Kootenai-Ponderay Sewer District

2020
Wastewater Treatment Facilities Plan Update
To the 2007 Facilities Plan

August 2020

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EXECUTIVE SUMMARY

ES.1 General Information

This update to the 2007 Wastewater Facilities Master Plan was driven by the National Pollutant Discharge Elimination System (NPDES) permit issued by the EPA in June of 2018. The 2007 Wastewater Facilities Plan included an assessment of the collection system and treatment alternatives to satisfy future but undefined effluent limits. The recently issued NPDES permit defines the effluent limits and establishes stringent nutrient limits, driven by low water quality in Boyer Slough, which cannot be met with the current lagoon treatment technology. Therefore, this Facility Plan Update evaluates alternatives to comply with the new permit.

Within this Facility Plan Update, the following alternatives to meet permit requirements are evaluated:

1. Do nothing
2. Land application without a surface water discharge
3. Boyer Slough discharge and critical season land application
4. Lake outfall
5. Regionalization or contract for service with the City of Sandpoint

ES.2 Planning Area Conditions

The District serves developed portions of the cities of Ponderay and Kootenai as well as small unincorporated areas of Bonner County. In 2018 the District served an estimated 1,500 equivalent residential users (ERU). Based on observed growth in the area, a growth rate of 2.78% was identified to project the future service population over the 20-year planning period of this Facility Plan Update. At the end of the planning period in year 2040, the District is projected to serve an estimated 2,740 ERUs.

ES.3 Flow and Waste Load Projections

The District has maintained influent flow records for the WWTP since the late 1990s. Daily flow data from January 1st, 2014 to December 31st, 2018 (5 years) were used to estimate existing flow conditions.

With a projected long term growth rate of 2.78%, assuming there are no significant changes in demographics and commercial or industrial enterprises, dry weather base flows are anticipated to increase from 227,000 gallon per day (2018) to about 415,000 gallons per day by the end of the planning period in 2040, serving approximately 2,740 ERUs. The existing flow conditions and projected flow conditions are summarized in **Table ES-1**.

Table ES-1 - Flow Summary - Existing

Condition	Existing Flow (gpd)	Projected Flow (gpd)
Dry Weather Base Domestic Flow	222,000	415,000
Yearly Average Flow	279,000	482,700
Max Month, Max 30-day Moving Ave.	594,000	900,000 [A]
Max Month, I/I Contribution	372,000	372,000
Wet Weather Peak Day Flow	1,032,000	1,225,000 [B]
Peak Hour	1,110,000 [D]	1,689,000 [C]

[A] (Max Month I/I Component + Yearly Average), rounded up, see Table 3-1 for I/I Component, assumes I/I component does not increase

[B] Peak Day flow was estimated (historic peak day flow – current domestic flow + future domestic flow)

[C] Peak Hour flow was estimated using a peaking factor of 3.5 times the average daily flow.

[D] Estimated at 5X Base Domestic Flow

ES.4 Existing and Future Permit Conditions

The District operates under a NPDES permit for discharge to Boyer Slough and a reuse permit for land application.

The EPA issued a National Pollutant Discharge Elimination System (NPDES) Permit Number ID0021229 to the District on June 26, 2018. Following the transfer of Primacy to the State of Idaho on July 1, 2018, the permit was converted to an IPDES permit. The permit became effective on September 1, 2018 and expires on August 31, 2023. The permit allows year-round discharge to Boyer Slough with different effluent limits for the critical summer season (June through September) and non-critical season (October through May). However, critical season effluent limits for continuous phosphorus discharge are not achievable with any known reasonably technology; therefore, discharge to Boyer Slough during the critical season is not possible.

The new permit has stringent effluent limits that were put into effect primarily due to low water quality in Boyer Slough and lack of a mixing zone large enough to receive the District's treated effluent. Of note are the following new permit limitations:

- **Ammonia-nitrogen:** (Year-Round): The existing lagoon treatment plant is not designed to reliably remove ammonia.
- **Nitrite and nitrate-nitrogen** (October-May): The existing lagoon treatment plant is not designed to reliably remove nitrogen.

- **Total phosphorus** (June-September): No known technology[1] is currently available to reliably meet the effluent phosphorus concentration limit of 9 micrograms per liter.
- **Total nitrogen** (June-September): The June-September total nitrogen limit of 200 microgram per liter would be very difficult to meet with conventional technology.

The permit requires sampling for the following constituents which is often a precursor to future permit limits:

- Total phosphorus (October-May)
- TKN (October-May)

The District was issued reuse permit number M-182-03 for the application of treated wastewater to land on June 25, 2013. The permit expires on June 25, 2023. The District is allowed to apply Class C (outside the New Zealand fence) and D (inside the New Zealand fence) reuse water to the land application site. The existing land application site has been operated in accordance with permit requirements, and significant changes are not anticipated in the next permit.

The existing wastewater treatment facilities cannot meet discharge limits established in the 2018 IPDES Permit without significant upgrades. The District has been given until August 31, 2028 (10 years from permit issuance) to comply with these new limitations under a compliance schedule. The compliance schedule allows continued operations while the District plans and constructs upgrades.

ES.5 Existing Wastewater Treatment Facilities

The Kootenai-Ponderay Sewer District's wastewater treatment plant (WWTP) is in the southeastern section of the District near Boyer Slough. The treatment plant provides equivalent secondary treatment to the incoming wastewater via a four-cell lagoon treatment system consisting of three partially aerated lagoons followed by a final polishing/storage lagoon. Treated effluent is disinfected with chlorine prior to being discharged to Boyer Slough or to the land application site. Discharge to Boyer Slough is dechlorinated prior to the outfall pipe.

Generally, the District discharges to the land application site from June 1st to September 30th and Boyer Slough from October 1st to May 31st. However, if the land application site cannot receive flow due to saturated soil conditions, the District can discharge treated effluent to Boyer Slough June through September under the conditions established in the NPDES permit, compliance schedule and interim limits.

In 2018, the average surface water discharge constituent concentrations were:

- 9.8 mg/l BOD

[1] Other than reverse osmosis which is prohibitively expensive.

- 7.6 mg/l TSS
- 23.6 mg/l Total-Nitrogen
- 0.1 mg/l Nitrite-Nitrogen
- 4.25 mg/l Nitrate-Nitrogen
- 3.6 mg/l Organic-Nitrogen
- 19.3 mg/l TKN
- 15.7 mg/l Ammonia-Nitrogen
- 5.33 mg/l Total-Phosphorus

The lagoon-type WWTP performed well under the prior permit; however, the lagoon WWTP cannot meet effluent limits established in the new permit.

ES.6 Wastewater Treatment Alternatives

Alternatives to meet permit requirements identified in the 2007 Master Plan were revisited, together with a new alternative to move the discharge point to Lake Pend Oreille, thereby bypassing Boyer Slough. Five treatment alternatives were evaluated:

1. Do Nothing
2. Update lagoon treatment with 100% land application
3. Non-critical season (winter) discharge to surface water with upgraded treatment:
    a. Expanded Lagoon Treatment (eliminated due to very stringent limits and cold weather climate)
    b. Oxidation ditch mechanical treatment
    c. Membrane biological reactor mechanical treatment
4. Lake outfall – Move the surface water discharge location to Lake Pend Oreille
5. Regionalization or contract for service with Sandpoint

Although the details of the lake outfall option must be thoroughly vetted, moving the discharge to the lake (rather than continuing to discharge to Boyer Slough) could be a valid alternative. The lake discharge is expected to be structured for no net decrease in lake water quality. To that end, the District has undertaken a Lake Study to evaluate the water quality in the lake discharge area to estimate potential impacts of moving the discharge. The Lake Study Strategy and Sampling Plan were coordinated with Idaho DEQ to ensure valid results with stakeholder buy-in. To be a valid alternative, the Lake Study will have to show that the District can discharge treated lagoon effluent directly into Kootenai Bay without causing an exceedance of water quality standards. It is expected the Lake Study will establish nutrient mass limits for the discharge after taking into account that portion of the District's effluent that is already in the lake. Depending on lake discharge permit limits, the District may have to store and land apply some flow during the critical season. As the District grows, higher quality effluent will be needed to meet mass load limits which will eventually require facility improvements (expected to be beyond the planning period).

ES.7 Selected Alternative

Based on input from the District Operations Manager, District staff, District Board members, a public workshop/meeting, and the analysis presented in this Facilities Plan Update, the lake outfall alternative ranked highest is, therefore, the preferred alternative.

ES.8 Financial Considerations

A simple financial analysis was performed to estimate the monthly cost per connection for the recommended improvements. The worst-case scenario would be if the District did not grow, in which case the district would have to increase the monthly user rate an additional $53 per month (per ERU) over the regularly programed rates to finance the improvements. However, the District is projected to grow at 2.78% per year which will increase the number of ERUs paying for the improvement and add revenue from connection fees. Assuming growth occurs, the improvements would necessitate an additional $22 per month per ERU. Since the current monthly rate is $49.31, the improvements would increase the monthly fee to $71.31.

CHAPTER 1 – General Information

1.1 Introduction

The Kootenai Ponderay Sewer District (District) Wastewater Facilities Plan Update has been prepared for the District in accordance with Idaho Administrative Procedures Act (IDAPA) 58.01.16. This comprehensive planning effort is intended to give the District an understanding of the existing system and a basis for future improvements. This planning effort started in early 2018 but was delayed pending issuance of the new NPDES permit and implementing studies required therein.

1.2 Background

The District completed the 2007 Wastewater Facilities Plan (2007 Plan) as a comprehensive planning document to assess NPDES Compliance issues and the collection system. At the time, potential permit limits were undefined, and the 2007 Plan offered a broad overview of potential alternatives to satisfy anticipated permit limits. A new NPDES permit was issued in 2018 with stringent effluent limits to discharge to Boyer Slough. This Facilities Plan Update addresses improvements necessary to meet the new permit limits and continue service through the 20-year planning period.

1.3 Collection System

The 2007 Plan identified several capacity concerns within the collection system based on flow projections and system modeling and identified preferred options to address deficiencies. The collection system recommendations within the 2007 Plan largely remain valid. This update does not include a further assessment of the collection system.

Aside from a few sewer main extensions, the collections system remains unchanged from the 2007 Plan with the following exceptions:

- Lift Station 11 was moved
- Lift Station 7 was replaced with a gravity sewer line
- The District has moved their map-book online to document maintenance activity records.

1.4 Purpose and Need

The District is committed to provide wastewater collection, treatment, and disposal for their constituents in a timely manner to meet permit requirements. To this end, this Update is designed to assist the District in the following ways:

- Identify required wastewater facilities upgrades and the timing of upgrades based on need.
- Review alternatives, and discuss regulatory compliance, environmental concerns, and operational and maintenance requirements.
- Present preliminary budget costs for improvement options to meet anticipated flow and discharge requirements through the planning period.
- Prepare an alternative evaluation matrix and rate the relative advantages and disadvantages of alternatives based on criteria selected by the District.

The new permit has stringent effluent requirements. Of note are the following new permit limitations:

- **Ammonia-nitrogen:** (Year-Round): The existing lagoon treatment plant is not designed to reliably remove ammonia.
- **Nitrite and nitrate nitrogen** (October-May): The existing lagoon treatment plant is not designed to reliably remove nitrogen.
- **Total phosphorus** (June-September): No known technology[2] is currently available to reliably meet the effluent phosphorus concentration limit of 9 micrograms per liter
- **Total nitrogen** (June-September): The June-September total nitrogen limit of 200 microgram per liter would be very difficult to meet with conventional technology.

The lower effluent limits in the 2018 permit were put into effect primarily due to low water quality and lack of a mixing zone large enough to receive the District's treated effluent.

The permit requires sampling for the following constituents which is often a precursor to future permit limits:

- Total phosphorus (October-May)
- TKN (October-May)

1.5 Planning Period

Although this update has been prepared using 20-year flow projections, it is important to recognize the challenges of addressing permit limits issued on a 5-year cycle under a 20-year timeframe. From a hydraulic standpoint, the recommendations identified in this Update should remain valid under the given growth projections, but compliance with changing permit conditions must be revisited on a regular basis with every permit renewal (generally expected every five years). The District should continue to review and modify this Update as new permit conditions are established.

[2] Other than reverse osmosis which is prohibitively expensive.

1.6 Regulatory Authority

The KPSD Wastewater Treatment Facility is considered a public wastewater system and is regulated under IDAPA 58.01.16. Idaho Department of Environmental Quality is the regulatory authority for this system classification. The system discharges to Boyer Slough under NPDES Permit No. ID-0021229, which is now administered by the IPDES program. The system can also discharge treated effluent to land application site under reuse permit M-182-03, administered by the Idaho Department of Environmental Quality (DEQ).

1.7 Report Organization

This report has been organized into the following:

- Executive Summary – Brief summary of following report chapters
- Chapter 1 – General Information
- Chapter 2 – Planning and Service Area Conditions
- Chapter 3 – Flows and Waste Load Projections
- Chapter 4 – Existing and Future Discharge Permit Conditions
- Chapter 5 – Summary of Existing Treatment Facilities
- Chapter 6 – Wastewater Treatment Improvement Alternative
- Chapter 7 – Selected Alternative
- Chapter 8 – Financial Considerations and Project Phasing

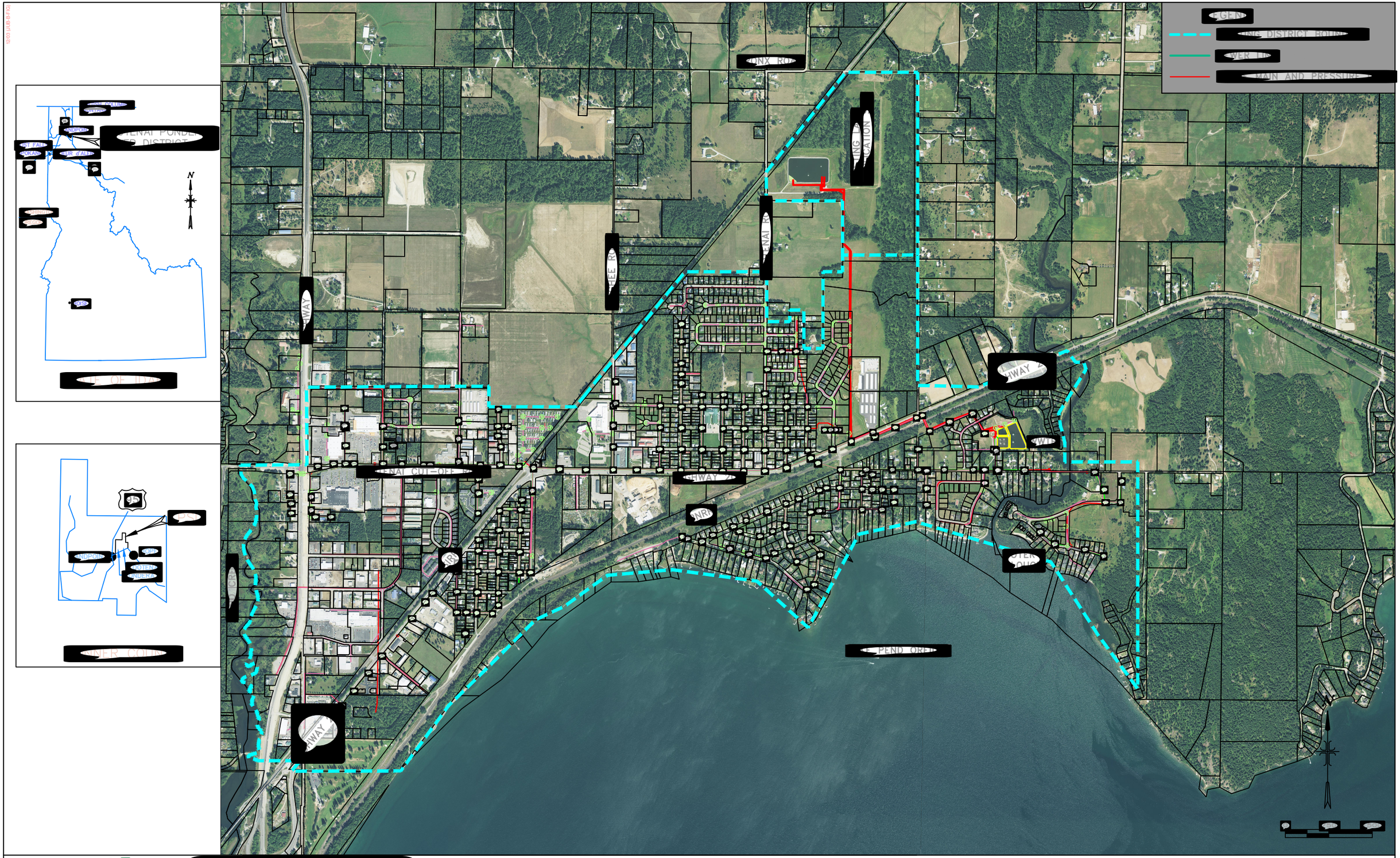
CHAPTER 2 – PLANNING AND SERVICE AREA CONDITIONS

The District serves the developed portions of the cities of Ponderay and Kootenai as well as small unincorporated areas of Bonner County. The District boundary is shown on **Figure 2-1**.

2.1 Coordination with the 2007 Plan

The following sections were discussed within the analysis of the 2007 Plan. There have been no significant changes since that time, and no updates are considered necessary for this Update.

- Topography/Geology/Soils
- Surface and Groundwater Hydrology
- Climate, Precipitation, Temperature, and Prevailing Winds
- Plants, Animals, and Natural Communities
- Air Quality and Noise
- Cultural Resources
- Economic and Social Profile
- Flood Plains and Wetlands
- Wild and Scenic Rivers
- Prime Agricultural Lands
- Public Health Considerations
- Proximity to a Sole Source Aquifer
- Environmental Justice



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CAD FILE:

KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITIES MASTER PLAN

FIGURE 2-1
VICINITY MAP AND SEWER DISTRICT BOUNDARY

2.2 Population Trends

The Kootenai-Ponderay Sewer District serves:

- The City of Kootenai
- Portions of the City of Ponderay
- Portions of unincorporated Bonner County near the Cities of Ponderay and Kootenai.

U.S. Census Bureau data from 1980 to 2010 for the City of Kootenai, the City of Ponderay, the City of Sandpoint, and Bonner County were analyzed to estimate historic population trends. Bureau data are shown in **Table 2-1**. The historic annual growth rate estimates for the entities range from 1.7 percent to 3.55 percent.

