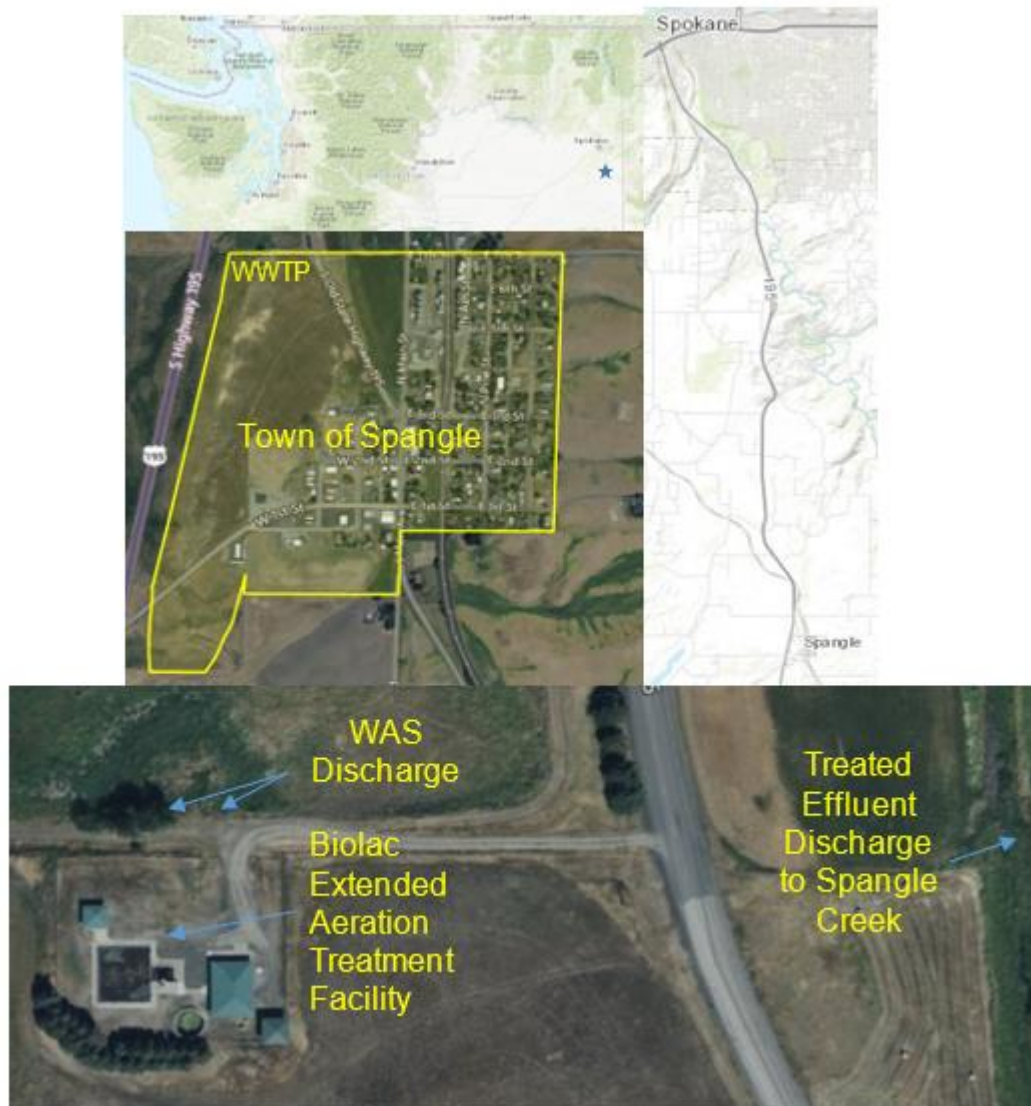
Permit status

Issuance Date of Previous Permit:	December 7, 2016
Application for Permit Renewal Submittal Date:	March 16, 2021
Date of Ecology Acceptance of Application:	March 16, 2021

Inspection status

Date of Last Non-sampling Inspection:	August 23, 2022
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Figure 1: Facility Location Map



II.A. Facility description

1. History

The Town of Spangle (Spangle), with a population of 278 residence, located approximately 18 miles south of Spokane along Highway 195, owns and operates a minor municipal wastewater treatment facility that discharges to Spangle Creek. Spangle was incorporated in 1888. They constructed their first public sewer system in 1977. The system consisted of a collection system and two containment lagoons. In 1993 a facility plan was completed recommending an expansion to include a larger lagoon and a land treatment system to accommodate expected growth and capacity concerns.

Updated setback requirements for land treatment sites affected the ability of Spangle to implement the land treatment system. Additionally, a change to Ecology's policy for discharges to intermittent streams in 1995 provided an opportunity for an upgrade to a mechanical plant with discharge to Spangle Creek.

In 1996 Spangle amended the facility plan recommending installation of the Biolac extended aeration activated sludge system with discharge to Spangle Creek. The approved plan also recommended that Spangle keep one lagoon for bypass of excessive flows resulting from inflow and infiltration and use the second lagoon for “temporary” discharge of waste activated sludge.

According to the Town, there is not a flow bypass from the headworks or the lift station to the old lagoon. However, they still discharge waste activated sludge to the old lagoon.

In 2015 Spangle received approval for design of an aerobic digester. The digester was constructed in 2016. The digester was not brought online due to operational issues. The Town is still discharging sludge to the old wastewater storage lagoon.

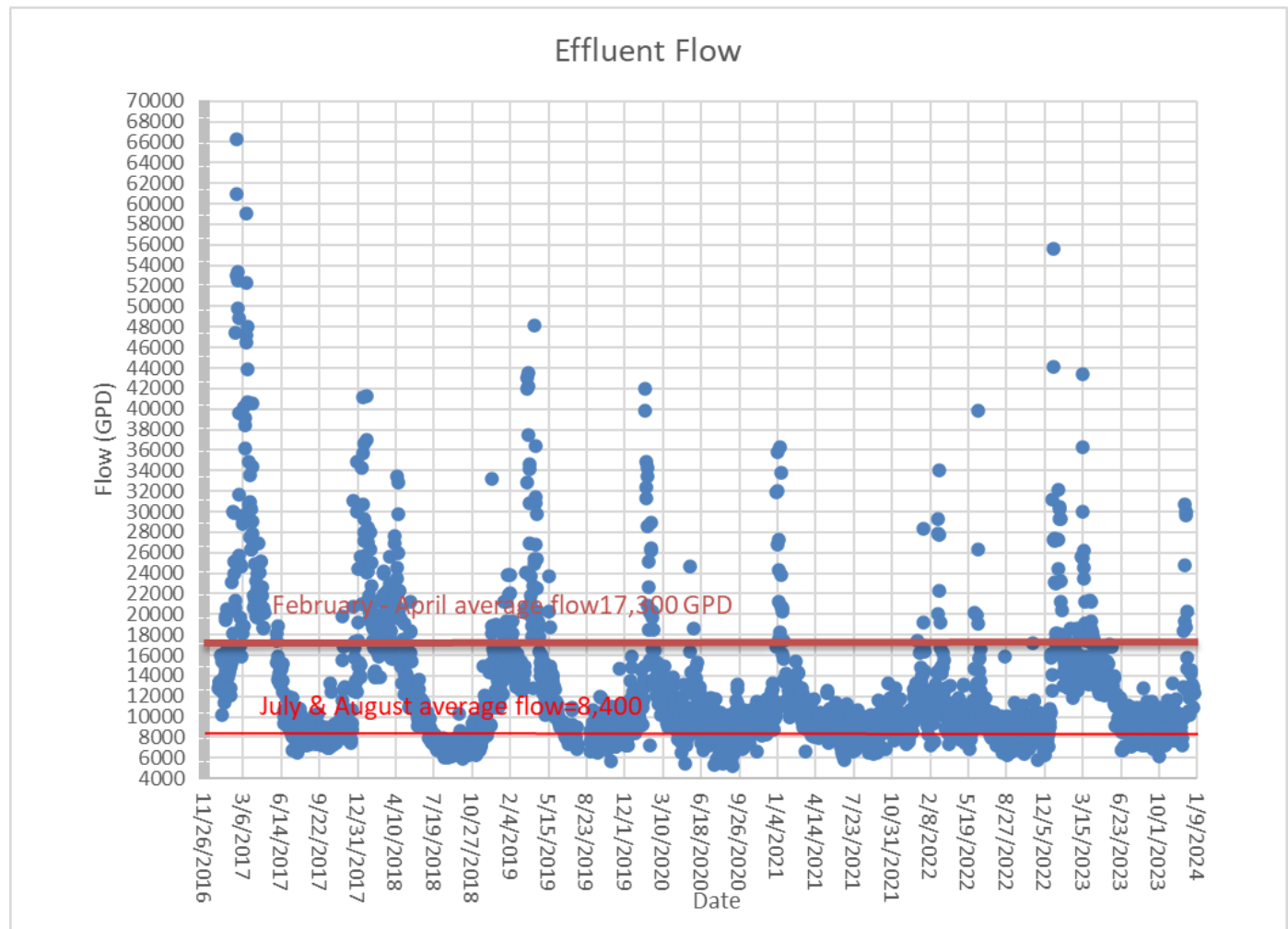
2. Collection system status

Spangle constructed the existing wastewater collection system in 1977. The collection system transports domestic and commercial sewage by gravity to a lift station situated on the north end of town approximately a half of a mile from the treatment facility.

The lift station has a backup generator, an alarm with call out system, two 7.5 hp pumps and a wet well. The pumps lift raw sewage to the headworks at the wastewater treatment plant (WWTP) via 3,000 feet of 4-inch pressure main.

Spangle completed an inflow and infiltration (I&I) evaluation in 2012 and 2020. As can be seen in Figure 2, the average dry weather (July and August) average flow is approximately 8,400 gallons per day (gpd). during the wet season (February – April) the facility average flow is 17,300 gpd. The flow range is 1,038 - 66,289 gpd. The standard deviation of the data set is 6,750 gpd. The most recent I&I study based on the 1985 guidelines from EPA found that they did not have excessive I&I. However, EPA updated the I&I guidance in 2014 due to the change in typical flows resulting from low flow devices and other water conservation requirements. Spangle recently received funding for planning to enable them to meet seasonal temperature and nutrient management requirements. The proposed permit requires completion of an engineering report per WAC 173-240-060. This includes the elements of a general sewer plan that requires the identification and prioritization of a capital improvement project that addresses the I&I or provides an analysis to evaluate whether the cost of treatment of the I&I is less than removing I&I from the collection system. The evaluation must also address compliance issues related to seasonal I&I and identify changes to the collection system needed to maintain compliance during seasonal I&I events.

Figure 2: Flow Demonstrating I&I



3. Treatment process

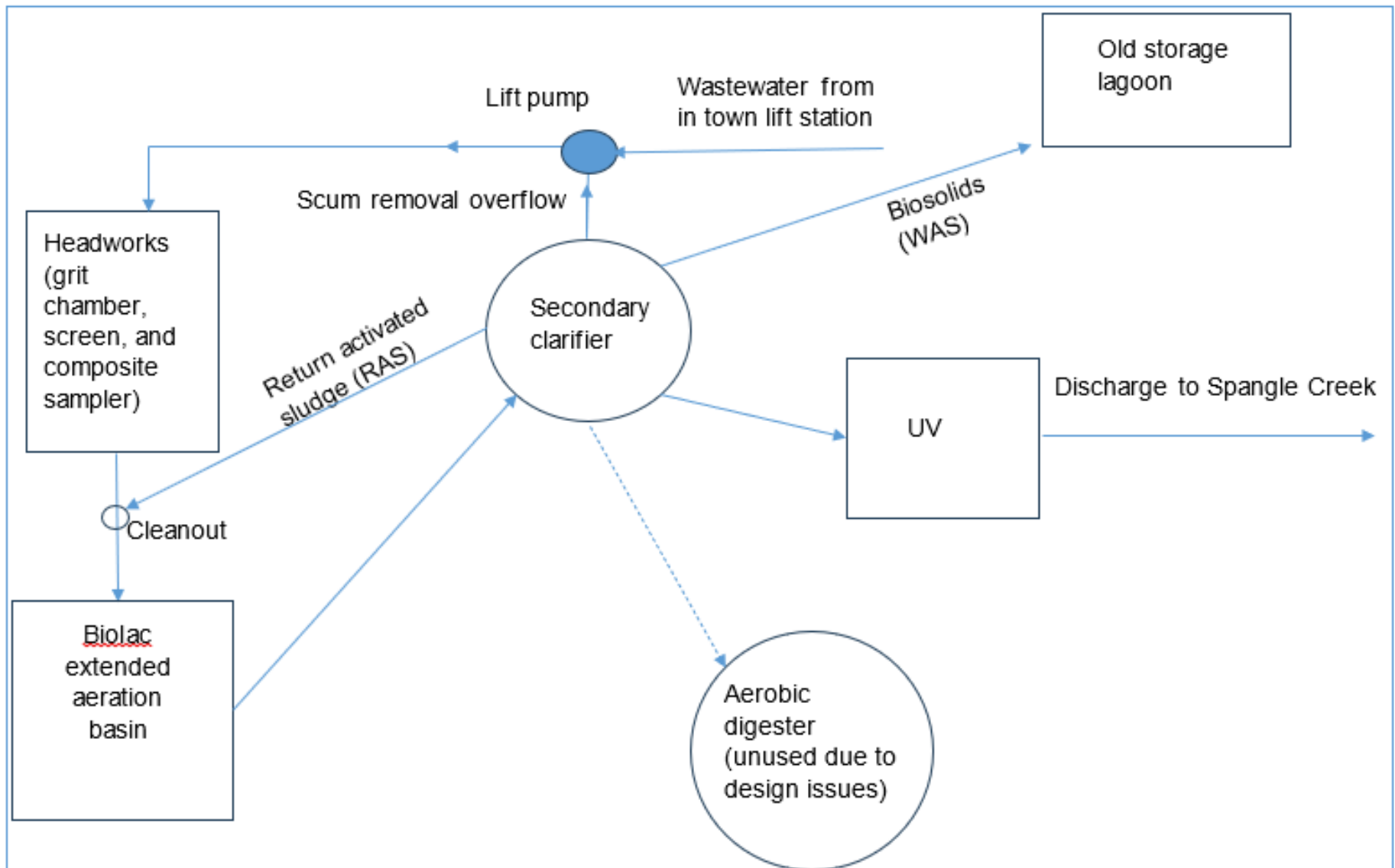
Spangle receives domestic wastewater from approximately 278 people and a small restaurant and convenience store. The Biolac extended aeration facility was designed for a population of 600. See Figure 3 for the treatment schematic.

- The headworks includes a grit chamber and self-cleaning screen. There are two sources of flow coming into the headworks. One is scum overflow from the secondary clarifier; the other is from the lift station for the collection system. The composite sampler is placed after the screen, so it pulls samples that include the scum collector from the secondary clarifier as well as the incoming raw sewage.
- The headworks flows to a cleanout that has a pipe coming from the recycle activated sludge. The cleanout discharges to the aeration basin.
- The center portion of the high-density polyethylene lined earthen aeration basin receives air. The aeration basin discharges via gravity flow to the secondary clarifier.