Table 2-1 – U.S. Census Bureau Data

	Estimated Population				Approximate Percent Growth
	1980	1990	2000	2010	
Bonner County	24,163	26,622	37,479	40,877	1.77
Sandpoint	4,460	5,203	7,167	7,365	1.7
Ponderay	399	449	667	1,137	3.55
Kootenai	280	327	441	6,78	3.0

Because the District serves Bonner County, the City of Ponderay and the City of Kootenai, the average growth rate for those three entities of 2.78% was chosen as reasonable rate to project future growth in the service area.

20-Year Growth Projection

In 2018 KPSD estimated that it served a total of 1,500 ERUs which includes residential, commercial, and industrial dischargers. Assuming a 2.78% growth rate, the District is expected to serve 2,740 ERUs by 2040 which is the end of the planning period.

CHAPTER 3 – FLOW AND WASTE LOAD PROJECTIONS

3.1 Flow History

The District has maintained influent flow records for the WWTP since the late 1990s. Daily flow data from January 1st, 2014 to December 31st, 2018 (5 years) were used to estimate existing flow conditions. A chart of the daily flow records at the WWTP is shown in **Figure 3-1**.

The existing flow conditions are summarized in **Table 3-1**.

Table 3-1 - Flow Summary - Existing

Condition	Flow (gpd)
Dry Weather Base Domestic Flow [A]	222,000
Yearly Average Flow	279,000
Max Month, Max 30-day Moving Ave.[B]	594,000
Max Month, I/I Contribution [C]	372,000
Wet Weather Peak Day Flow [D]	1,032,000
Peak Hour, Estimated at 5X Base Domestic	1,110,000

[A] June-September, averaged 2014 to 2018
[B] Calculated peaking factor of 2.68 (594/222)
[C] Max Month minus Base Domestic (594,000-222,000)
[D] Observed 3/9/2014

The average summer flows, July through September (dry weather flows) are shown in **Table 3-2**.

Table 3-2 - Average Summer Flow [A]

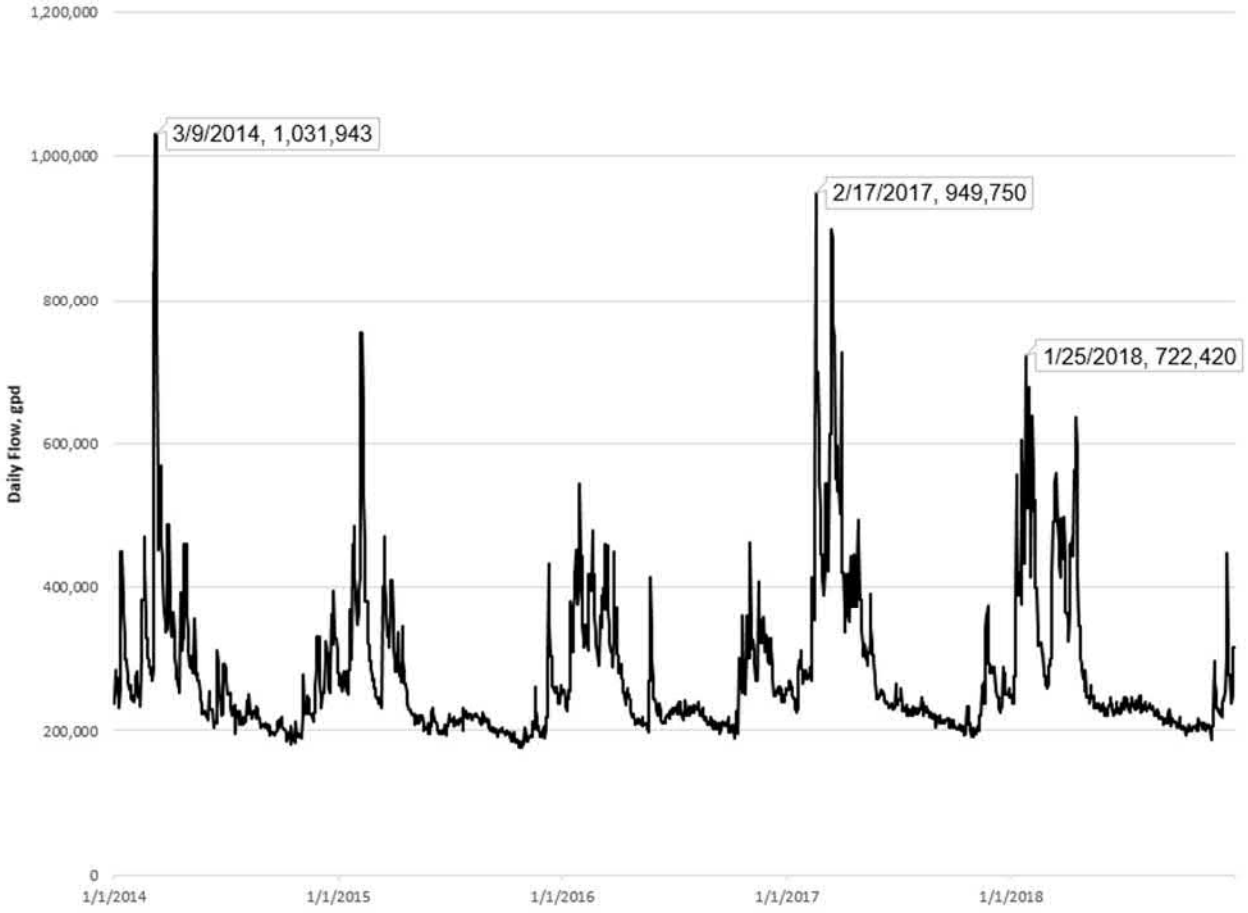
Year	Average Summer Flow by Month, gpd
2014	219,000
2015	212,000
2016	219,000
2017	223,000
2018	227,000
Average	222,000

[A] July-September flow

Typically, the dry weather flow would increase from year to year as additional connections are served by the District. An increasing dry weather flow trend is evident from 2015 to 2018 with 2014 being an outlier due to late June rains in 2014 impacting flows in July of that year.

Using the average 2018 ERU connections of 1,500 units and the average 2018 summer flow of 227,000 gpd, the base domestic flow (non-I/I) is approximately 152 gallons per day per ERU.

Figure 3-1 – Historical WWTP Flow Summary, 2014-2018



3.2 Infiltration and Inflow Component

The District has been actively investigating sources of inflow and infiltration and eliminating those sources when discovered. In 2015 the District developed a plan to reduce I/I and started looking for sources. The District has discovered and repaired abandoned laterals on vacant lots that were not sealed properly. One egregious example was an abandoned lateral discovered in 2017 that was draining about 2 acres of nearby property. Another example, discovered in 2017, contributing extraneous flow was a crushed lateral in the bottom of ditch collecting flow from nearby streets and homes. Additionally, in 2016 the District purchased a lateral inspection camera and has videoed over 1,400 laterals. Since then the District has made repairs to over 450 damage laterals and has replace 2 to 3 failed laterals a month. Every year the District has found and eliminated sources of I/I; therefore, the year 2018 was

analyzed using the expected domestic flow of 227,000 gpd and the actual flow received by the plant to estimate the annual volume of extraneous flow due to inflow and infiltration. The 2018 expected domestic flow per month and estimated extraneous flows are shown in **Table 3-3**.

Table 3-3 – Estimated Extraneous Flow due to Inflow/Infiltration

Year	Monthly Flow, gallons per month	Expected Domestic Flow, gallons per month[A]	Extraneous Flow, gallons per month
January	13,402,000	7,037,000	6,365,000
February	10,935,000	6,356,000	4,579,000
March	13,232,000	7,037,000	6,195,000
April	12,186,000	6,810,000	5,376,000
May	7,475,000	7,037,000	438,000
June	6,865,000	6,810,000	55,000
July	7,346,000	7,037,000	309,000
August	7,093,000	7,037,000	56,000
September	6,810,000	6,810,000	
October	7,037,000	7,037,000	
November	6,810,000	6,810,000	
December	8,143,000	7,037,000	1,106,000
Annual Total =	107,334,000	82,855,000	24,479,000
		Percent of Extraneous Flow =	23%

[A] Estimated based on observed average summer flow from 2018

The EPA considers seasonal wet weather to be excessive if the total wastewater flow exceeds 120 gallons per person per day during high groundwater or greater than 275 gallons per person per day during periods of rain/snow on rain events.

In the District's case, a high percent of the flow comes from industrial connections, so those connections were assumed to have zero residences living therein. The District estimates that the average people per occupied dwelling unit is 2.44 based on population estimates and the number of dwelling units occupied by those residence.

January's flow was used to determine the largest per capita wastewater component during periods of high groundwater to determine if I/I flow is excessive. January's flow averaged 432,000 gallons per day in 2018. With 1,500 ERUs in 2018 the total wastewater flow per ERU is 288 gallons per day. If the equivalent resident units were all dwelling units, the peak wastewater contribution per capita would be 118 gallons per capita per day (288/2.44). Although 118 gallons per capita per day of flow during periods of high groundwater is not considered excessive, the peak flow is close to being excessive and the District should continue removing sources of I/I.

In 2018 the maximum day flow recorded was 722,400 gallons (rain/rain on snow event) which corresponds to a per capita contribution of 197 gallons per day, which is not considered excessive.

3.3 Flow Projections

With a projected long term growth rate of 2.78%, assuming there are no significant changes in demographics and commercial or industrial enterprises, the dry weather base flow is expected to increase from 227,000 gallon per day (2018) to about 415,000 gallons per day by the end of the planning period[3] in 2040, serving approximately 2,740 ERUs.

The magnitude of the wet weather flows is dependent on the level of collection system effort undertaken to reduce infiltration. At this point it is assumed that some I/I reduction effort will be made on the older portions of the collection system that will provide an overall net-zero increase in the I/I component as other parts of the system deteriorate. With continuing effort, the I/I component may be significantly reduced; however, for this planning period it is assumed the overall I/I flow volume will remain constant through the planning period.

The 2018 monthly expected domestic flow and estimated extraneous flows are shown in **Table 3-4** assuming the extraneous flow volume remains about the same and the domestic wastewater flow increased from 227,000 to 415,000 gallon per day.

[3] 22 years of growth

Table 3-4 – Estimated Design Flow (2040)

Year	Monthly Flow, gallons per month	Expected Domestic Flow, gallons per month	Extraneous Flow, gallons per month
January	19,230,000	12,865,000	6,365,000
February	16,199,000	11,620,000	4,579,000
March	19,060,000	12,865,000	6,195,000
April	17,826,000	12,450,000	5,376,000
May	13,303,000	12,865,000	438,000
June	12,505,000	12,450,000	55,000
July	13,174,000	12,865,000	309,000
August	12,921,000	12,865,000	56,000
September	12,450,000	12,450,000	
October	12,865,000	12,865,000	
November	12,450,000	12,450,000	
December	13,971,000	12,865,000	1,106,000
Annual Total =	175,954,000	151,475,000	24,479,000
Average, gpd	482,700	415,000	67,000
		Percent of Extraneous Flow =	14%

A summary of the projected year 2040 design flows is included in **Table 3-5.**

Table 3-5 - 2040 Design Flow Summary

Condition	Flow – (gpd)
Dry Weather Base Domestic Flow	415,000
Yearly Average Flow	482,700
Max Month[A]	900,000
Max Month, I/I Contribution	372,000
Peak Day[B]	1,225,000
Peak Hour[C]	1,689,000

[A] (Max Month I/I Component + Yearly Average), rounded up, see Table 3-1 for I/I Component, assumes I/I component does not increase

[B] Peak Day flow was estimated (historic peak day flow – current domestic flow + future domestic flow)

[C] Peak Hour flow was estimated using a peaking factor of 3.5 times the average daily flow.

As discussed above, the District continues to seek out and remove sources of I/I and is planning to reduce the extraneous I/I flows. For planning purposes the current max

month I/I contribution is not expected to increase nor decrease even though the District is actively removing sources of I/I. Therefore, the max month flow for design purposes is estimated to be the yearly average flow plus the max month I/I contributions which is 855,000 gallons per day which was rounded up to 900,000 gallons per day as an extra factor of safety.

3.4 Waste Load – History and Projections

Historic Waste Loads

Influent samples for BOD and TSS measurements are taken weekly via 24-hour composite samples. Discharge Monitoring Reports (DMRs) from January 2014 to December 2018 were reviewed for trends and consistency and plotted on **Figure**s 3-2 and 3-3. The BOD and TSS averaged 344 and 200 mg/l and neither had alarming trends that would cause concern. The influent BOD concentration is unusually high for typical domestic wastewater with inflow and infiltration contributions. The high BOD concentrations and peak values are associated with increased production at Laughing Dog Brewing. The District worked with Laughing Dog in 2015 to develop a pretreatment program where high strength waste is held in a tank for solids to settle and allow for metered discharge into the collection system. Laughing Dog also started hauling very high strength waste off-site for alternate disposal. The occasional very high TSS and BOD concentrations are not expected in the future as the District continues to develop relationships with commercial/industrial discharges and to encourage pretreatment. Additionally, the District could develop standards to help manage high strength waste dischargers and establish limits defined in agreements with commercial and industrial users.

Figure 3-2 - 2014-2018 Influent BOD Concentration

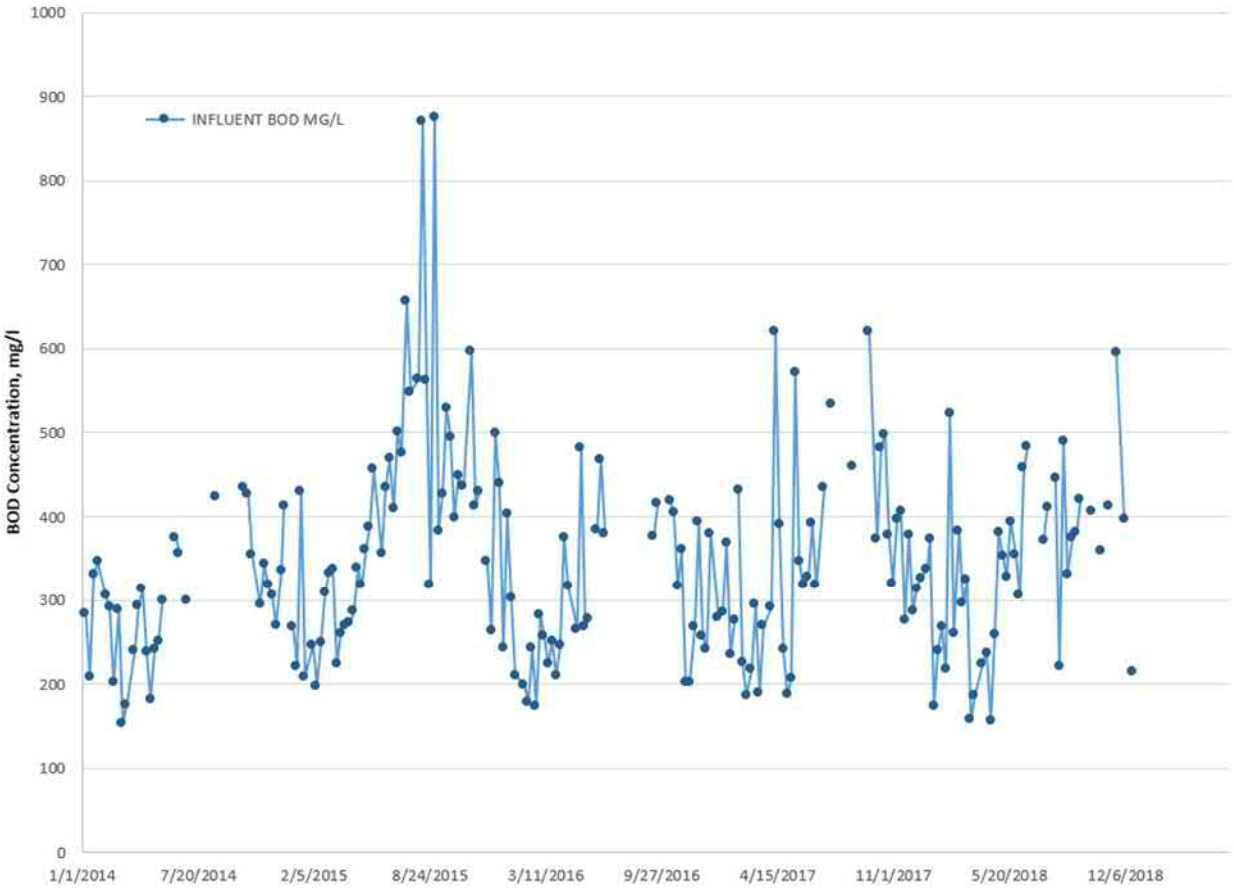
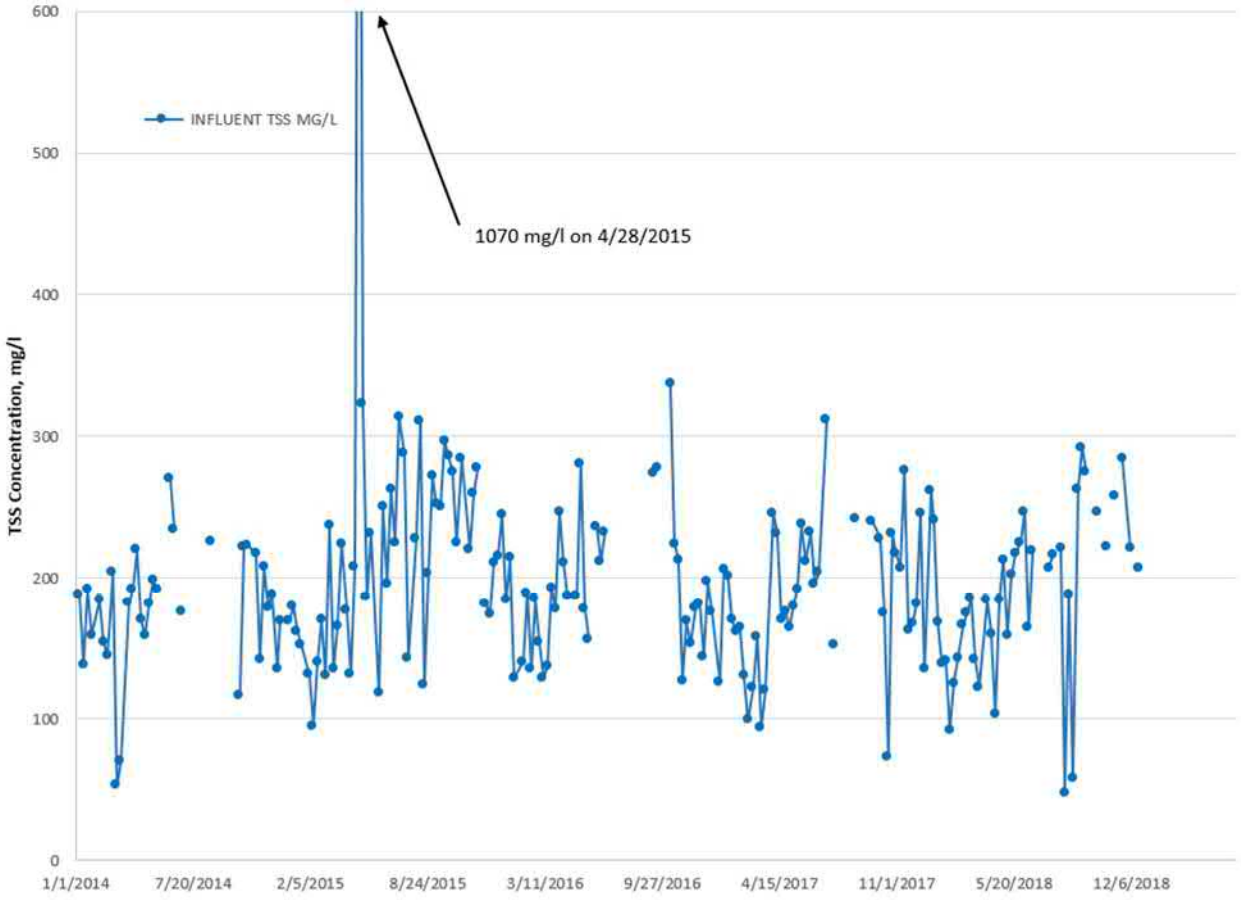
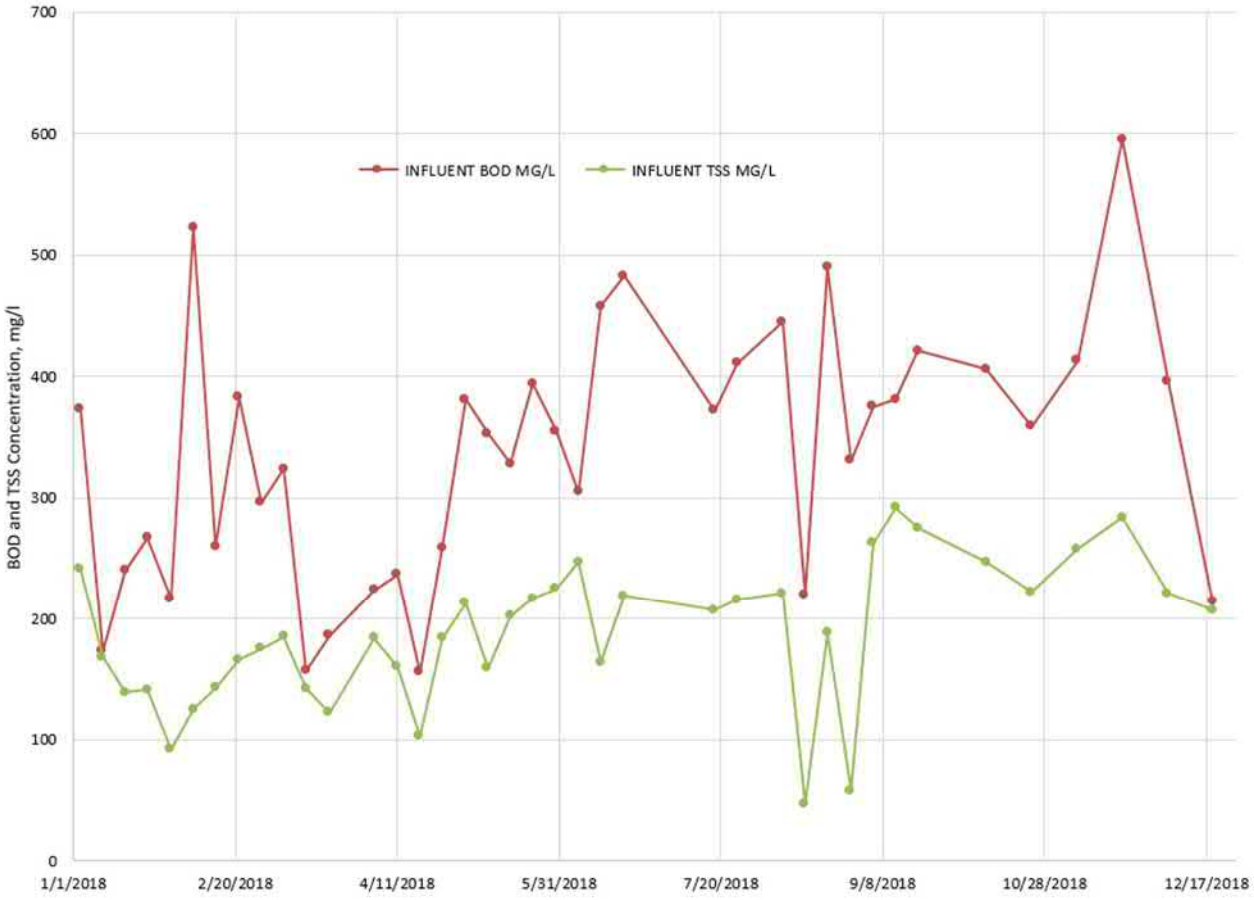