- The secondary clarifier has three waste streams:
 - The secondary clarifier has a “scum” collector that collects treated wastewater and limited solids from the surface of the clarifier. The scum collector is adjustable to control the flow. This flow recycles through a lift pump to the headworks.
 - The thickened solids from the bottom of the clarifier are sent back to the aeration basin as return activated sludge or to the abandoned lagoon as waste activated sludge. The abandoned lagoon was to be a temporary option when the plant was built in the late nineties. In 2016, Spangle constructed an aerobic digester, but the unit is not operable as constructed.
 - The quiescent zone around the secondary clarifier effluent weir discharges treated wastewater to ultraviolet (UV) disinfection.
- The UV system has a redundant bulb bank. The tank is U shaped. The flow comes in on the north end of the west bank and proceeds through both banks of bulbs. Only one set of bulbs is operated at a time. The bulbs are rotated to provide even wear on the bulbs.
- The effluent discharges from the east channel through an effluent flow gauge to Spangle Creek, approximately 750 feet east of the treatment facility.

This is an extended aeration facility with less than five million gallons per day. According to WAC 173-230-330 and the Permit Writer’s Manual, the facility requires a certified Group II operator. The facility requires reliability Class II. This means that the facility must have backup power to run the headworks screens, disinfection, and emergency lighting in the event of a power outage.

Figure 3: Treatment Schematic



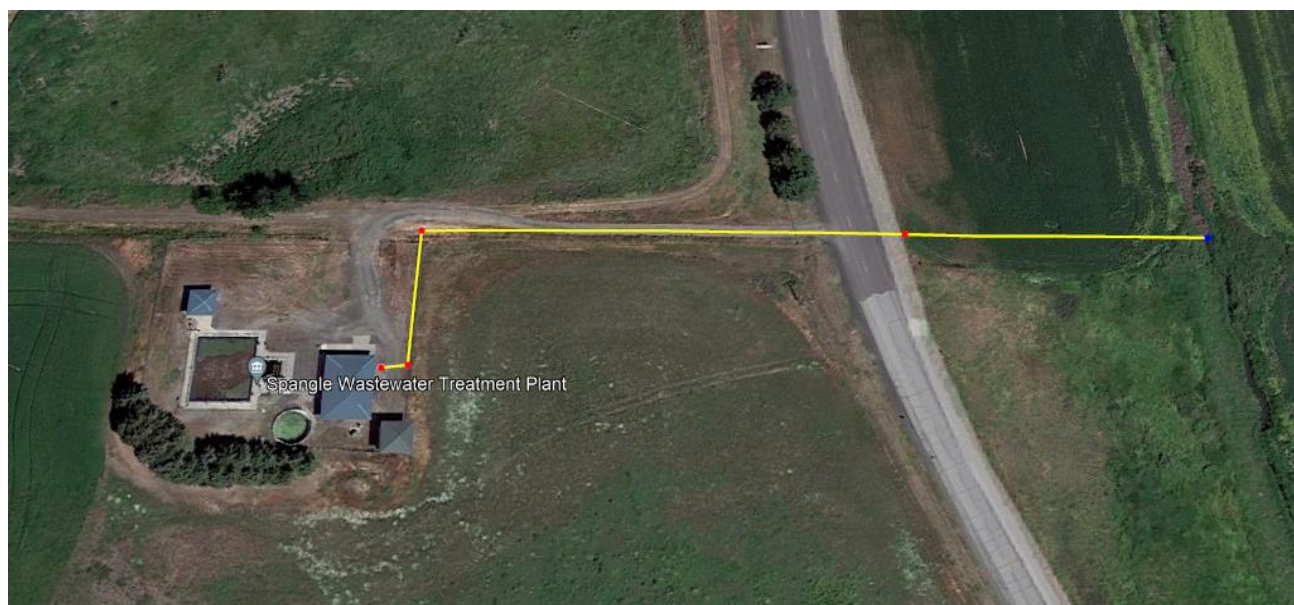
4. Solid wastes and residual solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings) and incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment and collection system. Spangle drains grit, rags, scum, and screenings and disposes this solid waste at the local landfill. Currently, solids (waste activated sludge) removed from the secondary clarifiers are not treated, but are discharged to the abandoned, unlined storage lagoon adjacent to the treatment facility. The facility has a biosolids permit, number BA0045471. Spangle requested and received funding to build a digester for solids. The digester was constructed but changes were made to the approved designs during construction. Due to the changes the digester is not functional. The proposed permit will have a compliance schedule requiring Spangle to address this issue.

5. Discharge outfall

The treated and disinfected effluent flows from the UV disinfection system through 750 feet of 8-inch pipe under the highway to the east bank of Spangle Creek. The pipe has a flap valve to prevent backflow during high flow events.

Figure 4: Approximate Discharge Pipe Route to Spangle Creek



II.B. Description of the receiving water

Spangle discharges to Spangle Creek. The only other nearby point source outfalls include Upper Columbia Academy, which discharges under state waste discharge permit ST0008034, a groundwater discharge. Significant nearby non-point sources of pollutants include agriculture and stormwater runoff from the town. There are no nearby drinking water intakes on Spangle Creek. Section IIIE of this fact sheet describes any receiving waterbody impairments.

The ambient background data used for this permit includes the following from EIM Study name: Hangman Creek Dissolved Oxygen and pH TMDL Study ID JJoy0005. The data from this location only included 7-DAD Max temperature data. The data reported in Table 2 only includes the critical season June 15 - September 14. The sampling location was downstream of the wastewater treatment outfall. No data is available upstream of the outfall.

Table 2: Ambient Background Data

Parameter	Value
Temperature (highest annual 7-DADMax)	31.4°C
Temperature (90 th percentile 7-DADMax)	30.3°C

II.C. Wastewater influent characterization

Spangle reported the concentration of influent pollutants in discharge monitoring reports. Review of the monitoring reports identified reporting errors in calculated values. Additionally, the facility has a scum removal device on the secondary clarifier that recycles relatively clean water to the headworks. The sampling device samples after this recycled water is added to the system. The influent samples may not reflect the actual influent character. The influent wastewater is characterized as follows:

Table 3: Wastewater Influent Characterization

Parameter	Units	# of Samples	Average Value	Maximum Value
Biochemical Oxygen Demand (BOD ₅)	mg/L	161	139	2554
Biochemical Oxygen Demand (BOD ₅)	lbs/day	161	16.2	369
Total Suspended Solids (TSS)	mg/L	164	182.6	1490
Total Suspended Solids (TSS)	lbs/day	162	20.8	297.1
pH	Standard units (s.u.)	1598	6.9	9.0

II.D. Wastewater effluent characterization

Spangle reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from January 1, 2017 – December 31, 2023.

Review of the data and questions asked during the inspection indicate that the data reported may not represent the data required by the permit. The permit issued in 2017 required Spangle to report maximum daily temperature using grab sampling until a continuous temperature measuring device (sampling every 30 minutes) was installed. The facility never reported the daily maximum and did not get an instrument that recorded the temperature every 30 minutes, which resulted in temperature data not being collected every day. Spangle did not install a continuously recording thermistor that could record the temperature every 30 minutes. Instead, they put in a manual read thermistor and report temperature when there was a scheduled shift. Additionally, they report the early morning temperature, which is typically the minimum daily temperature instead of reporting the permit required maximum temperature.

The wastewater effluent is characterized as follows:

Table 4: Wastewater Effluent Characterization

Parameter	Units	# of Samples	Average Value	Maximum Value
Flow	gallons per day	2494	12373	66289
Biochemical Oxygen Demand (BOD ₅)	mg/L	168	4.0	24.5
Biochemical Oxygen Demand (BOD ₅)	lbs/day	167	2.18	98.7
Biochemical Oxygen Demand (BOD ₅)	% removal	167	93.3	100
Total Suspended Solids (TSS)	mg/L	168	5.6	70
Total Suspended Solids (TSS)	lbs/day	168	0.6	6.6
Total Suspended Solids (TSS)	% removal	165	94	100
Ammonia	mg/L	135	0.58	13.7
Phosphorus	mg/L	164	3.7	9.0
Temperature (whole Year)	Degrees C	1621	13.3	24.4
Temperature (June15-Sept 14) (95 th percentile)	Degrees C	421	19.9	24.4 (22.9)

Parameter	Units	# of Samples	Maximum Monthly Geometric Mean	Maximum Weekly Geometric Mean
Fecal Coliforms	#/100 mL	83	324	920

Parameter	Units	# of Samples	Minimum Value	Maximum Value
pH	s.u.	1702	6.7	8.0
Dissolved Oxygen	mg/L	1,645	0.89	4.05

II.E. Summary of compliance with previous permit effective January 1, 2017

The previous permit placed effluent limits on the following parameters:

- Biochemical Oxygen Demand (5-day) BOD₅
- Total Suspended Solids (TSS)
- pH
- Fecal Coliform Bacteria
- Total Ammonia (as NH₃-N)
- Temperature – Interim
- 7-DADMax Temperature – Final

Spangle has not consistently complied with the effluent limits and permit conditions throughout the duration of the permit effective on January 1, 2017. Ecology assessed compliance based on its review of the facility's discharge monitoring reports (DMRs) and on inspections. In addition to the following summary of the violations, Spangle failed to report maximum daily temperature. Detailed violations are available online in the Ecology [Water Quality Permitting and Reporting Information System \(PARIS\)](https://apps.ecology.wa.gov/paris/PermitLookup.aspx)¹ database.

Table 5: Violations

Parameter	Violation Type	Number of Violations	Location	Date Range
Ammonia	Numeric Effluent Violation	15	001 (Effluent)	2019-2022
BOD ₅	Numeric Effluent Violation	11	001 (Effluent)	2017-2022

¹ <https://apps.ecology.wa.gov/paris/PermitLookup.aspx>

Parameter	Violation Type	Number of Violations	Location	Date Range
TSS	Numeric Effluent Violation	20	001 (Effluent)	2019-2023
Fecal Coliform	Numeric Effluent Violation	3	001 (Effluent)	2017-2021
BOD ₅	Exceedance of Design Criteria	1	IN1 (Influent)	2022
TSS	Exceedance of Design Criteria	2	IN1 (Influent)	2017
TSS	Frequency of Sampling Violation	2	IN1 (Influent)	2018-2019
Temperature	Frequency of Sampling Violation	6	001 (Effluent)	2017
Dissolved Oxygen	Analysis not Conducted	23	Effluent	2017
Flow	Analysis not Conducted	11	Spangle Creek	2017
pH	Analysis not Conducted	66	IN1 (Influent)	2017
Temperature	Analysis not Conducted	92	001 (Effluent)	2017
--	Failure to submit required report (non-DMR, non-pretreatment)	13	--	2018-2021
--	Late Submittal of DMRs	6	--	2017-2020

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

Table 6: Permit Submittals

Submittal Name	Submittal Status	Due Date	Received Date
O&M - Operation And Maintenance Manual Review Confirmation Letter	Received	3/15/2017	3/7/2017
Pretreatment - Annual List Of Industrial Users	Received	3/15/2017	3/7/2017

Submittal Name	Submittal Status	Due Date	Received Date
Operator Certification Renewal Notification	Received	5/15/2017	3/7/2017
Wasteload Assessment	Submitted	3/15/2017	3/13/2017
O&M - Operation And Maintenance Manual Review Confirmation Letter	Received	3/15/2018	3/16/2018
Pretreatment - Annual List Of Industrial Users	Received	3/15/2018	3/16/2018
Operator Certification Renewal Notification	Received	5/15/2018	3/16/2018
Engineering Report for construction/modification activities	Received	NA	7/26/2018
O&M - Operation And Maintenance Manual Review Confirmation Letter	Submitted	3/15/2019	4/9/2019
Pretreatment - Annual List Of Industrial Users	Submitted	3/15/2019	4/9/2019
Operator Certification Renewal Notification	Submitted	5/15/2019	4/9/2019
Wasteload Assessment	Submitted	3/15/2018	5/7/2019
Wasteload Assessment	Submitted	3/15/2019	5/7/2019
Electronic Signature Agreement Forms	Received	NA	2/12/2020
O&M - Operation And Maintenance Manual Review Confirmation Letter	Received	3/15/2020	6/1/2020
Pretreatment - Annual List Of Industrial Users	Received	3/15/2020	6/1/2020
Wasteload Assessment	Submitted	3/15/2020	6/4/2020
Infiltration And Inflow Evaluation	Submitted	12/2/2019	7/15/2020
Operator Certification - New Hire	Received	3/15/2017	8/6/2020
Application for Permit Renewal (Individual Permit)	Approved	12/31/2020	12/22/2020
O&M - Operation And Maintenance Manual Review Confirmation Letter	Submitted	3/15/2021	4/15/2021
Pretreatment - Annual List Of Industrial Users	Submitted	3/15/2021	4/15/2021
Wasteload Assessment	Submitted	3/15/2021	4/21/2021
Operator Certification Renewal Notification	Submitted	5/15/2021	6/1/2021

Submittal Name	Submittal Status	Due Date	Received Date
Noncompliance Notification (S3) Written Report Within 5-Days	Received	NA	6/18/2021
O&M - Operation And Maintenance Manual Review Confirmation Letter	Submitted	3/15/2022	2/3/2022
Pretreatment - Annual List Of Industrial Users	Submitted	3/15/2022	2/3/2022
Wasteload Assessment	Submitted	3/15/2022	2/4/2022
Operator Certification Renewal Notification	Submitted	5/15/2022	2/7/2022
Wasteload Assessment	Submitted	3/15/2023	1/10/2023
Pretreatment - Annual List Of Industrial Users	Submitted	3/15/2023	1/30/2023
Operator Certification Renewal Notification	Submitted	5/15/2023	2/14/2023
O&M - Operation And Maintenance Manual Review Confirmation Letter	Submitted	3/15/2023	2/27/2023
Operator Certification Renewal Notification	Submitted	5/15/2023	3/2/2023
Operator Certification Renewal Notification	Not Received	5/15/2020	NA

II.F. State environmental policy act (SEPA) compliance

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

III. Proposed permit limits

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

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Total Maximum Daily Load reports, Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the Federal Water Quality Criteria Applicable to Washington (40 CFR 131.45).

- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

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

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

III.A. Design criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this facility's treatment plant in the plans and specifications received by Ecology (Verela & Associates, Inc., 1997). Table 7 below includes design criteria from the referenced report. The approved, "Town of Spangle Wastewater Treatment Plant Addendum to Facility Plan" June 1996, prepared by Verela & Associates Inc. identified the technology limits required for discharge to Spangle Creek (Table 8). The report indicates that these are based on the letter from Ecology dated August 22, 1995 (Ecology, 1995). That letter had the same limits for both BOD₅ and TSS. This was changed in the approved report. Table 8 provides the approved technology limitations. The previous permits contained a typo that allowed for 23 mg/L daily maximum instead of 22.5 mg/L. Additionally, the permit identified this as a monthly average instead of a daily maximum; this is corrected in this permit.

Table 7: Design Criteria for Spangle Biolac Wastewater Treatment System

Parameter	Design quantity
Maximum Daily Flow (MDF)	85,000 gallons per day
Average Daily Flow (ADF)	68,000 gallons per day
Peak Hourly Flow (PHF)	230,000 gallons per day
BOD ₅ Loading for Maximum Month	137 pounds per day
TSS Loading for Maximum Month	103 pounds per day

Table 8: Effluent Design Criteria for Spangle Biolac Wastewater Treatment System

Parameter	Daily Maximum (mg/L)	Monthly Average (mg/L)
BOD ₅	15	10
TSS	22	15
Ammonia (summer)	1.5	1
Ammonia (winter)	4.5	3

Parameter	Daily Minimum (s.u.)	Daily Maximum (s.u.)
pH	6.5	7.5

Parameter	Geometric Mean	Not more than 10% Exceeding
Fecal Coliforms	100 organism/100 mL	100 organisms/100 mL

III.B. Technology-based effluent limits

Federal and state regulations define some technology-based effluent limits for domestic wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). Chapter 173-220-130 WAC requires that “effluent limitations shall not be less stringent than those based upon the treatment facility design efficiency contained in approved engineering plans and reports.” The proposed permit includes technology-based limits based on the approved treatment facility design.