Figure 3-3 - 2014-2018 Influent TSS Concentration



Discharge Monitoring Reports (DMRs) from January 2018 to December 2018 were evaluated to determine typical BOD and TSS concentrations for future flow and load projections. The number of ERUs served by the District and the population in 2018 were used to estimate flow contributions per ERU and per person. 2018 influent BOD and TSS concentrations are plotted in **Figure** 3-4.

Figure 3-4 - 2018 Influent BOD and TSS Concentration, mg/l



The observed influent BOD and TSS concentration over this period averaged 337 and 188 mg/L, respectively. Using the daily flow associated with the sample dates, the average daily BOD and TSS loading over this period was 815 and 450 pounds per day, respectively. The maximum daily loads for BOD and TSS were 2440 and 615 pounds. The maximum month average daily loads for BOD and TSS are estimated to be 1385 and 556 pounds. Design Loads are reported in **Table** 3-6 along with observed peaking factors.

Table 3-6 – 2018 Influent Load Summary

	BOD, lb/day	Peaking Factor	TSS, lb/day	Peaking Factor
Ave. Daily	815		450	
Max Month	1385	~ 1.7	556	~ 1.2
Peak Day	2440	~ 3.0	615	~ 1.4

As expected, the BOD and TSS concentrations increase in the summer (383 and 196 mg/l) due to less extraneous flow (I/I); however, both the BOD and TSS load drop in the summer due to lower summer time flows (745 and 379 lb/day, respectively).

In 2018 KPSD estimated that it served a total of 1,500 ERUs which includes residential, commercial, and industrial dischargers. At 2.44 persons per ERU, the 2018 BOD and TSS load per person is estimated to be 0.22 and 0.12 pounds per person per day, respectively.

Projected Waste Loads

Future waste load projections (to the end of the planning period) are estimated assuming the loading per ERU remains about the same. Loads were projected based on ERUs rather than expected population because the service area has a high percent of industrial connections that are not dwelling units. For example, Kootenai and Ponderay have a total of 1167 ERUs of which 277 (24%) are not dwelling units.

As stated in section 2.2, the District is expected to serve 2740 ERUs in the year 2040. The year 2040 waste load projections are estimated to be 1490 and 821 pounds per day for BOD and TSS, respectively (annual average). Maximum month and peak day loading estimates for the year 2040 are shown in **Table** 3-7 based on peaking factors calculated above.

Table 3-7 - 2040 Design Influent Load Projections

	BOD, lb/day	Peaking Factor	TSS, lb/day	Peaking Factor
Ave. Daily	1490		821	
Max Month	2530	~ 1.7	985	~ 1.2
Peak Day	4463	~ 3.0	1150	~ 1.4

3.5 Influent Nutrients

The District does not sample and analyze the influent for nitrogen or phosphorus; therefore, no influent nutrient data are available. Typical domestic wastewater total nitrogen levels range from 35 to 45 mg/l with 40 mg/l being the medium (Metcalf and Eddy, 1991). Of that about 25 mg/l is ammonia. Total phosphorus concentrations are expected to range between 6 to 12 mg/l with 8 mg/l being the medium.

The higher than typical average influent BOD concentrations are likely due to Laughing Dog Brewing which produces a carbonaceous BOD without excessive nutrients; therefore, higher nutrient loads are not expected. Additionally, effluent nutrient concentrations are consistent with normal influent concentrations (23.6 mg/l and 5.33 mg/l, annual average for total nitrogen and phosphorus, respectively).

Flow-proportioned composite influent sampling and analysis are recommended prior to design of the improvements recommended in this document to verify actual loads and peaking factors. Typical design valves from Metcalf and Eddy are utilized as design criteria for this Update and summarized in **Table 3-9**. The District should review the design assumptions as more representative data become available.

Table 3-9 – Influent Nitrogen and Phosphorus Design Assumptions

	Total Nitrogen	Total Phosphorus
Typical Concentration Range (mg/L)	35-45	6-12
Average Daily Concentration Used for Update (mg/L)	40	8
Average Daily Load, lb/day [A]	161	32
Maximum Month load, lb/day, Peaking factor of 1.3 [B]	210	
Peak day load, lb/day, Peaking factor of 2.2 [B]	355	
Maximum Month load, lb/day, Peaking factor of 1.3 [B]		42
Peak day load, lb/day, Peaking factor of 1.8 [B]		60
[A] Based on annual average flow (482,700 gpd) [B] Typical literature values		

CHAPTER 4 – EXISTING AND FUTURE PERMIT CONDITIONS

4.1 Existing Permit Limits and Conditions

4.1.1 NPDES Permit for Discharge to Boyer Slough

The District was issued a National Pollutant Discharge Elimination System (NPDES) Permit Number ID0021229 on June 26, 2018.

The permit became effective on September 1, 2018 and expires on August 31, 2023. A summary of the effluent limitations and monitoring requirements are included in **Table 4-1**. A copy of the permit is included in **Appendix A.**

Table 4-1 - NPDES Permit Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	—	—	—	Effluent	continuous	recording
Temperature[5,6]	°C	See notes 5 and 6.			Effluent	continuous	recording
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—	Influent and Effluent	2/month	24-hr. comp.
	lb/day	86	129	—			calculation
	% removal	85% (min.)	—	—	% removal	1/month	calculation
Total Suspended Solids (TSS)	mg/L	30	45	—	Influent and Effluent	2/month	24-hr. comp.
	lb/day	100	150	—			calculation
	% removal	85% (min.)	—	—	% removal	1/month	calculation
pH	s.u.	6.5 – 9.0 at all times			Effluent	5/week	grab
E. Coli Bacteria[1,2]	#/100 ml	126 (geometric mean)	—	406 (instantaneous max.)	Effluent	5/month	grab
Total Residual Chlorine[2,4]	µg/L	7.3	—	18.3	Effluent	5/week	grab
	lb/day	0.024	—	0.061			calculation
Total Ammonia as $N^{2,3}$ (October – May)	mg/L	1.77	—	4.63	Effluent	1/week	24-hr. comp.
	lb/day	5.90	—	15.4			calculation
Total Ammonia as $N^{2,3}$ (June - September)	mg/L	1.56	—	4.07	Effluent	1/week	24-hr. comp.
	lb/day	5.20	—	13.6			calculation
Nitrate + Nitrite as N^3 (October – May)	mg/L	10.0	20.1	—	Effluent	1/week	24-hr. comp.
	lb/day	33.4	67.1	—			calculation
Phosphorus, Total as $P^{3,7}$ (June – September)	µg/L	9.0	18	—	Effluent	1/week	24-hr. comp.
	lb/day	0.030	0.060	—			calculation
Phosphorus, Total as P (October – May)	µg/L	Report	—	Report	Effluent	1/month	24-hr. comp.
Nitrogen, Total as $N^{3,9}$ (June – September)	µg/L	200	401	—	Effluent	1/week	24-hr. comp.
	lb/day	0.667	1.34	—			calculation
Total Kjeldahl Nitrogen (October – May)	mg/L	Report	—	Report	Effluent	1/month	24-hr. comp.
Floating, suspended or submerged matter	—	See Part I.B.3.				1/month	Visual observation

Dissolved Oxygen	mg/L	Report daily minimum			Effluent	1/month	grab
Cadmium, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Chromium, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Chromium VI, Dissolved	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Conductivity	µmhos/cm	Report	—	—	Effluent	1/quarter[8]	grab
Copper, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Cyanide, Weak Acid Dissociable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Dissolved Organic Carbon (DOC)	mg/L	Report	—	—	Effluent	1/quarter[8]	grab
Hardness, total	mg/L as $CaCO_3$	Report	—	—	Effluent	1/quarter[8]	grab
Lead, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Mercury, Total	µg/L	Report	—	—	Effluent	1/quarter[8]	grab
Nickel, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Silver, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Zinc, Total Recoverable	µg/L	Report	—	—	Effluent	1/quarter[8]	grab
Oil and Grease	mg/L	Report	—	Report	Effluent	2/year	grab
Total Dissolved Solids	mg/L	Report	—	Report	Effluent	2/year	24-hr. comp.

Table 1: Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type

1. The average monthly E. Coli bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3-7 days within a calendar month. See Part V for a definition of geometric mean.
2. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Parts I.B.2. and III.G.
3. These effluent limits and monitoring requirements are subject to a compliance schedule. See I.D.
4. The effluent limits for total residual chlorine are not quantifiable using EPA-approved methods. EPA will use the minimum level (ML), 50 µg/L, as the compliance evaluation level for this parameter. The permittee will be compliant with the total residual chlorine limitations if the average monthly and maximum daily chlorine concentrations are less than 50 µg/L and the average monthly and maximum daily mass discharges of chlorine are less than 0.17 lb/day.
5. Temperature data must be recorded using micro-recording temperature devices known as thermistors. Set the recording device to record at one-hour intervals. Report the following temperature monitoring data on the DMR: monthly instantaneous maximum, maximum daily average, seven-day running average of the daily instantaneous maximum.
6. Use the temperature device manufacturer's software to generate (export) an Excel text or electronic ASCII text file. The file must be submitted annually to the EPA and IDEQ by January 31 for the previous monitoring year along with the placement log. The placement logs should include the following information for both thermistor deployment and retrieval: date, time, temperature device manufacturer ID, location, depth, whether it measured air or water temperature, and any other details that may explain data anomalies. The permittee may submit the file as an electronic attachment to NetDMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_temperature_43599, where YYYY_MM_DD is the date that the permittee submits the file.
7. The average monthly effluent limit for total phosphorus is not quantifiable using EPA-approved methods. EPA will use the minimum level (ML), 10 µg/L, as the compliance evaluation level for this parameter. The permittee will be compliant with the average monthly total phosphorus limitation if the average monthly total phosphorus concentration is less than 10 µg/L and the average monthly mass discharge of total phosphorus is less than 0.033 lb/day.
8. Monitoring for cadmium, chromium, conductivity, copper, cyanide, dissolved organic carbon, hardness, lead, mercury, nickel, silver and zinc is required for the final three full calendar years of the permit cycle. Quarters are defined as: January 1 to March 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31. Results must be reported on the DMR for the last month of the quarter. Effluent samples for conductivity, copper, dissolved organic carbon, hardness, and pH must be collected on the same day.
9. The average monthly effluent limit for total nitrogen is not quantifiable using EPA-approved methods. EPA will use the minimum level (ML), 400 µg/L, as the compliance evaluation level for this parameter. The permittee will be compliant with the average monthly total phosphorus limitation if the average monthly total phosphorus concentration is less than 400 µg/L and the average monthly mass discharge of total nitrogen is less than 1.33 lb/day.

Of note are the following new permit limitations:

- Ammonia-nitrogen, year-round permit limits.
- Nitrite and nitrate-nitrogen, October-May permit limits.
- Total phosphorus, June-September permit limits
- Total nitrogen, June-September permit limits.

The current facility is not capable of achieving these permit limits. The District has been given until August 31, 2028 (10 years from permit issuance) to comply with these new limitations. Since the current facility is not immediately capable of meeting effluent limits, the permit provides interim limits and monitoring requirements for total ammonia, nitrate and nitrite, total nitrogen and total phosphorus as shown in **Table** 4-2.

Table 4-2 - NPDES Interim Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent limits	Monitoring Requirements		
		Monthly Total[1]	Location	Frequency	Sample Type
Total Nitrogen as N (June)	lb/month	2,091	Effluent	1/week	24-Hr. Comp.
Total Nitrogen as N (July)	lb/month	249	Effluent	1/week	24-Hr. Comp.
Total Nitrogen as N (August)	lb/month	380	Effluent	1/week	24-Hr. Comp.
Total Nitrogen as N (September)	lb/month	482	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (June)	lb/month	468	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (July)	lb/month	56	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (August)	lb/month	85	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (September)	lb/month	108	Effluent	1/week	24-Hr. Comp.
Ammonia (Year – round)	mg/L	Report monthly average and daily maximum	Effluent	1/month	24-Hr. Comp.
Parameter	**Units**	**Effluent limits**	**Monitoring Requirements**		
		Monthly Total[1]	**Location**	**Frequency**	**Sample Type**
Nitrate + Nitrite (October – May)	mg/L	Report monthly average and daily maximum	Effluent	1/month	24-Hr. Comp.

Notes:
1. The monthly total must be calculated as the arithmetic mean of all daily discharges measured during a calendar month multiplied by the number of discharging days during that calendar month.

The permit has two compliance schedules; one if the District moves the outfall to Kootenai Bay in Lake Pend Oreille (Option A) and a second if the District keeps the outfall to Boyer Slough (Option B). Both compliance schedules allow until August 31, 2028 for full compliance; however, Option B requires construction to be complete by August 31, 2026 which will require an expedited procedure to attain. Both schedules have the following tasks with intermediate compliance dates as shown in **Table** 4-3. As of June 2020, all compliance dates have been met.

Table 4-3 – Intermediate Task Compliance Schedule

Deadline	Option A, Move Outfall to Kootenai Bay	Option B, Retain Boyer Slough Outfall.
November 30, 2018	Lake Study strategy paper	
November 30, 2018	Draft field sample plan, QAPP	
February 28, 2019	Final field sample plan, QAPP	
August 31, 2019	Facility planning Progress Report w/ investigation of alternatives	Facility planning Progress Report w/ investigation of alternatives
February 29, 2020	Year one data analysis and interim report, QA report	
August 31, 2020		Facility plan with preferred alternative
February 28, 2021	Year two data analysis and interim report, QA report	Facility plan with preferred alternative if moving from option A to B
	Decision to pursue option A or B	Decision to pursue option A or B
August 31, 2021		Funding approval
February 28, 2022	Year three data analysis and interim report, QA report	
August 31, 2022		Complete design
February 28, 2023	final facility plan	
August 31, 2023		Bids awarded
February 28, 2024	Funding approval	
August 31, 2024	completed design	construction update
August 31, 2025	bids awarded	construction update
August 31, 2026	**construction update**	construction completed
August 31, 2027	construction update	optimization completed
August 31, 2028	construction completed	
February 28, 2029	optimization completed	

4.1.2 Land Application Permit

The District was issued reuse permit number M-182-03 for the application of treated wastewater to land on June 25, 2013. The permit expires on June 25, 2023. The District is allowed to apply Class C (outside the New Zealand fence) and D (inside the New Zealand fence) wastewater to the land application site as prescribed in **Table 4-4** and in accordance with other applicable permit conditions and schedules. A copy of the permit is included in **Appendix B**.

Table 4-4 – Land Application Permit Requirements

Parameter	Effluent Limitations
Flow, mgd	Varies depending on irrigation demand
Type of Wastewater	Municipal wastewater
Application Season	Growing Season
Application Period	May 1 through September 30 when soil moisture is less than 10 centibars
Method of Treatment and process Description	Aerated Lagoons, Settling Lagoons, Polishing Lagoon and chlorine disinfection
Hydraulic loading rate	Based on soil moisture probes- less than 10 centibars
Minimum depth to groundwater	At least 3 feet prior to starting irrigation for season
Buffer zones	Inhabited Dwellings – 500 feet on southern and western side, 300 feet on northern side, 200 feet on eastern side with 50-foot vegetative buffer Public access – 300 feet Surface water – 100 feet Private well – 500 feet Public water supply well – 1,000 feet
Disinfection	Total coliform less than 23 MPN/100 ml for Class C And less than 230 MPN/100 ml for Class D
Fence and signs	Three-wire fencing minimum Signs every 500 feet and at each corner

4.2 Future Permit Limits and Conditions

4.2.1 NPDES Discharge Permit

Although significant changes are not anticipated in the District's next NPDES Permit, the permit requires sampling for total phosphorus, TKN and dissolved oxygen once a month, October through May, which is often a precursor to future permit limits.

If the District moves the outfall to Kootenai Bay in Lake Pend Oreille the existing permit will be modified to reflect a lake outfall.

4.2.2 Land Application Permit

Future land application permits are not expected to change significantly.

4.3 Expected Lake Pend Oreille Outfall Permit

Water quality concerns in Boyer Slough and associated limits incorporated into the 2018 permit have compelled the District to consider alternate disposal methods, including discharging directly to Lake Pend Oreille.

Although the details of discharging into the lake must be thoroughly vetted, the concept has merit for the following reasons:

- Most of the District's discharged nutrient load currently enters the lake at the mouth of Boyer Slough and is carried downstream to the Pend Oreille River.
- Water quality standards are being met in those downstream reaches with a portion of the District's nutrient load in the bulk water column.
- It is expected that waste load allocations granted in a lake outfall permit can be met with readily available wastewater treatment technologies and optimization of the land treatment system.
- Removal of nutrient loads currently discharged to Boyer Slough with direct discharge downstream will have an overall effect of improving water quality in Boyer Slough.

Lake Pend Oreille is downstream of the District's discharge and subject to the "2002 Total Maximum Daily Load for Nutrients for the Nearshore Waters of Lake Pend Oreille, Idaho" (Nearshore TMDL). The nearshore waters of the lake comply with water quality standards, as reported in the TMDL, with the District discharging into an upstream tributary. However, it was recommended that no additional phosphorus load be allowed during the critical summer season since the lake phosphorus concentration was near an inflection point where water quality could be degraded. To comply with the "no increase in phosphorus load" recommendation, the District implemented a land application reuse system in 2004 to facilitate growth and maintain water quality by not increasing the critical season phosphorus load to the lake. To comply with the "no increase in phosphorus load" with a lake outfall, the District would eventually[4] have to reduce effluent phosphorus concentrations to meet waste load allocations and fully utilize their existing land application site.

For the current planning period, the lake discharge would be structured for no net decrease in lake water quality. To that end, the District has undertaken a Lake Study to evaluate the water quality in the lake discharge area to estimate potential impacts of moving the discharge (see compliance schedule above). The Lake Study Strategy and Sampling Plan were coordinated with Idaho DEQ to ensure valid results with stakeholder buy-in.

[4] Expected to be beyond the planning period.

CHAPTER 5 – SUMMARY OF EXISTING TREATMENT FACILITIES

5.1 Introduction

The Kootenai-Ponderay Sewer District's WWTP is in the southeastern section of the District near Boyer Slough. The treatment plant provides equivalent secondary treatment to the incoming wastewater via a four-cell lagoon treatment system consisting of three partially aerated lagoons followed by a final polishing/storage lagoon. Treated effluent is disinfected with chlorine prior to being discharged to Boyer Slough or to the land application site. Discharge to Boyer Slough is dechlorinated prior to the outfall pipe.

Since the 2007 Master Facilities Plan, the District has made four significant modifications:

1. The sand filters have been decommissioned.
2. A second pipeline was constructed between the treatment lagoons and the polishing lagoon. One pipe conveys wastewater to the polishing lagoon and the other pipe conveys treated effluent from the polishing lagoon to the surface water discharge.
3. The land application polishing/storage lagoon was added in series with the three treatment/settling lagoons as an effluent polishing lagoon with a separate discharge pipe to Boyer Slough. The polishing/storage lagoon replaces the function of the sand filters, produces a higher quality effluent and is required to be in series with the other lagoons.
4. Disinfection Modifications:
    a. The third lagoon which had been used to provide chlorine contact time has been removed from service as a chlorine contact basin. The third lagoon is now in series after the second lagoon.
    b. Chlorine contact volume is provided in the pipe between the polishing lagoon and the outfall when discharging to Boyer Slough and in the pipe from the polishing lagoon to the land application area when irrigating.

The current configuration operates as a three-cell partially aerated lagoon treatment system with a large storage lagoon to polish the effluent prior to disinfection and disposal. The treatment plant provides equivalent secondary treatment to the incoming wastewater adequate for discharged to surface water (under interim limits) or to the land application site.

An aerial photo of the treatment plant site is shown in **Figures 5-1 and 5-2**. A process schematic is included in **Figure 5-3**.

Treatment Facility Components

The wastewater treatment facilities consist of the following major components:

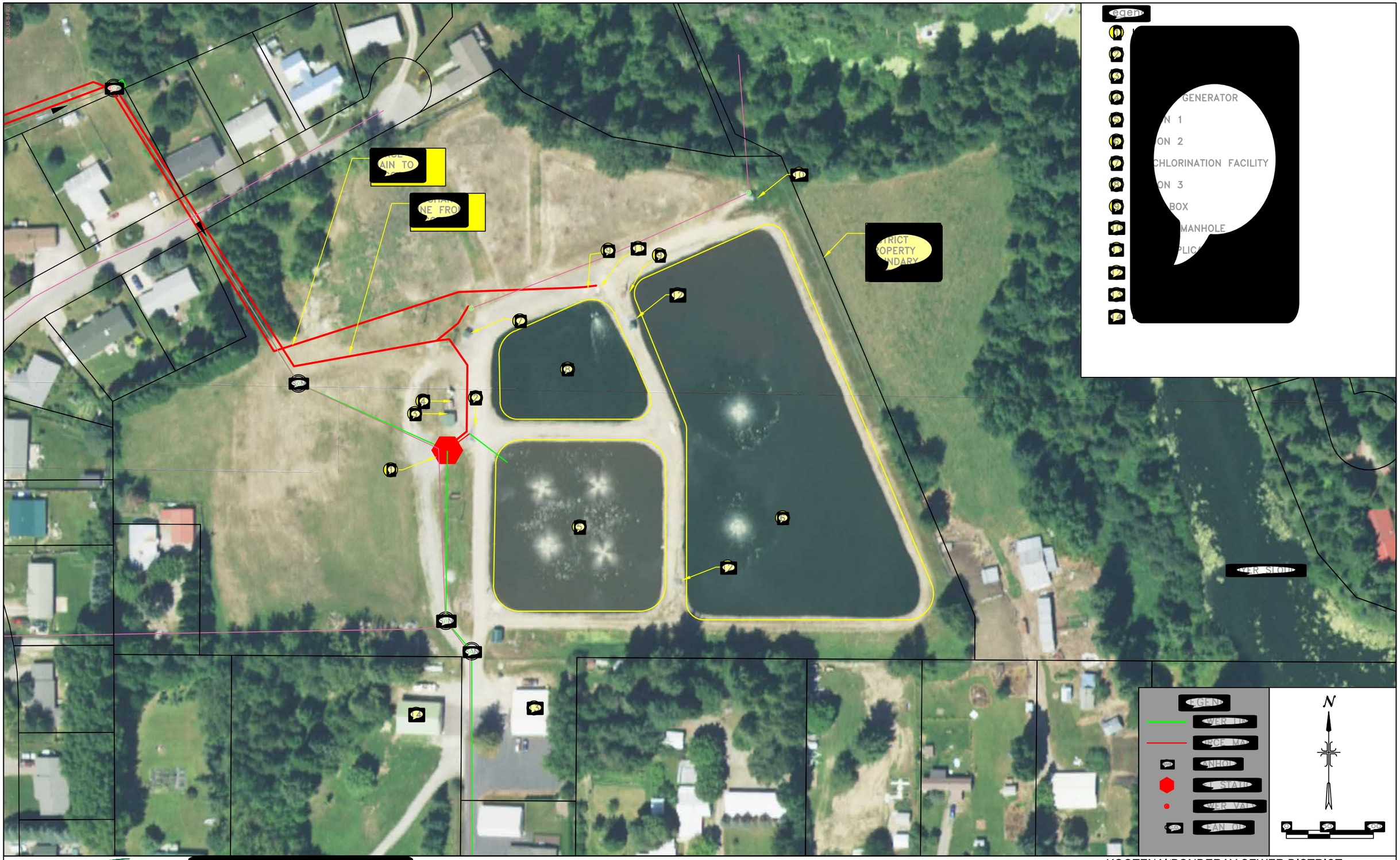
- Influent Lift Station and flow measurement
- Headworks and bar rack

- Lagoon 1, First lagoon, heavily aerated mechanically
- Lagoon 2, Second lagoon, lightly aerated with a large quiescent zone
- Lagoon 3, Third lagoon, not aerated
- Intermediate lift station, pumps to Lagoon 4
- Force main to Lagoon 4
- Lagoon 4, Fourth lagoon which is the polishing/storage lagoon
- Chlorine feed system
- Surface water discharge force main (provides disinfection contact volume)
- Dechlorination system
- Surface water discharge outfall to unnamed tributary to Boyer Slough
- Land application discharge force main (provides disinfection contact volume)
- Land application site
- Effluent flow meter

The plant's components are discussed below and as applicable, assessed against design flows and loads presented in Chapter 3.

5.2 Influent Lift Station and Flow Measurement

Wastewater is collected throughout the District and conveyed to the treatment plant by a system of gravity sewers and pump stations. The collected wastewater is pumped into the treatment plant by the Headworks Pump Station. The Headworks Pump Station was constructed in 2003 and was upgraded with two 10-horsepower Hydromatic vortex S4LRC submersible pumps in 2013. A Sparling 600 Series 6-inch Tigermag magnetic flow meter measures influent flow at the WWTP. Total daily flows are electronically recorded via the plants SCADA system. The Headworks Pump Station can pump about 600 gpm with one pump and about 900 gpm (1.3 MGD) with both pumps running.



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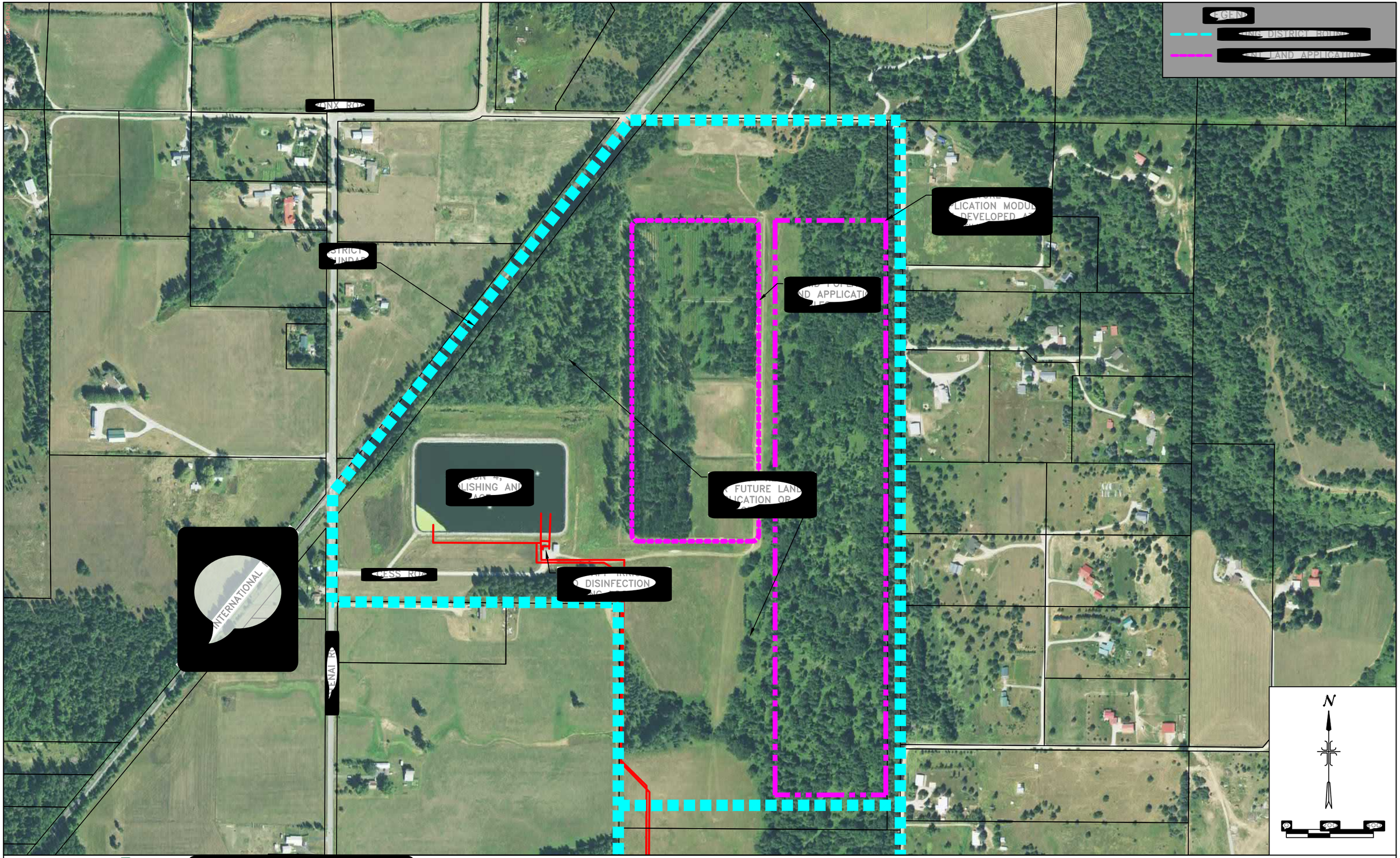
CAD FILE:

ENGINEERS BASED ON INFORMATION PROVIDED INCLUDING: RECORD DRAWINGS, HAND SKETCH COMMUNICATIONS FROM THE KOOTENAI-PONDE FIELD VERIFICATION. A THOROUGH REVIEW

KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITIES MASTER PLAN

FIGURE 5-1
EXISTING WWTP: AERIAL VIEW



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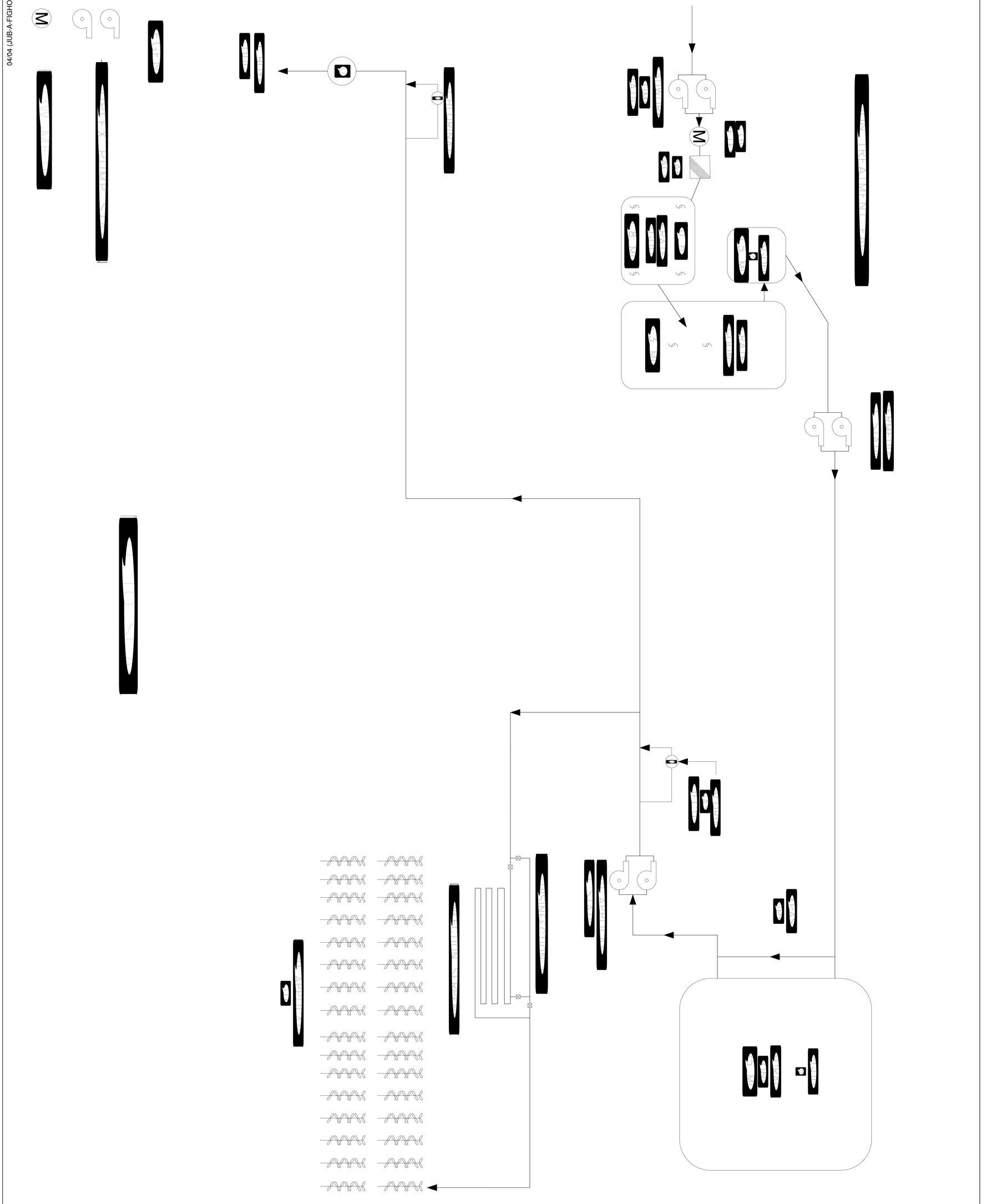
CAD FILE:

KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITIES MASTER PLAN

FIGURE 5-2
EXISTING LAND APPLICATION SITE

04/04 (JUB-A-FIGHORZ)



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KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITY MASTER PLAN

FIGURE 5-3
EXISTING WWTP:PROCESS SCHEMATIC

5.3 Headworks and Bar Rack

The headworks structure is located downstream of Lift Station 4 and provides coarse screening of the raw sewage prior to entering the aerated lagoons. Influent samples are collected from the headworks structure just downstream of the bar rack via a composite sampler. The bar rack protects downstream equipment from damage by removing large items (rocks, wood, large rags, etc.) and some smaller material that may be retained on the bars. The bar screen is located in an open channel 4 feet wide and 2.75 feet deep and consists of ¼-inch metal bars spaced to provide 1 inch of clear space between the bars across the 4-foot-wide open channel. The bar rack is manually cleaned by raking off the material retained on the bars and depositing them into a trash receptacle.