Table 9 below identifies technology-based limits for pH, fecal coliform, BOD₅, and TSS as listed in chapter 173-221 WAC and based on technology-based limits reflected in the approved treatment facility design report and plans and specifications. Section III.D-G of this fact sheet describes the potential for water quality-based limits.

Table 9: Technology-based Limits

Parameter	Average Monthly	Average Weekly
BOD ₅	10 mg/L	15 mg/L
BOD ₅	The BOD ₅ effluent concentration must not exceed fifteen percent (15%) of the average influent concentration	NA

Parameter	Average Monthly	Average Weekly
TSS	15mg/L	22.5 mg/L
TSS	The TSS effluent concentration must not exceed fifteen percent (15%) of the average influent concentration	NA

Parameter	Monthly Geometric Mean	Weekly Geometric Mean
Fecal Coliform Bacteria	100 organisms/100 mL	150 organisms/100 mL

Parameter	Daily Minimum	Daily Maximum
pH	6.5 standard units	7.5 standard units

Technology-based mass limits for BOD₅ and TSS are typically based on WAC 173-220-130(3)(b) and WAC 173 221-030(11)(b). However, Ecology calculated the monthly and weekly average mass limits for BOD₅ and TSS based on the technology limits identified and approved in the 1996 facility plan as follows. The facility plan did not provide a weekly average. Ecology multiplied the monthly average by 1.5 to estimate the weekly average.

Mass limit = CL x DF x CF, where:

CL = Technology-based concentration limit (mg/L)

DF = Maximum monthly average design flow (MGD) (0.068)

CF = Conversion factor = 8.34

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

Average monthly mass limit = Influent mass monthly design load (lbs/day) x 0.15

Average weekly mass limit = Average monthly mass limit x 1.5

The Table 9 technology-based mass limits from the engineering report for BOD₅ and TSS are more stringent than the designed-based mass limits (Table 10).

Table 10: Comparison of technology-and design based Mass Limits

Parameter	Concentration Limit (mg/L)	Technology-based Mass Limit (lbs/day)	Influent Design Load (lbs/day)	Design-based Mass Limit (lbs/day)
BOD ₅ Monthly Average	10	5.7	137	20.6
BOD ₅ Weekly Average	15	8.5	NA	30.8
TSS Monthly Average	15	8.5	103	15.5
TSS Weekly Average	22.5	12.8	NA	23.2

Notes: NA=Not Available

III.C. Surface water quality-based effluent limits

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

1. Numeric criteria for the protection of aquatic life and recreation

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

2. Numeric criteria for the protection of human health

Numeric criteria for the protection of human health are promulgated in Chapter 173-201A WAC and 40 CFR 131.45. These criteria are designed to protect human health from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish, and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

3. Narrative criteria

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

- Adversely affect designated water uses.

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

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

4. Antidegradation

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

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

Tier I: ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions.

Tier II: ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities.

Tier III: prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

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

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

Facility specific requirements – This facility must meet Tier I requirements.

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

- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.
- Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

5. Mixing zones

The proposed permit does not authorize a mixing zone for the discharge.

Spangle Creek is an intermittent stream that does not flow continuously. As a result, during the critical season the creek is effluent dominated.

III.D. Designated uses and surface water quality criteria.

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. The table included below summarizes the criteria applicable to this facility's receiving water and its designated uses.

1. Freshwater aquatic life uses and associated criteria

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

Table 11: Salmonid Spawning, Rearing, and Migration

Criteria	Value
Temperature – Highest 7-DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen – Lowest 1-Day Minimum	8.0 mg/L
Turbidity	5 NTU over background when the background is 50 NTU or less; or A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

2. Recreational use and criteria

The recreational use for this receiving water is primary contact recreation. *E.coli* organism levels must not exceed a geometric mean value of 100 CFU or MPN per 100 mL, with no more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained within the averaging period exceeding 320 CFU or MPN per 100 mL.

3. Water supply uses

The water supply uses are domestic, agricultural, industrial, and stock watering.

4. Miscellaneous freshwater uses

The miscellaneous freshwater uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

III.E. Water quality impairments

Spangle Creek is on the current 303(d) list as impaired for dissolved oxygen. Ecology is currently developing the Hangman Creek Advanced Restoration Plan, which includes Spangle Creek. As part of a focused watershed, Hangman Creek has been extensively studied and the nonpoint source impacts are more predominant when compared to the point source impacts. By addressing the nonpoint source impacts, the ARP, which includes a description of actions, a schedule and milestones, is a beneficial and practicable way of achieving WQS. The ARP will identify sources and make recommendations for the individual facilities discharging to the Hangman Creek but is not intended to provide wasteload allocations. Wasteload allocations may be developed in a future TMDL if the ARP does not result in achieving the DO criteria. In the interim, this permit will have technology-based limits for oxygen demanding pollutants such as five-day biochemical oxygen demand, ammonia, and performance based limits for phosphorus.

The [Hangman \(Latah\) Creek Watershed Fecal Coliform Bacteria, Temperature and Turbidity TMDL²](https://apps.ecology.wa.gov/publications/documents/1110012.pdf), Publication No. 11-10-012, published May 2011 includes waste load allocations (WLA) for the Spangle wastewater treatment plant for fecal coliforms, temperature, and total suspended solids. The fecal coliform indicator used in the TMDL will not change until formally pursued by either Ecology or the Permittee and re-approved by EPA.

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

Ecology must consider the narrative criteria described in WAC 173-201A-260 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

² <https://apps.ecology.wa.gov/publications/documents/1110012.pdf>

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

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

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

1. Mixing zones and dilution factors

Ecology has not authorized a mixing zone in the permit.

2. Nutrients

Ecology determined the impacts of dissolved oxygen deficiency, nutrients, pH, fecal coliform, ammonia, and temperature as described below. The derivation of surface water quality-based limits also considers the variability of pollutant concentrations in both the effluent and the receiving water.

3. Dissolved Oxygen: BOD₅ and Ammonia Effects

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

Ecology evaluated the impacts of oxygen demanding waste from the treatment plant. The impacts from nonpoint impacts upstream and downstream significantly reduce the amount of dissolved oxygen (DO) available in the surface water. Until nonpoint sources can be addressed, it is not possible to calculate the impacts from the Spangle wastewater treatment facility with the currently available information.

The proposed permit will continue the BOD₅ and ammonia limits identified in the previous permit, and will add performance-based phosphorus limits. The performance-based limits are intended to limit phosphorus inputs to the current level until the nonpoint sources have been addressed and the point source effects are identifiable. This may require a future TMDL if the ARP does not result in achieving the DO criteria.

Phosphorus Maximum Daily Effluent Limit: 10.8 mg/L

Phosphorus Average Monthly Effluent Limit: 5.7 mg/L

Ecology will require Spangle to provide engineering demonstrating that they are meeting AKART for DO. Ecology will evaluate ammonia for toxicity later in this fact sheet.

The 10th percentile creek DO concentration downstream of the treatment facility was 2.9 mg/L in summer 2009. The DO use requirement in Spangle Creek is 8.0 mg/L. The 5th percentile effluent DO concentration based on daily sampling is 1.6 mg/L. The facility did not take representative minimum daily DO readings, as a result it is not possible to include a performance-based limit for DO in the permit.

The proposed permit requires Spangle to collect continuous dissolved oxygen measurements and report the daily minimum DO concentration. Ecology will use the effluent dissolved oxygen data to set a performance-based limit and a compliance schedule in the next permit cycle. Because Spangle does not have a mixing zone, the dissolved oxygen concentration required at the point of discharge will be 8.0 mg/L.

4. pH

Ecology did not have the data needed to model the impact of the effluent pH on the receiving water using the calculations from EPA, 1988.

Ecology predicts no violation of the pH criteria under critical conditions. However, the proposed permit requires Spangle to collect the data needed to verify this prediction. Generally, in this case Ecology would include a technology-based limit of a pH range of 6.0 to 9.0. Because the facility has demonstrated it can meet the water quality standards in the discharge, the proposed permit continues the water quality-based effluent pH limits of 6.5 to 8.5.

5. Bacteria

Ecology has completed a TMDL, "Hangman (Latah) Creek Watershed Fecal Coliform Bacteria, Temperature, and Turbidity Total Maximum Daily Load", May 2011, and established a wasteload allocation (WLA) for this discharge. The Spangle WLA is 6.6×10^8 cfu/day. Based on the WLA and a maximum daily design flow of 85,000 gallons per day, the average month fecal coliform limit is 205 cfu/100 mL. The previous permit's average month limit for fecal coliform was 100 cfu/ 100 mL. The previous permit limit is more stringent; as a result, the proposed permit will continue the previous technology based fecal coliform limit of 100 cfu/100 mL. Ecology will not require the alternative indicator of E.coli at 100 cfu/100 mL. Ecology will require sampling that will be used to evaluate the reasonable potential to exceed the E coli criteria in the next permit.

6. Turbidity

Ecology has completed a TMDL, "Hangman (Latah) Creek Watershed Fecal Coliform Bacteria, Temperature, and Turbidity Total Maximum Daily Load", May 2011, and established a WLA for this discharge. The proposed permit includes an effluent limit for total suspended solids (TSS) derived from the completed TMDL. The TSS WLA is the same as the previous permit limits: average monthly limit is 15 mg/L, 8.5 lbs/day; average weekly limit is 23 mg/L, 12.8 lbs/day.

7. Toxic pollutants – aquatic life criteria

Federal regulations at 40 CFR 122.44 require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards. The following toxic pollutants are known to be present in the discharge: ammonia. Ecology conducted a reasonable potential analysis (See Appendix D) on these parameters to determine whether it would require effluent limits in this permit.

Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature and pH in the receiving freshwater. No valid ambient background data was available for ammonia. Ecology used zero for background. Ecology requires Spangle (Special Condition S11. of the proposed permit) to collect ambient ammonia concentrations upstream of the point of discharge. This information may result in a permit modification or additional limits in the next permit renewal.

8. Temperature

The state temperature standards (WAC 173-201A, WAC 173-201A-200, WAC 173-201A-600, and WAC 173-201A-602) include multiple elements:

- a. Annual summer maximum threshold criteria (June 15 to September 15)
- b. Supplemental spawning and rearing season criteria (September 15 to June 15)
- c. Incremental warming restrictions
- d. Guidelines on preventing acute lethality and barriers to migration of salmonids.

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

- a. Annual summer maximum and supplementary spawning/rearing criteria

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

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

b. Incremental warming criteria

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

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

c. Guidelines to prevent acute lethality or barriers to migration of salmonids.

These site-level considerations do not override the temperature criteria listed above.

- i. Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.
- ii. General lethality and migration blockage: The temperature at the edge of a chronic mixing zone must not exceed either a 1DMax of 23°C or a 7DADMax of 22°C. When adjacent downstream temperatures are 3°C or cooler, the 1DMax at the edge of the chronic mixing zone must not exceed 22°C.
- iii. Lethality to incubating fish: The temperature must not exceed 17.5°C at locations where eggs are incubating.

Ecology has completed a temperature TMDL, "Hangman (Latah) Creek Watershed Fecal Coliform Bacteria, Temperature, and Turbidity Total Maximum Daily Load", May 2011, and established a wasteload allocation for this discharge. The proposed permit includes a final effluent limit for temperature derived from the completed TMDL.

The previous permit required the Permittee to collect continuous temperature measurements and report the daily maximum. Spangle did not collect the continuous data, instead they installed a thermistor and recorded the temperature every morning. This is not representative of the daily maximum temperature which typically occurs in the late afternoon. As a result, the proposed permit does not include a performance based effluent limit.

The final TMDL approved water quality-based limit is 18.2°C in June; 21.5°C in July; and 17.7°C in August. The proposed permit includes a compliance schedule to meet the TMDL wasteload allocation and requires the Permittee to collect continuous data and report representative maximum daily temperature data. The data will be used in the next permit to develop a performance-based limit.

III.H. Evaluation of human health-based water quality criteria

Washington's water quality standards include numeric human health-based criteria for priority pollutants that Ecology must consider when writing NPDES permits.

Ecology determined the applicant's discharge does not include any industrial discharges and therefore is unlikely to contain chemicals regulated to protect human health.

III.I. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the [Aquatic Lands Cleanup Unit website](https://ecology.wa.gov/Aquatic-Lands-Cleanup-Unit-website)³.

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the sediment management standards.

- Toxics do not accumulate in the sediments even though the point of discharge is a depositional area.

III.J. Groundwater quality limits

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

Currently, Spangle discharges waste activated sludge to an old unlined lagoon. As a result, Ecology determined Spangle's discharge has the potential to cause a violation of the groundwater quality standards. The proposed permit includes the following conditions to protect groundwater: Spangle must provide an engineering report that meets WAC 173-240-060 demonstrating that they are applying AKART to the discharge of waste activated sludge to the old lagoon or demonstrates that the discharge meets groundwater quality. The permit includes the requirements for the engineering report. If Spangle selects the option of continued discharge of sludge to the unlined lagoon, the plan must include the siting of monitoring wells and a monitoring plan identifying the sampling required to evaluate the effects of the discharge on groundwater.

III.K. Whole effluent toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods.

³ <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Sediment-cleanups>

However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity, and other WET tests measure chronic toxicity.

Using the screening criteria in chapter 173-205-040 WAC, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. Therefore, this permit does not require WET testing. Ecology may require WET testing in the future if it receives information indicating that toxicity may be present in this effluent.

III.L. Comparison of effluent limits with the previous permit issued on December 7, 2016

Table 12: Comparison of Previous and Proposed Effluent Limits – Outfall 001

Limit	Basis of Limit	Existing Permit Limit	Proposed Permit Limit
Biochemical Oxygen Demand (5-day) – Average Monthly	Technology	10.0 mg/L 5.7 lbs/day 85% removal of influent BOD ₅	10.0 mg/L 5.7 lbs/day 85% removal of influent BOD ₅
Biochemical Oxygen Demand (5-day) – Average Weekly	Technology	15 mg/L 8.5 lbs/day	15 mg/L 8.5 lbs/day
Total Suspended Solids – Average Monthly	TMDL	15 mg/L 8.5 lbs/day 85% removal of influent TSS	15 mg/L 8.5 lbs/day 85% removal of influent TSS
Total Suspended Solids – Average Weekly	TMDL	23 mg/L 12.8 lbs/day	22.5 mg/L 12.8 lbs/day
Fecal Coliform Bacteria – Monthly Geometric Mean	Technology	100 cfu/100mL	100 cfu/100mL
Fecal Coliform Bacteria – Weekly Geometric Mean	Technology	200 cfu/100mL	200 cfu/100mL
pH – Daily Minimum	WQ	6.5 s.u.	6.5 s.u.
pH – Daily Maximum	WQ	8.5 s.u.	8.5 s.u.
Total Ammonia (as NH ₃ -N) – Average Monthly	Technology	1.0 mg/L	1.0 mg/L
Total Ammonia (as NH ₃ -N) – Maximum Daily	Technology	1.5 mg/L	1.5 mg/L

Limit	Basis of Limit	Existing Permit Limit	Proposed Permit Limit
Total Phosphorous (as P) – Maximum Daily	Technology	--	10.8 mg/L
Total Phosphorous (as P) – Average Monthly	Technology	--	5.7 mg/L
Interim Maximum Day 7-DADMax Temperature	WQ	Current Temperature	Current Temperature
Final Maximum Day 7-DADMax Temperature Final (effective March 1, 2035)	TMDL	July – 18.2°C August –21.5°C September – 17.7°C	June – 18.2°C July –21.5°C August – 17.7°C
Interim Dissolved Oxygen Average Monthly Minimum Limit	WQ	--	Current concentration
Final Dissolved Oxygen Average Monthly Minimum Limit (effective March 1, 2035)	WQ	--	8.0 mg/L

Notes:

- The TSS limit in the previous permit was rounded up. This is corrected here to the technology limit in the approved engineering report.
- The temperature limits in the previous permit did not match the approved TMDL wasteload allocation in that they were shifted from June, July and August to July, August, and September. The proposed limits for temperature were taken from the TMDL Table ES5.