The bar rack channel connects to a flow-splitting transfer structure. Because there is only one treatment train, all of the flow is conveyed to the first lagoon.

The clean bar rack can pass an estimated 2.0 MGD with less than 5 inches of head loss and 0.8 MGD with less than 0.5 inches of head loss. Accumulating debris will quickly increase the head loss. Under normal operation, the bar rack does not limit the plant's hydraulic capacity. Should the bar rack blind off, influent wastewater would overtop the screening part of the rack and flow into the discharge side and into the first lagoon

5.4 Wastewater Treatment

5.4.1 Biological Wastewater Lagoon Treatment, Existing Performance

Wastewater is biologically treated in the District's four lagoons which have characteristics shown in **Table** 5-1.

Table 5.1 – Lagoon Characteristics

	Lagoon 1	Lagoon 2	Lagoon 3	Lagoon 4
Volume, MG	1.8	3.3	0.5	25 MG[a]
Water Depth, ft	9	7	6	17
Area, sqft	38,000	87,000	18,000	290,000
Aeration, hp	4 @ 7.5 1@ 20	1 @ 10 hp 1 @ 5 hp		
Freeboard, ft[b]	2	2	2	2
Liner	Constructed with Clay material	Constructed with Clay material	Constructed with Clay material	60 mil HDPE

[a] Volume varied between 0.5 MG and 17 MG
[b] Does not meet current IDAPA requirement of 3 ft. Significant rebuilding would be required to achieve 3ft of freeboard.

In 2018, the average surface water discharge constituent concentrations were:

- 9.8 mg/l BOD

- 7.6 mg/l TSS
- 23.6 mg/l Total-Nitrogen
- 0.1 mg/l Nitrite-Nitrogen
- 4.25 mg/l Nitrate-Nitrogen
- 3.6 mg/l Organic-Nitrogen
- 19.3 mg/l TKN
- 15.7 mg/l Ammonia-Nitrogen
- 5.33 mg/l Total-Phosphorus

Effluent BOD and TSS data from 2014 through 2018 were reviewed. A total of 167 sample events are summarized in **Table 5-2**. Effluent conditions reflect use of the first three lagoons and partial use of Lagoon 4 for treatment.

Table 5-2 – Effluent BOD and TSS Summary

	Effluent Constituent			
	BOD, mg/l	**BOD, lb/d**	**TSS, mg/l**	**TSS, lb/d**
Limit	30	86	30	100
Average =	10.9	28.3	9.03	33.5
Max =	28.7	92.7	41	1709
Count Above Permit Limit	0	1	1	0
Average % Removal	97%		95%	
Count Under 85% limit	0		3	

Effluent nutrient data from 2014 through 2018 were reviewed. Forty-nine nutrient sample events are summarized in **Table 5-3**.

Table 5.3 – Effluent Nutrient Summary

	Effluent Constituent Concentration, mg/l							
	Ammonia	Nitrite	Nitrate	Organic - N	TKN	Nitrate+ Nitrite	Total N	Total Phosphorous
AVERAGE =	13.64	0.34	3.41	3.91	17.55	3.27	21.30	5.18
Max =	29.20	4.04	19.90	26.96	35.70	19.95	35.88	7.62
Min =	0.04	0.05	0.01	0.20	1.76	0.10	3.80	0.69

Effluent ammonia was typically higher during the cold winter months due to slower biological nitrification rates at low temperatures. As expected, when the WWTP was able to nitrify, effluent nitrate and nitrite concentrations increased as ammonia was converted. When the WWTP was discharging to surface waters (non-growing season months, typically) between 6.7 and 165 pounds per day of nitrogen were discharged with an average of 62 pounds per day. The pounds per day varies widely because the flow discharged from the storage lagoon varies widely depending on how much effluent the operator chooses to discharge. The flow rate can vary between 0.15 and 0.7 MGD depending on operations.

Effluent phosphorus concentrations varied but generally ranged between 3 and 7 mg/l with an average of 5.1 mg/l. When the WWTP was discharging to surface waters, between 4.5 and 26 pounds per day of phosphorus were discharged with an average of 13.8 pounds per day. The pounds per day varies widely because the flow discharged from the storage lagoon varies widely depending on how much effluent the operator chooses to discharge. The flow rate can vary between 0.15 and 0.7 MGD depending on operations.

Effluent nitrogen and phosphorus concentrations were typical for a treatment facility not designed to remove either nitrogen or phosphorus.

5.4.2 Biological Wastewater Lagoon Treatment, Future Performance

Performance through each lagoon can be estimated by the following equation[5]:

$$\overset{\text{Effluent}}{\text{BOD}_5}\ \text{mg/l} = \overset{\text{Influent}}{\text{BOD}_5}\ \text{mg/l} * \frac{1}{1 + k(\text{HRT})}$$

Where:

BOD_5 = 5-day biochemical oxygen demand exerted by the wastewater influent and effluent (a measure of the wastewater's strength), mg/L.

k = kinetic coefficient, approximately 0.06 for lagoons in cold climates (see "10-States" standards). Note that k changes with temperature.

HRT = hydraulic residence time in the lagoons, days.

The removal of BOD_5 through the lagoons was estimated using the model equation with the lagoons in series. In the future Lagoon 4 will have to operate with a minimum volume of seven million gallons for treatment and reserve 18 million gallons

[5] Recommended Standards for Wastewater Facilities, 2014 Edition, ("10-States Standards")

for storage[6]. The current average influent BOD_5 of 337 mg/l was used in the analysis. The results are shown in **Table 5-4**.

Table 5.4 – Estimated Lagoon Performance - Existing Conditions

Flow (gpd)	Lagoon Effluent - BOD_5 mg/l				Overall Removal (%)
	1st	2nd	3rd	4th	
300,000	151	46	30	4	98.9%
350,000	164	56	38	5	98.5%
400,000	175	65	46	7	97.9%
450,000	185	73	54	9	97.3%
500,000	193	82	62	11	96.6%
550,000	201	90	70	14	95.9%
600,000	208	98	77	16	95.1%
650,000	214	105	84	19	94.3%
700,000	220	112	91	22	94%
750,000	225	118	98	25	93%
800,000	230	124	104	27	92%
850,000	235	130	110	30	91%

Theoretically, with 7 million gallons retained in Lagoon 4 for treatment, the lagoons can achieve an effluent BOD concentration around 8 mg/l at the expected design flow 418,000 gpd (annual average). Additionally, the lagoons can achieve an effluent BOD concentration less than 30 mg/l at the peak day flow of 1.161 MGD if the influent strength is less than 200 mg/l (dilute due to high flows).

However, the lagoon treatment system is not designed to remove nutrients or reduce ammonia as required in the permit; therefore, effluent nutrient concentrations are expected to be similar to historical concentrations. Without additional unit processes, the WWTP cannot meet the new surface water discharge limits. For the lagoon treatment plant to remain in service "as-is", the facility would have to dispose of treated effluent solely to the land application site. To discharge to Boyer Slough, significant upgrades are needed.

5.4.3 Disinfection System

Liquid chlorine is used to disinfect the lagoon effluent. Bacteria are inactivated when they are exposed to an adequate concentration of chlorine for an adequate amount of time, typically 45 to 60 minutes under plug flow conditions. The District must disinfect all effluent discharged for reuse at the land application site and effluent discharged to surface water. With the addition of the polishing/storage lagoon in series with the treatment lagoons, the disinfection methodology now utilizes the discharge force mains for contact time. The existing chlorination equipment can

[6] Lagoon 4 is not currently operated with a minimum of 7 MG.

inject approximately 20 pounds of chlorine per day. Under normal operating conditions, the plant uses between 5 and 7 pounds of chlorine per day to meet disinfection requirements.

The land application effluent is disinfected in the 4,310 feet of 8-inch effluent piping between the land application pumps and the first management unit. The land application effluent pipe provides 45 minutes of contact time at 250 gallons per minute[7] of flow which is the preferred irrigation rate to one hydraulic management unit.

Note the system is capable of irrigating two hydraulic management units at the same time with both pumps running at a total flow rate of 900 gpm; however, operators do not prefer to irrigate two units at the same time at a high flow rate. Should operators need to irrigate two units at the same time, disinfection contact time can be provided in a parallel 657-foot long 48" HDPE pipe designed to provide 68 minutes of contact time.

The surface water discharged effluent is disinfected in the 8,060 feet of 8-inch effluent piping between the discharge pumps and the effluent dechlorination point. The discharge pipe provides 45 minutes of contact time at 450 gallon per minute. Higher discharge rates are accommodated by increasing the chlorine dose and equalizing discharge flow in the fourth lagoon.

5.4.4 Effluent Dechlorination

Effluent discharged to surface water is dechlorinated by injecting sulfur dioxide into force main just upstream of the plant drain manhole. Sulfur dioxide is mixed into the effluent due to the turbulent discharge. From the plant drain manhole, treated, disinfected, and dechlorinated effluent flows to the WWTP's discharge manhole and flow meter prior to flowing to the Outfall.

5.8 Outfall to a Boyer Slough Tributary

Treated effluent flows to the plant discharge manhole where effluent monitoring samples are collected via a composite sampler. From the plant discharge manhole effluent flows to Boyer Slough via the outfall pipe. The WWTP discharge permit allows year-round discharge to an unnamed surface water that is a tributary to Boyer Slough. All effluent samples required for NPDES permit compliance are collected at the effluent monitoring manhole prior to discharge to the surface water. Effluent flows from the monitoring manhole into an 8-inch concrete pipe and is discharged to the receiving water. The existing outfall has a hydraulic capacity over 3 million gallons per day.

[7] Pumps are turned down using a VFD

The District was issued a National Pollutant Discharge Elimination System (NPDES) Permit Number ID0021229 on June 26, 2018, see Chapter 4 for details.

5.9 Land Application Disposal

The District is permitted to land apply effluent under an Idaho DEQ reuse permit M-182-03, see Chapter 4 for details. The District can land apply treated effluent May 1 through September 30 if the soil moisture content is less than 10 centibars.

Prior to the issuance of the new permit the District did not have to land apply effluent and could discharge any volume of treated wastewater year-round to Boyer Slough. The District managed the land application site to minimize discharge to Boyer Slough even though not regulatorily required to restrict discharge; therefore, the District had a very flexible treatment system. The District's goal was minimize discharge to Boyer Slough during the warmer summer months when Lake Pend Oreille's backwater filled Boyer Slough. The District is often unable to land apply effluent in late spring and early summer due to soil moisture content greater than 10 centibars so effluent is stored as long as possible and discharged to Boyer Slough. In late spring or early summer, the District usually drains the storage lagoon to make room to store flow during the warmer months leading up irrigation season to minimize discharge to Boyer Slough.

As discussed above, the new permit limits discharge to Boyer Slough and has a compliance schedule with interim limits. The interim limits have mass loading limits for nitrogen and phosphorus, June-September, so the District can no longer discharge year-round to Boyer Slough unrestricted. The District manages the loading limits with storage (nearly empty June 1 and nearly full September 30 unless land applied) and the land application site.

The District currently utilizes 20 acres of hybrid poplar trees or willows available to receive effluent as shown in **Figure 5-2**. The 20 acres have been divided into eight 2.5-acre modules for the purpose of controlling effluent application (irrigation) rates. The land application site has hybrid poplar crops that are approximately 15 years old with trunk sizes varying from 4 to 8 inches in diameter and willow crops around 5 years old. The willow crops are coppiced every few years and the willow whips are used by the Department of Natural Resources to stabilize steam banks.

An analysis was performed on the current land application system to determine the required application area to dispose of the projected flow at the end of the planning period (see Table 3-5) by storing and land applying flow June through September and discharging to Boyer Slough October through May. Historic land application irrigation rates were reviewed to estimate future irrigations rates assuming similar crops would be planted (Poplar trees and Willows) in new hydraulic management units. The average irrigation rate between 2014 and 2018 was 22 inches per year. For analysis,

the average irrigation demand was reduced 10 percent to account for a wetter irrigation season.

Based on this analysis, the District would need to increase the land application area to 72 acres (see **Appendix C)** to serve though the end of the planning period. An estimated 80 acres are available at the current land application site; therefore, the land application site is adequate to serve throughout the planning period as long as a surface water discharge is available. Continued surface water discharge would require significant upgrades to the lagoon treatment plant. It should be noted that at the end of the planning period the land application area will be at 90% of capacity (72 of 80 acres in use).

District staff has indicated several operational difficulties related to the land application system. The primary difficulty is maintaining uniform irrigation rates to each of the modules. The irrigation system utilizes a system where irrigation laterals are fed by a center riser that is filled to an elevation of 15 to 20 feet above ground level. This head is then used to feed a header pipe that in turn feeds irrigating laterals. The lateral irrigation pipe has holes drilled through the pipe near each tree. The District has very little control over the irrigation system other than by throttling individual valves on the irrigation lateral lines. It is extremely difficult to maintain uniform irrigation rates; consequently, specific areas within individual modules become overloaded. This has limited the ability to land apply effluent because part of module reaches maximum soil moisture, while other parts of the same module are dry.

5.9 Power Supply and Standby Power

One generator is located at the WWTP to provide power to the WWTP operations, including:

- The aeration system blowers
- Influent Lift Stations 4 and 7
- Miscellaneous units at the WWTP

The WWTP currently has 3-phase power; however, District staff indicate that power quality in the area is highly variable, with frequent fluctuations in amperage and voltage. Because of this, the use of variable frequency drives (VFDs) was avoided during the previous WWTP upgrades.

5.10 WWTP Hydraulic Capacity

The WWTP hydraulic capacity evaluation in the 2007 report remains valid. Decommissioning the sand filters had no impact on the hydraulic capacity since the effluent was pumped to the filters and now it is pumped to lagoon 4 (storage/polishing lagoon). Re-tasking lagoon 3 away from providing chlorine contact time did not reduce hydraulic capacity. The 2007 report summary follows:

From the headworks to the intermediate pump station, the plant can pass an estimated 0.4 MGD with the chlorine contact basin's outfall weir set at an elevation of 2112 feet. The overflow pipe in the transfer structure between the primary and secondary lagoon conveys a significant amount of flow under these conditions. Because the overflow pipe is located near the normal lagoon withdraw pipe additional short circuiting is not observed during periods of use. Ideally, the main conveyance pipe would provide sufficient capacity without requiring the overflow pipe. However, the overflow pipe allows the secondary lagoon to maintain its maximum elevation and no treatment volume is lost. The plant is able to pass peak flows greater than 0.4 MGD by raising lagoon levels for short periods. The plant will reach its hydraulic limit at average daily flows of 0.4 MGD.

The reservoir pump station can pump 0.864 million gallons per day to Lagoon 4. Effluent from Lagoon 4 can flow by gravity to the outfall pipe at 0.34 million gallons per day or at 0.72 MGD using the irrigation pumps. The outfall pipe to Boyer Slough has a capacity over one million gallons per day.

CHAPTER 6 – WASTEWATER TREATMENT IMPROVEMENT ALTERNATIVES

6.1 Introduction

Wastewater Treatment alternatives have been developed based on permit limits identified in Chapter 4 with emphasis on meeting lower effluent limits. No technology can reliably achieve the effluent phosphorus limit of 9 ug/l in effect June through September; therefore, all of the alternatives considered eliminate discharge to Boyer Slough during that critical season.

Additionally, the District is pursuing a lake outfall that would move the year-round discharge from Boyer Slough to Lake Pend Oreille where water quality standards are being met with the District's effluent effectively in the bulk water column already. To that end, the District is undertaking a 3-year Lake Water Quality Study to determine the impacts of moving the District's discharge point downstream into the lake.

Options under consideration are:

1. Do nothing
2. Cease surface water discharge and implement complete land application:
    a. Store flow during the non-irrigation season and
    b. Land apply 100% of the flow during the irrigation season.
3. Boyer Slough discharge and critical season land application:
    a. Upgrade the treatment plant to meet year-round ammonia and seasonal nitrate/nitrite limits (October through May) by:
        i. Enhanced lagoon treatment, or
        ii. Constructing a mechanical treatment plant.
    b. Store flow and land apply during the critical season (June through September).
4. Lake outfall:
    a. Construct a new lake outfall
    b. Upgrade the treatment plant, as needed, to meet effluent limits to satisfy lake water quality requirements by:
        i. Enhanced lagoon treatment, or
        ii. Mechanical treatment plant
5. Regionalization or contract for treatment with Sandpoint.

These options are discussed below.

6.1 Alternative 1 - Do Nothing

If the District did nothing to the existing facility, at the end of the 10-year compliance schedule on September 1st 2028, the District would be in violation of the permit and subject to substantial fines.

The District has a long history of permit compliance and is dedicated to continuing that tradition; therefore, the Do Nothing alternative is not viable and is eliminated from consideration.

6.2 Alternative 2 – Land Application, Without a Surface Water Discharge

Discharging treated effluent to Boyer Slough could be eliminated by storing treated effluent during the non-irrigation season and land applying effluent during the irrigation season. This alternative would land apply the 100% of the annual effluent during the growing season necessitating a reliable land application area of sufficient size to receive the effluent. Additionally, sufficient storage volume is required to hold treated effluent between irrigation seasons. The District currently has 80 acres of potential irrigation area and 25 million gallons of existing storage; however, without a surface water discharge, at the end of the planning period, the District would need to have 380 acres under irrigation and 135 million gallons of storage which is a 475% increase in land and a 540% increase in storage. The District would need 300 additional acres under irrigation and 110 million gallons of additional storage.