IV. Monitoring requirements

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

If a facility uses an accredited contract laboratory to monitor wastewater, it must ensure that the laboratory uses sufficiently sensitive methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

IV.A. Wastewater monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies consider the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's "Permit Writer's Manual", Publication 92-109 (Ecology, 2018) Table 40, Part A for all treatment plants less than 0.1 MGD average design flow. Spangle has an activated sludge type mechanical treatment facility.

The previous permit did not require the minimum recommended monitoring frequency. The proposed permit implements the recommended frequency.

Ecology has included some additional monitoring of nutrients including phosphorous and ammonia in the proposed permit. Ecology will use this data to establish the limits for the next permit.

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

Ecology revised the water contact recreation bacteria criteria effective January 1, 2021, and eliminated all recreational uses except for primary contact criteria in both fresh and marine waters. Primary contact criteria changed to *E. coli* for freshwater and to enterococci for marine water. Because Spangle has an effluent limit based on the TMDL, this permit requires monitoring of both fecal coliform and *E. coli* during this permit cycle. Ecology will reevaluate reasonable potential for the bacteria limit based on the new indicator during the next permit cycle. Additionally, Ecology added UV system monitoring intended to demonstrate that the disinfection system is operating as designed.

IV.B. Lab accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data.

V. Other permit conditions

V.A. Reporting and record keeping

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

V.B. Prevention of facility overloading

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

- Take the actions detailed in proposed permit Special Condition S4.
- Design and construct expansions or modifications before the treatment plant reaches existing capacity.
- Report and correct conditions that could result in new or increased discharges of pollutants.
- Identify and eliminate inflow and infiltration.

Special Condition S4 restricts the amount of flow.

The municipality should contact Ecology's regional office as early as practical before planning a project that may include Ecology-administered funding or changes to the quality or quantity of the discharge.

V.C. Operation and maintenance

The proposed permit contains Special Condition S5 as authorized under RCW 90.48.110, WAC 173-220-150, chapter 173-230 WAC, and WAC 173-240-080. Ecology included it to ensure proper operation and regular maintenance of equipment, and to ensure that Spangle takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

Special Condition S5 requires Spangle to submit an update to the operation and maintenance manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-080). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

Spangle has documented inflow and infiltration (I&I) in its collection system in a report submitted in 2012 and again in 2019. They must further characterize and provide a capital improvement plan to address the issues. The permit includes requirement to identify funding and take actions to address the I&I in the system or demonstrate using the analysis in EPA's guidance for estimating I&I (Environmental Protection Agency, 2014) that the I&I is not resulting in compliance issues and that it is less expensive to treat the I&I than to correct the problem.

V.D. Pretreatment

1. Duty to enforce discharge prohibitions

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

- The first section of the pretreatment requirements prohibits the POTW from accepting pollutants which causes "pass through" or "interference." This general prohibition is from 40 CFR §403.5(a). Appendix C of this fact sheet defines these terms.
- The second section reinforces specific state and federal pretreatment prohibitions found in WAC 173-216-060 and 40 CFR §403.5(b). The POTW may not accept certain wastes, which:

- Are prohibited due to dangerous waste rules.
- Are explosive or flammable.
- Have too high or low of a pH (too corrosive, acidic, or basic).
- May cause a blockage such as grease, sand, rocks, or viscous materials.
- Are hot enough to cause a problem.
- Are of sufficient strength or volume to interfere with treatment.
- Contain too much petroleum-based oils, mineral oil, or cutting fluid.
- Create noxious or toxic gases at any point.

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

- The third section of pretreatment conditions reflect state prohibitions on the POTW accepting certain types of discharges unless the discharge has received prior written authorization from Ecology.

These discharges include:

- Cooling water in significant volumes.
- Stormwater and other direct inflow sources.
- Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

2. Federal and state pretreatment program requirements

Ecology administers the Pretreatment Program under the terms of the addendum to the “Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10” (1986) and 40 CFR Part 403. Under this delegation of authority, Ecology issues wastewater discharge permits for significant industrial users (SIUs) discharging to POTWs which have not been delegated authority to issue wastewater discharge permits. Ecology must approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)(iii)].

Industrial dischargers must obtain a permit from Ecology before discharging waste to Spangle POTW [WAC 173-216-110(5)]. Industries discharging wastewater that is similar in character to domestic wastewater may not require a permit.

3. Industrial user survey update

This provision requires the POTW to notify Ecology of proposed categorical industrial users (CIU), significant industrial users (SIUs), and potential significant industrial users (PSIUs). This provides Ecology with notice of any new or proposed industrial users in the POTW's service area without a more rigorous “complete” industrial user survey.

This level of effort is often sufficient for small municipalities which have not seen any adverse effects potentially attributable to industries, have loadings commensurate with domestic flows, and have a small proportion of industrial flow.

V.E. Solid waste

To prevent water quality problems the facility is required in permit Special Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards. The enforcement compliance schedule requires Spangle to provide engineering planning for waste sludge and biosolids generated on site.

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

V.F. Compliance schedules

The compliance schedule in the proposed permit is divided into two different schedules. Permit Section S10 includes an enforcement compliance schedule and provides the tasks required to get the community into compliance with monitoring for temperature and dissolved oxygen and for addressing collection system issues.

Spangle also requires a water quality base effluent limit compliance schedule, Permit Section S11, to meet the temperature TMDL and the water quality based dissolved oxygen limit. The small community does not have the infrastructure or the resources to immediately meet the wasteload allocation for temperature or the WQBEL for dissolved oxygen.

The following steps will be needed:

- Engineering planning will take two to three years to identify the infrastructure needed to get the community to compliance with the temperature TMDL. This timing will depend on funding availability. This is a small community of approximately 278 people. In addition to funding and engineering resources, the timeline is dependent upon the community completing sewer collection system infrastructure repairs to eliminate storm and groundwater going into the system.
- Engineering design plans and specification of the identified alternative that will move the community into compliance with the temperature wasteload allocation and the dissolved oxygen limit. Again, this will depend on available resources and may take two to three years after planning document is developed, depending on funding availability.

- The construction of required infrastructure once the plans and specifications are approved is also dependent upon funding. Ecology expects it to take three to four years to complete design and construction and then startup of the new infrastructure.

Ecology expects the compliance timeline to take seven to ten years to complete. The proposed permit requires Spangle to report on progress every year.

V.G. Receiving Water Studies

Ecology did not have the data needed to evaluate ammonia toxicity. The proposed permit will require Spangle to submit a quality assurance project plan for surface water data collection. Data will be collected upstream of the outfall for pH, temperature, dissolved oxygen, and ammonia. The permit provides the specific requirements in section S12. Ecology will use the data collected to evaluate reasonable potential for ammonia toxicity.

V.H. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual domestic wastewater NPDES permits issued by Ecology.

VI. Permit issuance procedures

VI.A. Permit modifications

Ecology may modify this permit to impose numeric limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for groundwaters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

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

VI.B. Proposed permit issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five years.