This option requires the District to purchase several hundred acres or enter into a long-term agreement with a nearby property owner (owners) to receive treated effluent for disposal via irrigation. For planning purposes, to accommodate setbacks, at least 15% excess land is assumed. Therefore, this option will need approximately 345 additional acres for land application area.

For planning purposes, it is assumed that 110 million gallons of storage will be provided by constructing four, 27.5 million-gallon lagoons. The three new lagoons will be of similar size to the existing lagoon. The new lagoons will occupy about 35 acres.

For cost estimating purposes, this option will need:

- 380 acres of land, 345 additional acres under irrigation and 35 acres for storage
- 110 million gallons of additional storage
- Rebuilt existing lagoons with new liners to prevent seepage
- Additional capacity in the irrigation lift station
- Force main to new storage lagoons
- Force main to new land application area
- New irrigation system
- Miscellaneous ancillary equipment upgrades.

Supporting water balance calculations are included in **Appendix C**.

6.3 Alternative 3 – Boyer Slough Discharge and Critical Season Land Application

Discharge during the non-critical season (October through May) could be achieved by upgrading the treatment process to biologically remove nitrogen. June through

September flows would be managed by effluent storage and land application which would require increasing the land under irrigation from 20 acres to 84 acres to dispose of all the effluent generated during the summer months. However, the District estimates that only 80 acres are available at their existing land application site. Therefore, to avoid the purchase of additional land, the District would need irrigate all available acres and retain about 2 million gallons in Lagoon 4 which can be slowly discharged during the non-critical season. With careful management, the existing land application site is adequate for this alternative through the end of the planning period. Supporting water balance calculations are included in **Appendix C.**

This option requires the existing land application site to be fully outfitted to receive effluent for land application (increasing the area under irrigation from 20 acres to 80 acres). Since Lagoon 4 will remain in service for storage, it will need rebuilt to provide another 20 years of service.

Effluent quality will have to be improved to discharge to Boyer Slough October through May; therefore, significant improvements are needed to meet the new effluent ammonia, nitrite, and nitrate limits.

Three mechanical treatment options were considered to achieve permit limits required to discharge to Boyer Slough October through May:

- Modified lagoon treatment,
- An oxidation ditch treatment plant, and
- A membrane biological reactor treatment plant.

The three treatment options are discussed below. The effluent quality for each option is expected to meet concentration and mass loading limits under max month conditions, which has the most restrictive limits, as shown in **Table** 6-1

Table 6-1 – Maximum Month Effluent Limits

	Concentration [A], mg/l	Mass Load, lb/day
BOD	< 11.5	<86
TSS	<13.3	<100
Ammonia	<0.79	<5.9
Nitrite and Nitrate	<4.4	<33.4

[A] At max month flow of 0.9 MGD and load based permit limits.

6.3.1 Alternative 3A Modified Lagoon Treatment

Lagoon treatment plants can theoretically be modified to remove nitrogen to the required effluent conditions. JUB requested and received proposals from three vendors that claim to have technologies that modify lagoon treatment plants to remove nitrogen. Only one vendor, Nexom, had an adequate track record removing nitrogen with reliable performance in cold climates like North Idaho. JUB requested and received a proposal from Nexom that initially looked promising; however, after

discussing cold climate operations, reliability and the size of the biological reactors given the stringent discharge limits, Nexom withdrew their proposal (on June 22, 2020). Therefore, the existing lagoon treatment plant cannot be upgraded or modified to reliably meet effluent limits to discharge into Boyer Slough. Alternative 3A was dropped from further consideration.

6.3.2 Alternative 3B Oxidation Ditch

An oxidation ditch is an extended aeration activated sludge process in which incoming wastewater is routed through a concrete basin in a generally circuitous route. Horizontal brush rotors or vertical turbine aerators both completely mix the basin and maintain a dissolved oxygen level of approximately 2.0 mg/L. The existing lagoon plant will be kept operational during construction of the oxidation ditch and then demolished.

Concept level sizing was performed to provide two basins able to treat the maximum month flow and load[8]. Two basins provide process redundancy and reliability.

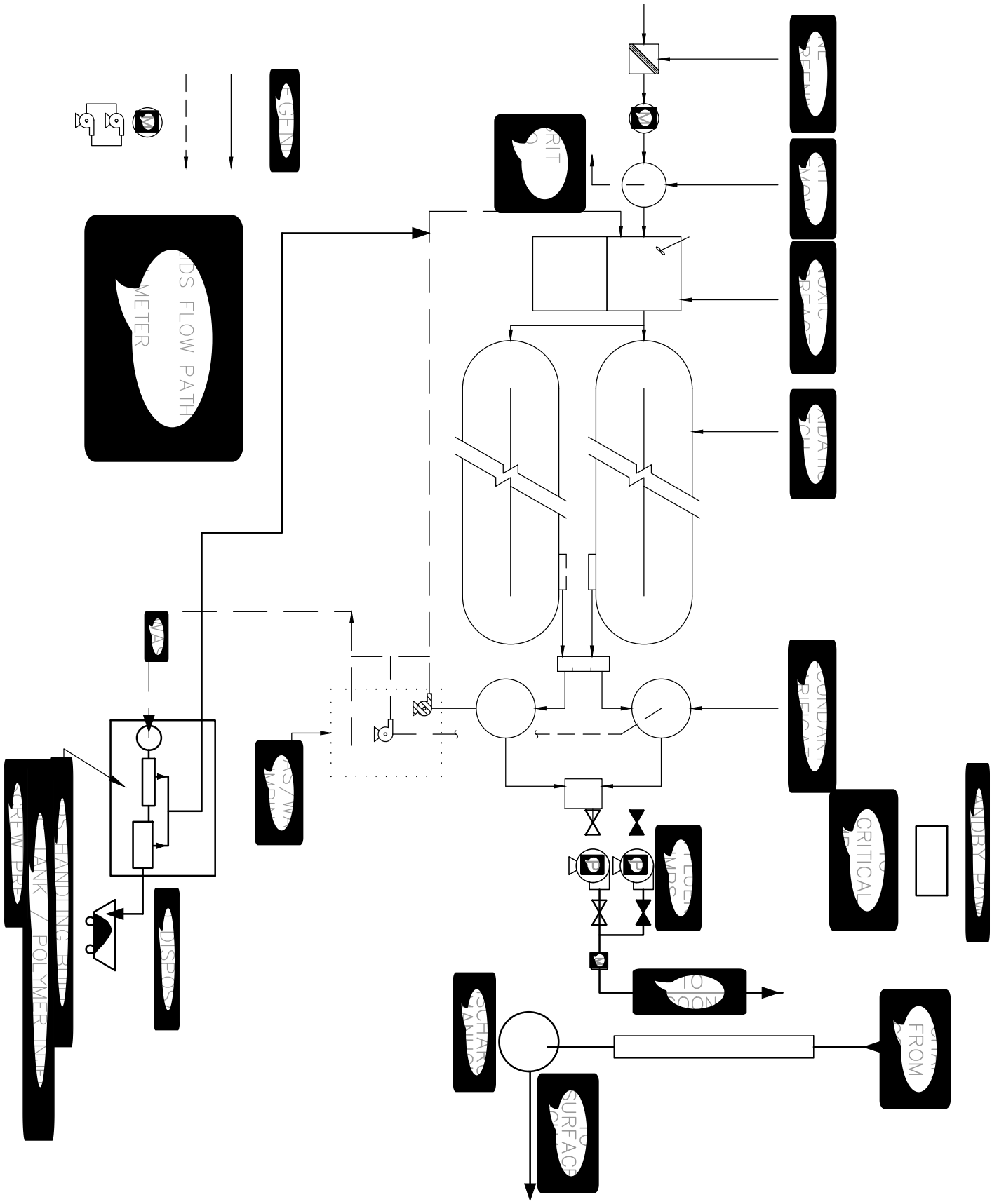
The oxidation ditch process will require:

- Excavating and preparing the site West of Lagoon 1
- Headworks facility
- Oxidation ditch with anoxic zone
- Secondary clarification
- Biosolids recirculation and wasting pumps
- Chlorine injection facilities for disinfection
- Rebuild storage lagoon
- Biosolids dewatering and disposal
- Control Building

A process schematic of a typical WWTP utilizing an oxidation ditch is included in **Figure 6-1**.

The proposed oxidation ditch is sized to meet stringent effluent nitrogen limits established in the latest NPDES permit (see Chapter 4). At this time, phosphorus removal is not needed since phosphorus limits are only in effect during the summer months and the District can manage phosphorus with the land application site. It may be beneficial to add phosphorus removal to the final design to allow more management alternatives or increase the attractiveness of a lake outfall.

[8] IDAPA 58.01.16.490.02.a.ii.(2) requires at least two equally sized basins.



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CAD FILE: xx

KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITY MASTER PLAN

FIGURE 6-1
OXIDATION DITCH PROCESS SCHEMATIC

The preliminary basin volume recommended for alternative evaluation is two basins at 550,000 gallons each providing 29.3 hours of hydraulic contact time at max month flow of 0. 9 million gallons per day. A minimum side water depth of 10 feet is recommended so vertical turbine aerators can be utilized. Design criteria are included in **Table 6-2**.

Table 6-2 – Oxidation Ditch Typical Design Parameters

Parameter	Typical Range[A]	Proposed Design
Aerobic Basin Volume, gallons		1,100,000 gallons total 2 at 550,000 each
Anoxic Basin Volume		370,000 gallons total 2 at 185,000 each
Hydraulic Residence Time, hrs	8-36	29.3 at Max Month flow 15.3 at peak hour flow
Fluid Velocity, fps	0.8-1.2	1.0 (target)
Volumetric Loading, lb BOD_5/1000 CF/day	5-30	21.5, Annual Ave. 12.7 Max Month
MLSS, mg/L	1,500-5,000	2,500-4,000 (target)
SRT, days	20-30	21.5 [B]
Recycle Ratio (Qr/Q)	0.75-1.5	1.5
Side Water Depth, ft	6-20	10
Secondary Clarification $Gal/ft^2/day$		2 at 60' diameter
	200-400 ave	170 with one offline
	600-800 peak	430 with one offline

[A] Adapted from Metcalf and Eddy, third edition, Table 10-5.
[B] Ave. Daily Load of 1490 lb/day at 3500 MLSS

A preliminary oxygen demand calculation was performed to determine the probable horsepower requirements of the aeration equipment. The following conditions were assumed:

- Max Month influent BOD_5 load at 2530 pounds (see Chapter 3)
- Influent TKN at 40 mg/L with complete nitrification
- Minimum required dissolved oxygen level of 2.0 mg/L

Based on these assumptions, each basin will require two 50 hp aerators to maintain the desired dissolved oxygen level with one basin out of service.

6.3.3 Alternative 3C Membrane Biological Reactor

A membrane biological reactor (MBR) is an activated sludge process that operates at a much higher suspended solids concentration and uses a membrane filter to separate the solids from the effluent instead of a clarifier. Because secondary clarifiers are not required and the reduced biomass reactor volume, MBR plants have a smaller footprint than conventional activated sludge processes.

An MBR plant has the following components:

- Excavating and preparing the site West of Lagoon 1
- Headworks facility
- Membrane biological reactor treatment plant with an anoxic zone
- Biosolids recirculation and wasting pumps
- Chlorine injection facilities for disinfection
- Rebuild storage lagoon
- Control Building

Concept level sizing was performed to provide two basins able to treat the maximum month flow and load. Two basins provide process redundancy and reliability.

The projected flow could be treated by an MBR plant with the parameters listed in **Table 6-3.**

Table 6-3 – MBR Design Parameters[A]

Parameter	Proposed Design
Average Daily Flow	0.48 MGD
Aerobic Volume	390,000 gallons total 2 at 195,000 each
Anoxic Volume	112,000 gallons total 2 at 56,000 each
MLSS, mg/L	8,000 – 10,000
Membrane Tank Volume	70,000 gallons total 2 at 35,000 each
Membrane Tanks	2 tanks
HRT, aerobic	19.4 hours
SRT [B]	19.6 days
Flux [C]	5 gfd @ ADF

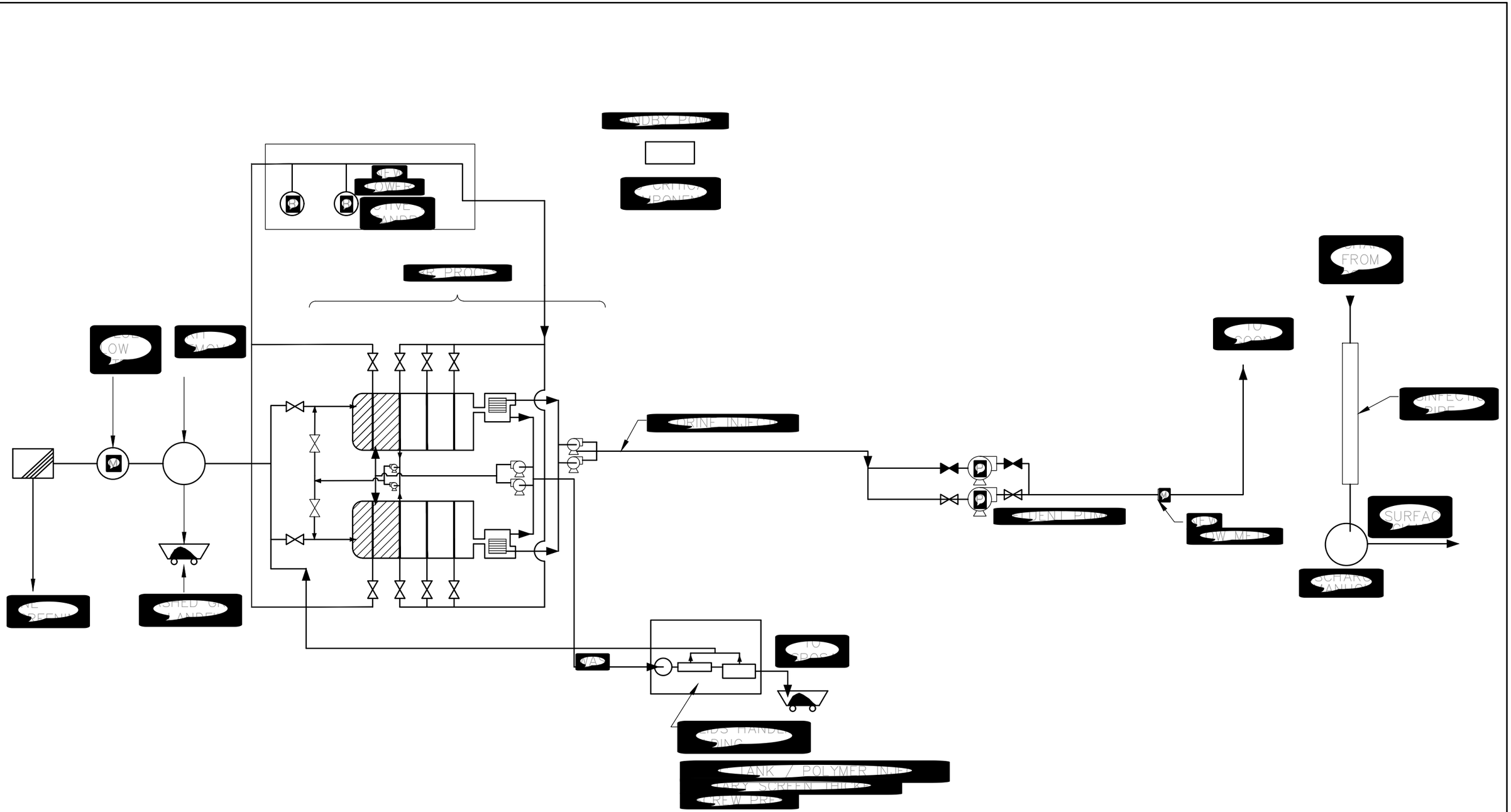
[A] – Typical values provided by equipment manufacturers.

[B] Ave. Daily Load 1490 lb/d, 9000 MLSS, Yield = 1.

[C] To be determined during vendor selection and design.

The flow schematic for this alternative is illustrated in **Figure 6-2**.

The proposed membrane biological reactor is sized to meet stringent effluent nitrogen limits established in the latest NPDES permit (see Chapter 4). At this time, phosphorus removal is not needed since phosphorus limits are only in effect during the summer months and the District can manage phosphorus with the land application site. It may be beneficial to add phosphorus removal to the final design to allow more management alternatives or increase the attractiveness of a lake outfall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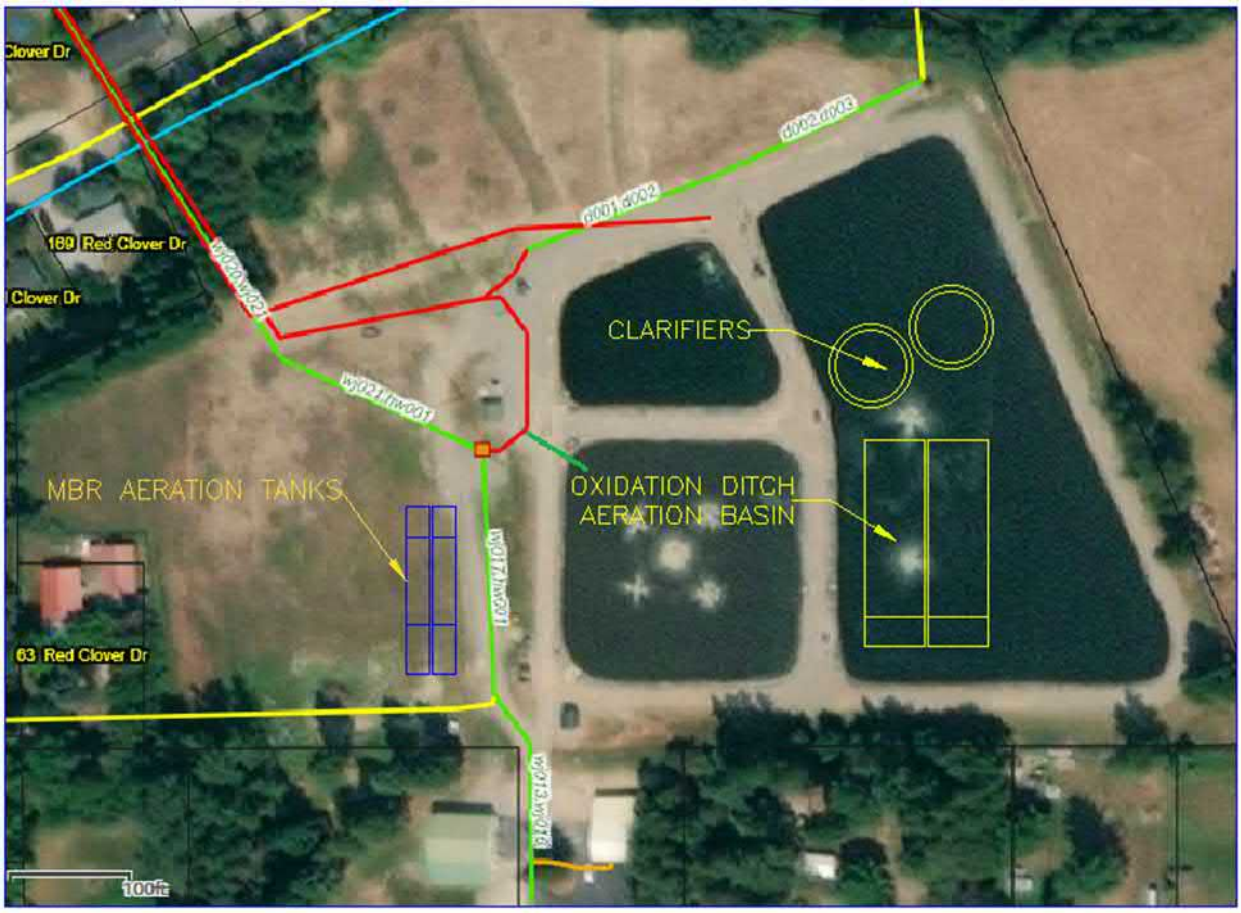
The relative size of the two mechanical treatment plant alternatives (major components) are shown in **Figure** 6-3 for comparisons purposes only. The final location and orientation will be determined later.

Figure 6-3 – Relative Size of Mechanical Treatment Alternatives



6.3.4 Screening and Grit Removal

Screening and Grit removal are required prior to a mechanical treatment plant to prevent debris from accumulating in the treatment units. Additionally, a 2-mm screen is required by membrane vendors for warranty purposes to prevent damage. Therefore, an internally fed drum screen with washing and compacting was considered and included in the mechanical alternatives. A vortex-type grit removal system and grit washer sized to remove 100-micron grit was considered and included in the mechanical alternative. To minimize odors, the equipment should be enclosed in a headworks building.

6.3.5 Disinfection Facilities

Disinfection is required to inactivate pathogens in the effluent prior to discharge. The District generally produces Class C effluent for land application; however, the District can irrigate Class D effluent within an electric fenced area if necessary. Class C effluent requires an effluent median number of total coliform organisms of 23 MPN/100ml or less. Class D effluent requires an effluent median number of total coliform organisms of 230 MPN/100ml or less.

Two disinfection alternatives were considered:

1. Chlorine gas disinfection coupled with sulfur dioxide gas dechlorination
2. Ultraviolet (UV) light disinfection

Required chlorine dose is a function of the chlorine concentration and the chlorine contact time. UV light dose is a function of the intensity of UV light transmitting through the effluent and the contact time. In general, the higher the dose the more organisms are inactivated.

Chlorine Disinfection

The existing WWTP uses liquid chlorine to disinfect wastewater effluent. To provide chlorine contact time, the District uses the pipe between the storage lagoon and the point of disposal (land application or Boyer Slough). For this project, the existing chlorine disinfection system is adequate to serve throughout the planning period.

The District's surface water discharge permit allows only 0.011 mg/l of chlorine. To meet that requirement, the effluent must be dechlorinated prior to discharging to Boyer Slough. The District injects sulfur dioxide[9] in the outfall pipe just prior to the effluent monitoring manhole to dechlorinate. Typically, 1.46 to 1.6 mg/L of sulfur dioxide (dechlorinating agent) is required to neutralize 1.0 mg/L chlorine residual. This methodology works well and is adequate to serve throughout the planning period.

[9] Flow paced and based on the chlorine residual concentration.

However, should the district choose to construct a chlorine contact tank near the treatment facilities rather than use the long force main pipe for contact time, new chlorine disinfection facilities are estimated to cost 1.6 million.

Ultraviolet Light Disinfection

UV disinfection utilizes 254 nm wavelength UV light transmitted into the wastewater stream to alter the DNA of the organisms in the wastewater, thereby preventing the cells from reproducing. The light bulbs (long tubes) are typically arranged horizontally or vertically in an open channel forcing the wastewater to pass within approximately two cm of the active lamps. UV disinfection is considered more effective for virus inactivation than for bacterial inactivation, meaning the bacterial standard will likely have the added benefit of a high degree of virus inactivation. EPA states additional advantages are its operating simplicity, lack of toxic residuals or disinfection byproducts, and freedom from hazardous chemicals. Disadvantages include relatively high operation and maintenance costs, lamp cleaning requirements, and the potential for turbidity to negatively impact disinfection by shielding pathogens from UV light. Another disadvantage is that iron cannot be use in the wastewater treatment process to precipitate phosphorus or improve gravity settling because iron fouls the UV bulbs.

Consistently high effluent quality is critical for successful UV disinfection. Because of this, UV disinfection is generally used in mechanical treatment plants only. However, improvement in low-pressure, high-intensity UV technology means that UV disinfection may be used in a lagoon system. Considerable operator attention shall be expected to verify the lagoon effluent maintains consistent high quality.

If UV disinfection is used, a low pressure, open channel system is recommended due to its proven track record. A backup chlorine feed system is also recommended in the event the UV system fails or is undergoing maintenance. It is assumed that a dechlorination system will not be required since use of the chlorine feed system will occur only during planned periods or during approved emergencies.

Ultraviolet light disinfection facilities for the projected flow would require the parameters listed in **Table 6-4**.

Table 6-4 – UV Disinfection Design Parameters

Parameter	Value
UV Dose (μM-s/cm^2)	80,000
TSS (mg/L)	<5
BOD_5 (mg/L)	<5
Disinfection (MPN/100 ml)	
7-day median	<23
Maximum	230
UV Transmittance	65%
Number of Reactors	6
Number of UV Lamps	60
Lamp Lifetime (hours)	12,000
Total Electric Load (kW/kVA)	21.6

UV disinfection facilities are estimated to cost 3.2 million, whereas, new chlorine disinfection facilities are estimated to cost 1.6 million. Therefore, UV disinfection was eliminated from further consideration. Additionally, the long force mains can continue to serve as chlorine contact volume which eliminates this cost

6.3.6 Biosolids Management

The WWTP does not currently dewater biosolids because the solids are stored in the lagoons. Generally, the lagoons must be dredged periodically to remove the accumulated solids. In the spring of 2008, the District dredged the first lagoon and 1/3rd of the second lagoon. To date, the lagoons do not need to be dredged with only 12 to 18 inches of accumulated solids.

The mechanical treatment alternatives, discussed above, require the biosolids to be dewatered and hauled off site because the new treatment process cannot store biosolids very long. To that end, a screw press was considered to dewater the solids to approximately 16 percent moisture content for those alternatives requiring mechanical treatment. Biosolids will be hauled to a 1,200-acre ranch about 7 miles northeast of District's WWTP. The ranch receives biosolids from nearby communities, including, City of Sandpoint, City of Dover, City of Priest River, Bottle Bay Sewer District, Cave Bay Sewer District, and Sandpiper Shores Sewer District. Received biosolids are stockpiled on-site and land applied when appropriate for farming operations.

6.4 Alternative 4 – Lake Outfall

The District currently discharges into Boyer Slough which discharges into Kootenai Bay of Lake Pend Oreille. The nearshore waters of Lake Pend Oreille (including Kootenai Bay) were evaluated in the 2002 Nearshore TMDL and in subsequent evaluation reports and found to be meeting water quality standards. The 2002 report recommended that phosphorus nutrient loads be held to current values during the critical summer growing season. The District has been able to maintain their phosphorus discharge load to 2002 levels by storing and land applying effluent during the critical season. However, stringent phosphorus discharge limits in the new permit eliminate the ability to discharge to Boyer Slough during the critical season; therefore, the District is pursuing an option to move the discharge to Kootenai Bay. The goal is to move the District waste loads downstream, bypassing the poor water quality in Boyer Slough, and discharging into a water body that is meeting water quality standards. This approach requires the District to estimate the mass of their waste loads entering Kootenai Bay at the mouth of Boyer Slough and evaluate the ongoing effect of that mass being discharge in Kootenai bay. With agreement and coordination with DEQ, the District is assessing the water quality in the Kootenai Bay area of Lake Pend Oreille to evaluate the impacts of a new outfall and diffuser approximately 3000 feet offshore.

To be a valid alternative, the Lake Study will have to show that the District can discharge treated lagoon effluent directly into Kootenai Bay without causing an exceedance of water quality standards. It is expected the Lake Study will establish nutrient mass limits for the discharge after taking into account that portion of the District's effluent that is already in the lake. Depending on lake discharge permit limits, the District may have to store and land apply some flow during the critical season. As the District grows, higher quality effluent will be needed to meet mass load limits which will eventually require facility improvements.

This alternative would construct a new outfall and diffuser into the lake and would discharge effluent into the lake approximately 3000 feet offshore; thereby, bypassing Boyer Slough. A potential lake outfall location is shown in **Figure** 6-4.

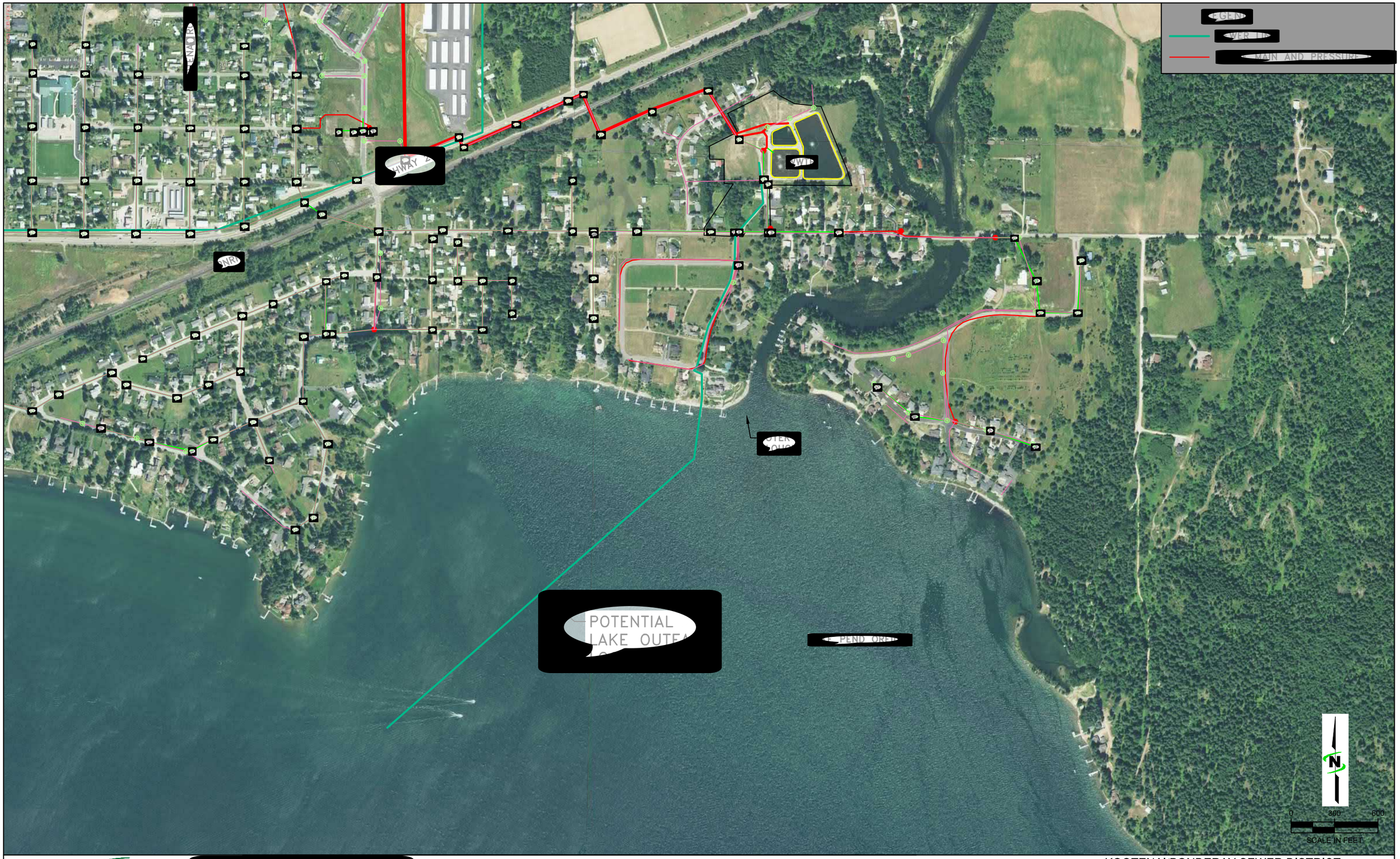
The lake outfall alternative has unknowns associated with moving the outfall to the lake. Two high risk unknowns are:

1. Lake Study
    a. At this time, it is not known if the Lake Study will find a de minimis impact of KPSD's discharge into the lake. Even with some of the District's effluent already in the water body the attenuated waste load mass may be so small that advanced treatment cannot achieve low enough effluent concentrations to meet allowable mass loads with a direct lake discharge.

b. The Lake Study is currently underway but will not be done until February 28, 2022 which is two years after this facility plan is due per the compliance schedule. The completion of the Lake Study may invalidate conclusions made in this report causing the District to change course which may negatively impact the available timeline to achieve compliance.

2. Permitting
    a. Even though the regulating agencies generally acknowledge the potential to move the outfall, the permitting process to that end may take several years after the completion of the Lake Study. It may be difficult for the District to move forward designing and constructing facilities to meet permit conditions without those permit conditions being known.
    b. Third parties may derail the permitting process via legal challenges.

Resolving unknowns before moving ahead with the lake outfall alternative may exceed the compliance schedule timeline and moving forward with a lake outfall without resolving the unknowns increases risk of having to backtrack and change course.



J-U-B ENGINEERS, INC.

CAD FILE:

KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITIES MASTER PLAN

FIGURE 6-4
POTENTIAL OUTFALL LOCATION

6.5 Alternative 5 – Regionalization or Contract Treatment with Sandpoint

The District met with the City of Sandpoint on June 11, 2020 to discuss options for regional treatment. Many details will have to be worked out, but the bottom line from that meeting was that Sandpoint would be willing to receive raw wastewater from the District for treatment and disposal except during periods of peak flow. Sandpoint would not be able to treat the District's wastewater during periods of high flow, typically during periods of high inflow and infiltration flow. Sandpoint is in the process of improving treatment facilities and increasing capacity to treat their peak flows and the idea is to receive the District's flow in-between Sandpoint's peak flow events. When Sandpoint is not able to receive wastewater, the District would have to store their wastewater for later discharge when treatment capacity becomes available.

Sandpoint will give the district the maximum window of time the District will have to store wastewater so the District can incorporate the storage facility cost into their facility plan. At maximum month flows, using Lagoon 4, the District can store about 28 days of flow.

Regionalization with the City of Sandpoint or some form of contract-for-service cooperation is a feasible option. There may be mutually beneficial reasons to cooperate, including:

- Discharging to Sandpoint may have a lower long-term cost and decreased uncertainty.
- Sandpoint may be able to offset cost without a great deal of impact by allowing the District to discharge during off-peak hours, even on a daily basis.

At this point, discharging to Sandpoint has unknowns that increase uncertainty. A few unknows are:

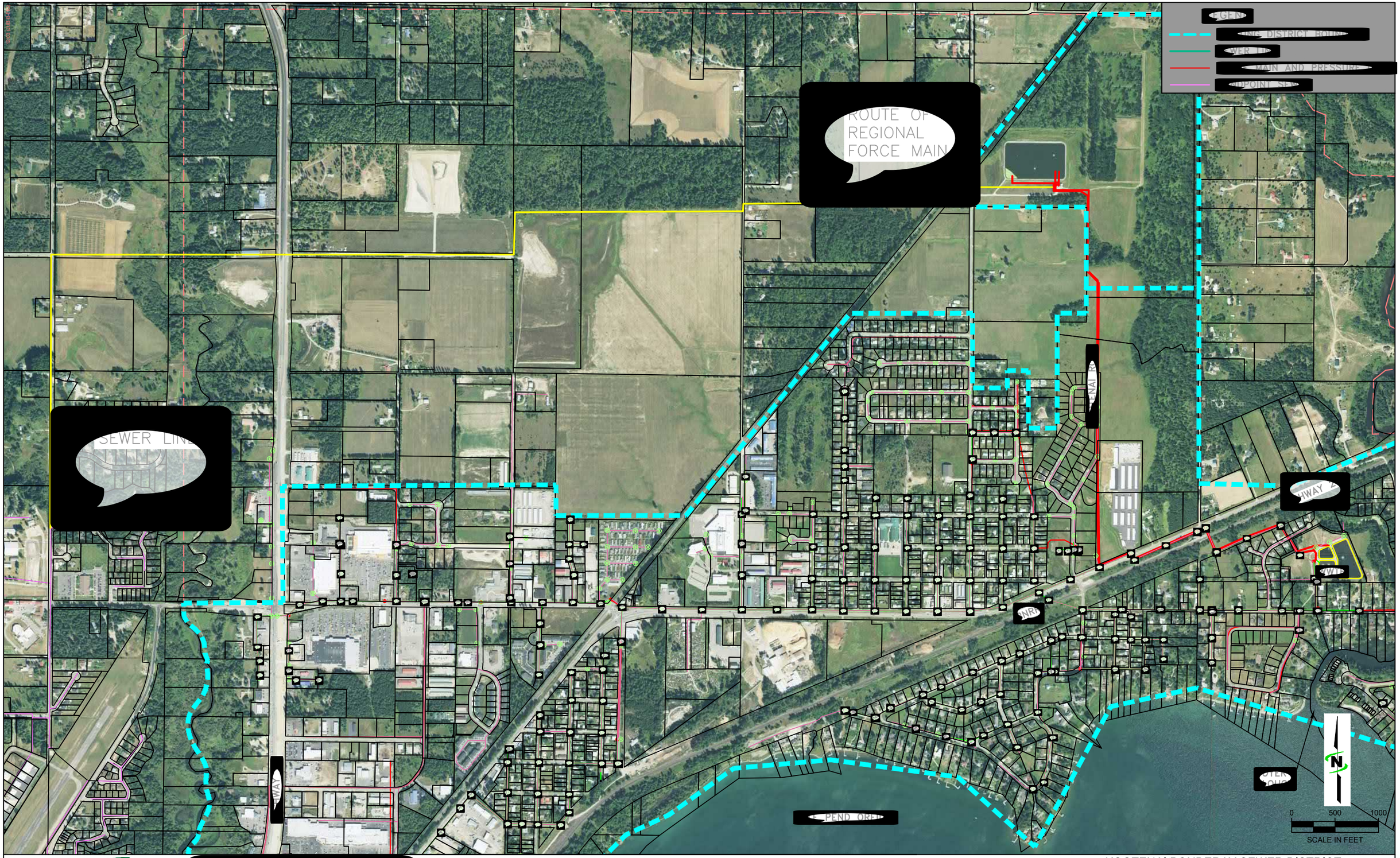
1. Sandpoint is currently studying this alternative but is not able to estimate the cost to treat the District's wastewater.
2. Sandpoint has not established the final capacity of the planned improved WWTP facilities and cannot tell the District how long they will have to store flow.
3. Other than a general agreement and approval of the concept, contract agreements have not been discussed.