VII. References for text and appendices

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Water Environment Federation, American Society of Civil Engineers. (2020). Existing Sewer Evaluation and Rehabilitation: Manual of Practice FD 6.

Water Pollution Control Federation. (1976). Chlorination of Wastewater.

Washington State and Ecology website general reference links:

[Laws and Regulations](#)⁴

[Permit and Wastewater Related Information](#)⁵

⁴ <http://leg.wa.gov/LawsAndAgencyRules/Pages/default.aspx>

⁵ <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance>

Appendix A - Public Involvement Information

Ecology proposes to reissue a permit to the Town of Spangle. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on March 29, 2021 and April 5, 2021 in the Spokesman Review to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on October 17, 2024 in the Spokesman Review to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

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

See [Frequently Asked Questions about Effective Public Commenting](https://apps.ecology.wa.gov/publications/SummaryPages/0307023.html)⁶.

For more information, call the Department of Ecology Eastern Regional Office at (509) 329-3400 or [visit Ecology's website](https://ecology.wa.gov)⁷.

The primary author of this permit and fact sheet is Diana Washington.

⁶ <https://apps.ecology.wa.gov/publications/SummaryPages/0307023.html>

⁷ <https://ecology.wa.gov>

Appendix B - Your Right to Appeal

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

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

- File your notice of appeal and a copy of this permit with the PCHB (see filing information below). "Filing" means actual receipt by the PCHB during regular business hours as defined in WAC 371-08-305 and -335. "Notice of appeal" is defined in WAC 371-08-340.
- Serve a copy of your notice of appeal and this permit on the Department of Ecology by mail, in person, or by email (see addresses below).

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

Filing with the PCHB

For the most current information regarding filing with the PCHB: visit the [Pollution Control Hearings Board⁸](https://eluhoboard.org/) website or call (360) 664-9160.

Service on Ecology

Street Address:

Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, Washington 98503

Mailing Address:

Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, Washington 98504-7608

E-Mail Address:

ecologyappeals@ecy.wa.gov

⁸ <https://eluhoboard.org/>

Appendix C - Glossary

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

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

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

AKART – The acronym for “all known, available, and reasonable methods of prevention, control and treatment.” AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and RCW 90.48.520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

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

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

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

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

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

Average monthly discharge limit – The average of the measured values obtained over a calendar months' time.

Background water quality – The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

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

BOD₅ – Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD₅ is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

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

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

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

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

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

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

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

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

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

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

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

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

Days (compliance period interval) – When the compliance period is stated in days: (A) exclude the day of the event that triggers the period; (B) count every day, including intermediate Saturdays, Sundays, and legal holidays; and (C) include the last day of the period, but if the last day is a Saturday, Sunday, or legal holiday, the period continues to run until the end of the next day that is not a Saturday, Sunday, or legal holiday.

Detection level – or method detection limit means the minimum concentration of an analyte (substance) that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results as determined by the procedure given in 40 CFR part 136, Appendix B.

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

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

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

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

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

Enterococci – A subgroup of fecal streptococci that includes *S. faecalis*, *S. faecium*, *S. gallinarum*, and *S. avium*. The enterococci are differentiated from other streptococci by their ability to grow in 6.5% sodium chloride, at pH 9.6, and at 10°C and 45°C.

E. coli – A bacterium in the family Enterobacteriaceae named Escherichia coli and is a common inhabitant of the intestinal tract of warm-blooded animals, and its presence in water samples is an indication of fecal pollution and the possible presence of enteric pathogens.

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

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

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

Immediate reporting – Report permit violations immediately without delay of any interval of time from the moment the permittee becomes aware of the violation. Priority should first be given to stopping an active noncompliance.

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

Industrial wastewater – Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade, or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated stormwater and, also, leachate from solid waste facilities.

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

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

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

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

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

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

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

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

Method detection limit (MDL) – See Detection level.

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

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

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

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

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

Peak hour design flow (PHDF) – The largest volume of flow anticipated to occur during a

one-hour period, expressed as a daily or hourly average.

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

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

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

- Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day; or
- Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

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

Quantitation level (QL) – also known as Minimum level (ML) – The term “minimum level” refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (DL), whichever is higher.

Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the DL in a method, or the DL determined by a laboratory, by a factor of 3. For the purposes of NPDES compliance monitoring, EPA considers the following terms to be synonymous: “quantitation limit,” “reporting limit,” and “minimum level”.

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

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

Sample Maximum – No sample may exceed this value.

Significant industrial user (SIU) –

1. All industrial users subject to Categorical Pretreatment Standards under 40 CFR Chapter I, Subchapter N and 40 CFR 403.6, and
2. Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix D - Technical Calculations

Reasonable Potential Analysis:

Ecology uses spreadsheet tools to determine reasonable potential (to cause or contribute to violations of the aquatic life and human health water quality numeric standards) and to calculate effluent limits. The process and formulas for determining reasonable potential and effluent limits in these spreadsheets come from the Technical Support Document for Water Quality-based Toxics Control, (EPA 505/2-90-001) (USEPA, 1991).

Spangle does not have a mixing zone, so mixing is not used to develop permit limits. The criterion is applied at the end of the pipe when mixing is not authorized.

Figure 5: Receiving Water Critical Conditions

Dilution Factor Calculations and Receiving Water Critical Conditions

Step 1: Enter Waterbody Type

Water Body Type	Freshwater
-----------------	------------

Facility Name	Spangle WWTP
Receiving Water	Spangle Creek

Step 2: Enter Dilution Factors -OR- Calculate DFs by entering Facility/Receiving Water Flow Data

Do you want to enter dilution factors -or- flow data?	Flow Data
---	-----------

	Annual Average	Max Monthly Average	Daily Max
Facility Flow, MGD	0.068	0.085	0.085
Facility Flow, cfs (calculated)	0.11	0.13	0.13

	Condition	Receiving Water Flow, cfs	Allowable % of river flow	Max Dilution Factor Allowed
<u>Aquatic Life - Acute</u>	7Q10		0.025	1.0
<u>Aquatic Life - Chronic</u>	7Q10		0.25	1.0
<u>HH-Non-Carcinogen</u>	30Q5		0.25	1.0
<u>HH-Carcinogen</u>	Harmonic Mean		0.25	1.0
<u>Whole river at 7Q10</u>	7Q10		1	1.0

Step 3: Enter Critical Data

	Effluent	Receiving Water
Temp, °C	22.9	31.35
pH, s.u.	6.7-8.0	7.38-7.6
Alkalinity, mg/L as CaCO3	Not available	Not available
Hardness, mg/L CaCO3	Not Available	Not available
Salinity, psu		
Receiving water TSS, mg/L (leave blank if unknown)		
If TSS is annual data, enter 'A'; if from critical period, enter 'S'; If no TSS, leave blank		

Spangle Creek does not have flow data.

Spangle Creek does not have any chemistry data above the WWTP discharge. All data is taken below the WWTP discharge.

Figure 6: Phosphorus Technology-based Performance Limits

Phosphorous Performance-based Effluent Limits

INPUT	
LogNormal Transformed Mean:	1.2050
LogNormal Transformed Variance:	0.2550
Number of Samples per month for compliance monitoring:	4
Autocorrelation factor (n_e) (use 0 if unknown):	0
OUTPUT	
$E(X) =$	3.7905
$V(X) =$	4.173
$VARn$	0.0701
$MEANn=$	1.2975
$VAR(Xn)=$	1.043
RESULTS	
Maximum Daily Effluent Limit (mg/L):	10.8
Average Monthly Effluent Limit (mg/L):	5.7
5.65752647 5.470772438	

Appendix E - Response to Comments

The legal notice that informed the public that a draft permit and fact sheet were available for review was published in the Spokesman Review on October 17, 2024. Ecology received comments on the draft permit following the 30-day public comment period. The comments and Ecology's responses are attached to this Fact Sheet as Attachment E-1.