This option would include:

1. Rebuilding Lagoon 4 for flow equalization.
2. Constructing additional storage, as needed.
3. Constructing a force main pipeline between the District and Sandpoint's collection system.
4. Upgrading the land application pump station to pump to the City of Sandpoint.
5. Upgrading portions of the City of Sandpoint's collection system to manage the District's additional flow, if necessary.

6. Maintain an emergency discharge into Boyer Slough and/or the land application site after treatment in the storage lagoon.

There are many options to route a connecting pipe between the District and the City of Sandpoint. A potential route was selected for cost estimating purposes as shown in **Figure** 6-5.



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CAD FILE:

KOOTENAI/PONDERAY SEWER DISTRICT
WASTEWATER FACILITIES MASTER PLAN

FIGURE 6-5
POTENTIAL ROUTE OF REGIONAL FORCE MAIN

6.6 Alternative Component List

Major process components for each alternative discussed above as well as ancillary unit process (screening, grit removal, biosolids handling, laboratory facilities, etc.) are summarized in **Table 6-5**.

Table 6-5 - Alternative Component List

	Alt 2	Alt 3 Seasonal Discharge to Boyer Slough			Alt 4	Alt 5
Component List	**100% Land Application Lagoon Treatment**	**Alt 3a Modified Lagoon ELIMINATED**	**Alt 3b Oxidation Ditch**	**Alt 3c Membrane Bioreactor**	**Lake Outfall**	**Regionalization Or Contract Treatment**
Screening (2mm)			X	X		
Grit Removal			X	X		
Anoxic Biological Reactor			X	X		
Membrane Bioreactor				X		
Oxidation Ditch			X			
Secondary Clarification			X			
Disinfection, chemical injection			X	X		
RAS/WAS Pump System			X	X		
Biosolids Management			X	X		
Control Building			X	X		
Rebuild Treatment Lagoons	X				X	
Rebuild Storage Lagoon	X		X	X	X	X
380 Acres – Irrigation and Storage	X					
110 MG Storage Lagoon	X					
300 Acres of New Irrigation	X					
80 Acres of Existing Irrigation	X		X	X	X	
Lake Outfall					X	
Regionalization Fees						X
Regional Conveyance System						X
Regional Pump Station						X

6.7 Opinion of Probable Construction Cost

An opinion of probable cost for the treatment alternatives and ancillary unit process was developed for each of the alternatives. A summary is included in **Table 6-6**. A detailed summary and breakdowns by unit process are included in **Appendix D**.

Table 6-6 - Alternative Opinion of Cost

	Alt 2	Alt 3 Seasonal Discharge to Boyer Slough			Alt 4	Alt 5
Component List	**100% Land Application Lagoon Treatment**	**Alt 3a**	**Alt 3b Oxidation Ditch**	**Alt 3c Membrane Bioreactor**	**Lake Outfall**	**Regionalization Or Contract Treatment**
Screening (2mm)		ELIMINATED	$2,341,000	$2,341,000		
Grit Removal			$1,411,000	$1,411,000		
Anoxic Biological Reactor			$670,000	$670,000		
Membrane Bioreactor				$11,431,000		
Oxidation Ditch			$4,885,000			
Secondary Clarification			$3,853,000			
Disinfection, chemical injection			$1,600,000	$1,600,000		
RAS/WAS Pump System			$1,430,000	$1,430,000		
Biosolids Management	$1,250,000		$5,390,000	$5,390,000	$1,250,000	
Control Building			$2,103,000	$2,103,000		
Rebuild Treatment Lagoons	$262,000		$262,000	$262,000	$262,000	
Rebuild Storage Lagoon	$691,000		$691,100	$691,100	$691,100	$691,100
380 Acres – Irrigation and Storage	$49,000,000					
110 MG Storage, 4 Lagoons	Included					
300 Acres of New Irrigation	Included					
80 Acres of Existing Irrigation	$1,497,000		$1,497,000	$1,497,000	$1,497,000	
Lake Outfall					$13,300,000	
Regionalization Fees						$7,500,000
Regional Conveyance System						$14,200,000
Regional Pump Station						Included
TOTAL in Millions =	$ 52.7		$ 26.1	$ 28.8	$ 16.9	$ 22.4

CHAPTER 7 – SELECTED ALTERNATIVE

7.1 Alternative Ranking

Wastewater treatment and disposal improvements are necessary for the District to provide adequate service. Based on input from the District Operations Manager, District staff, District Board members, a public workshop/meeting, and the analysis presented in this Facilities Plan Update, a preferred improvement alternative was selected.

The wastewater treatment alternatives presented in Chapter 6 were discussed and ranked based on criteria important to operations staff, the Board and public comments. The alternatives were scored, using the alternative's rank specific to the criteria and a weighting factor based on how important the Board felt each criterion was. The following key criteria were identified:

- **Capital costs** – The costs to construct each alternative (previously documented in this analysis).
- **Operation and maintenance costs** – The costs to own, operate, and maintain, each alternative, in 2020 dollars.
- **Relative ease of operation for each system** – The District understands that operator costs, time, and training will continue to increase, but it values simplicity in operations because this often leads to increased reliability and assures permit compliance.
- **Ability to expand** – The District has seen continued development in and around its boundaries. The District may need to expand its boundaries and shoulder the responsibility to provide wastewater treatment services to larger areas.
- **Ability to satisfy future permit requirements** – Regulatory requirements are likely to get more stringent, which may require additional treatment.
- **Regulatory compliance** – An important factor for the District is the ability to reliably meet current and anticipated regulatory requirements.
- **Public acceptance** - The District wants to continue to be a "good neighbor" facility, with few documented complaints about its operations.

The summation of each alternative's numeric rank for each criterion provides a raw score specific to the key criteria. Multiplying the numeric rank by a weighting factor and summing the results for the criteria gives a weighted score to each alternative that considers which criteria are most important to the District.

The final ranking matrix is shown in **Table 7-1**. The lake outfall alternative received the highest score and is, therefore, the preferred alternative. This recommendation may change if expected permit conditions are not realized or the cost to connect to the City of Sandpoint's system is substantially lower than estimated.

Table 7-1 - Alternative Ranking Criteria *

Criteria Rank (Weighting factor)

Alternative	Capital Cost	O&M Cost	Ease of Operation	Ability to Expand	Ability to Meet Future Permits	Regulatory Compliance	Public Acceptance	Raw Score	Weighted score	Weighted Rank
2 - 100% Land Application	1.0	1.0	1.0	1.0	1.0	1.0	5.0	**11**	**160**	**5**
3B - Oxidation Ditch	2.5	2.0	2.0	1.0	4.0	4.0	2.0	**17.5**	**310**	**4**
3C - Membrane Bioreactor	2.5	2.0	3.0	4.0	4.0	5.0	4.0	**24.5**	**425**	**3**
4 - Lake Outfall	5.0	2.0	4.0	5.0	5.0	5.0	4.0	**30**	**530**	**1**
5 - Regional System	3.5	4.0	5.0	4.0	5.0	5.0	3.0	**29.5**	**515**	**2**

Definitions:

Criteria Rank: Relative importance of one evaluation criteria versus the others (multiplied by alternative rank to obtain score in parentheses)

Capital Cost: Net present cost to construct the alternative to serve the District

O&M Cost: Annual cost of operating the proposed alternative

Ease of Operation: Complexity of the system and/or demand on operator time

Ability to Expand: How easy and cost-effective the system would be to grow to at least 200 percent of current District build-out

Ability to Meet Future Permits:

Regulatory Compliance: Vulnerability of the system to changes in regulatory requirements

Public Acceptance: How likely would the public (District and general public) be to support the alternative

*** Higher number indicates a more favorable rating**

7.2 WWTP Classification

The major components and the primary unit processes currently in use throughout the District are not expected to change due to the addition of the lake outfall since the function of the lake outfall is simply to replace the Boyer Slough outfall. Since the complexity of the treatment process is not changing, the WWTP Classification is not expected to change.

CHAPTER 8 – FINANCIAL CONSIDERATIONS AND PROJECT PHASING

8.1 WWTP Upgrades, Financial Considerations and Project Phasing

The Lake Outfall preferred alternative has five cost components:

1. Lake Outfall
2. Upgrade existing land application site
3. Rebuilding Storage Lagoon (Line lagoon with HDPE)
4. Rebuilding Treatment Lagoons (Line lagoons with HDPE)
5. Biosolids Management (Remove accumulated biosolids from lagoons when rebuilding the lagoons and 10 years later)

A probable phasing plan is presented in **Table** 8-1

Table 8-1 - Construction Phasing and Budget Costs [a]

	Projected Construction Period			
Project	**2022 to 2025**	**2025 to 2026**	**2026 to 2028**	**2032 to 2036**
Phase I – Lake Outfall	$13,300,000			
Phase II – Land Treatment Improvements		$1,497,000		
Phase III – Rebuild Lagoons and Biosolids Management			$1,578,100	
Phase IV – Biosolids Management				$625,000
TOTALS	$13,300,000	$1,497,000	$1,578,100	$625,000

a. All costs are based on 2020 dollars.

The costs are based on 2020 dollars and include mobilization and bonding, engineering, and construction contingency for comparison purposes. These costs should be adjusted to reflect inflation, prior to obtaining funding for any projects.

A simple financial analysis was performed, assuming the District can borrow money at 2.5%, to estimate the monthly cost per connection for the recommended improvements. The financial impact was calculated assuming an amortized payment over 20 years to pay for the proposed improvement. The calculated monthly financial impact is in addition to the current monthly fee and is constant throughout the 20-year financing plan.

It was also assumed the operational cost of the preferred alternative would not significantly change since the District's overall operation plan is similar (discharge to the Lake rather than Boyer Slough). Therefore, no increase in operation cost was added to the project financial impact.

The worst-case scenario would be if the District did not grow, in which case the district would have to increase the monthly user rate an additional $53 per month (per ERU) over the regularly programed rates to finance the improvements.

However, the District is projected to grow at 2.78% per year which will increase the number of ERUs paying for the improvement and add revenue from connection fees. The District is currently not carrying any debt; therefore, it can be assumed that the connection fees can go toward paying for the improvements. If the current $7,900 connection fee increases at 0.5 percent per year and the District grows at 2.78%, the improvements would necessitate an additional $22 per month. Since the current monthly rate is $49.31, the improvements would increase the monthly fee to $71.31.

8.2 Potential Funding Sources

A number of potential sources are available to fund municipal wastewater system improvements. A review and analysis of the available funding options are presented next.

8.2.1 State Revolving Loan Fund

The Idaho Department of Environmental Quality (IDEQ) administers the State Revolving Loan Fund (SRF) that provides below-market rate interest loans to help repair or build wastewater facilities. The interest rate for current FY2020 loans ranges from 1.5 to 3 percent for 20 years. The interest rate is established annually.

8.2.2 Community Development Block Grant

The Community Development Block Grant (CDBG) program is administered by the Idaho Department of Commerce (IDOC). These grants mainly are designed to fund local housing water, wastewater, and economic development projects for moderate to low income communities. Some areas of the District have a median household income that fits this designation. Therefore, the District possibly can receive a grant from this source. Applications are due in November each year, and recipients are notified the following spring. The maximum amount for a single grant currently is $500,000.

8.2.3 Rural Development

The U.S. Department of Agriculture's Rural Development (RD) Rural Utilities Program administers a water and wastewater loan and grant program for communities of 10,000 residents or less. RD uses a number of factors, such as water rates and percent

of household income in debt service, to determine whether a community is eligible for a grant. A revenue bond ordinance is required, with repayment via utility rates.

8.2.4 USEPA State and Tribal Assistance Grants

This monetary source is administered through the U.S. Environmental Protection Agency's (USEPA) State and Tribal Assistance Grants (STAG) account, appropriated by Congress annually. The STAG account also is the source of the Drinking Water State Revolving Fund (SRF) and Clean Water SRF. STAG grants are "earmarked" by Congressional delegates for designated projects within their Congressional district. The grants are an increasingly sought-after source of funds. Projects funded through STAG vary from multi-million-dollar facilities to small projects. By Congressional directive, the grants can cover only 55 percent of the project cost. The remaining 45 percent must be a matching fund unless USEPA reduces or waives the matching fund requirement. Grants are dispersed based on solicitation of a Congressional delegate on behalf of his district.

8.2.5 Congressional Line Item Appropriation

These funds are earmarked in the federal budget for specific projects. Because they are special appropriations, they have no firm criteria. In general, such funds require a reasonable amount of local match (30 to 60 percent).

8.2.6 Recommendation

It is recommended the District pursue a loan with favorable terms from the State Revolving Loan Fund and investigate grant funding.

APPENDICES

Appendix A National Pollution Discharge Elimination System Permit
Appendix B Land Application Permit
Appendix C Water Balances
Appendix D Opinions of Probable Cost Estimates

APPENDIX A

NPDES Permit

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue Suite 155
Seattle, Washington 98101-3123

Authorization to Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 *et seq.*, as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

Kootenai-Ponderay Sewer District
511 Whiskey Jack Road
Sandpoint, ID 83864

is authorized to discharge from the wastewater treatment plant located near Kootenai, Idaho, at the following location(s):

Outfall	Receiving Water	Latitude	Longitude
001	Unnamed Tributary to Boyer Slough	48° 18' 44.2"	116° 29 45.8"

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective September 1, 2018.

This permit and the authorization to discharge shall expire at midnight August 31, 2023.

The permittee shall reapply for a permit reissuance on or before if the permittee intends to continue operations and discharges at the facility beyond the term of this permit.

Signed this 26th day of June 2018.

Daniel D. Opalski, Director
Office of Water and Watersheds

Schedule of Submissions

The following is a summary of some of the items the permittee must complete and/or submit to EPA during the term of this permit:

Item	Due Date
1. Discharge Monitoring Reports (DMR)	DMRs are due monthly and must be submitted on or before the 20th day of the month following the monitoring month.
2. Quality Assurance Plan (QAP)	The permittee must provide EPA and IDEQ with written notification that the Plan has been developed and implemented by November 30, 2018 (see II.B). The Plan must be kept on site and made available to EPA and IDEQ upon request.
3. Operation and Maintenance (O&M) Plan	The permittee must provide EPA and IDEQ with written notification that the Plan has been developed and implemented by February 28, 2019 (see II.A). The Plan must be kept on site and made available to EPA and IDEQ upon request.
4. NPDES Application Renewal	The application must be submitted by March 4, 2023 (see V.B).
5. Surface Water Monitoring Report	The report must be submitted by March 4, 2023 (see I.C.11).
6. Compliance Schedule	Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date (see III.K).
7. Twenty-Four Hour Notice of Noncompliance Reporting	The permittee must report certain occurrences of noncompliance by telephone within 24 hours from the time the permittee becomes aware of the circumstances. (See I.B.2 and III.G.)
8. Emergency Response and Public Notification Plan	The permittee must develop and implement an overflow emergency response and public notification plan. The permittee must submit written notice to EPA and IDEQ that the plan has been developed and implemented by February 28, 2019 (see II.D).

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Appendix A 32

I. Limitations and Monitoring Requirements

A. Discharge Authorization

During the effective period of this permit, the permittee is authorized to discharge pollutants from the outfalls specified herein to an unnamed tributary to Boyer Slough, within the limits and subject to the conditions set forth herein. This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in the permit application process.

B. Effluent Limitations and Monitoring

1. The permittee must limit and monitor discharges from outfall 001 as specified in Table 1, below. All figures represent maximum effluent limits unless otherwise indicated. The permittee must comply with the effluent limits in the tables at all times unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit.

Table 1: Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	—	—	—	Effluent	continuous	recording
Temperature[5,6]	°C	See notes 5 and 6.			Effluent	continuous	recording
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—	Influent and Effluent	2/month	24-hr. comp.
	lb/day	86	129	—			calculation
	% removal	85% (min.)	—	—	% removal	1/month	
Total Suspended Solids (TSS)	mg/L	30	45	—	Influent and Effluent	2/month	24-hr. comp.
	lb/day	100	150	—			calculation
	% removal	85% (min.)	—	—	% removal	1/month	
pH	s.u.	6.5 – 9.0 at all times			Effluent	5/week	grab
E. Coli Bacteria[1,2]	#/100 ml	126 (geometric mean)	—	406 (instantaneous max.)	Effluent	5/month	grab
Total Residual Chlorine[2,4]	µg/L	7.3	—	18.3	Effluent	5/week	grab
	lb/day	0.024	—	0.061			calculation
Total Ammonia as N[2,3] (October – May)	mg/L	1.77	—	4.63	Effluent	1/week	24-hr. comp.
	lb/day	5.90	—	15.4			calculation
Total Ammonia as N[2,3] (June - September)	mg/L	1.56	—	4.07	Effluent	1/week	24-hr. comp.
	lb/day	5.20	—	13.6			calculation
Nitrate + Nitrite as N[3] (October – May)	mg/L	10.0	20.1	—	Effluent	1/week	24-hr. comp.
	lb/day	33.4	67.1	—			calculation
Phosphorus, Total as P[3,7] (June – September)	µg/L	9.0	18	—	Effluent	1/week	24-hr. comp.
	lb/day	0.030	0.060	—			calculation
Phosphorus, Total as P (October – May)	µg/L	Report	—	Report	Effluent	1/month	24-hr. comp.
Nitrogen, Total as N[3,9] (June – September)	µg/L	200	401	—	Effluent	1/week	24-hr. comp.
	lb/day	0.667	1.34	—			calculation
Total Kjeldahl Nitrogen (October – May)	mg/L	Report	—	Report	Effluent	1/month	24-hr. comp.
Floating, suspended or submerged matter	—	See Part I.B.3.				1/month	Visual observation

Table 1: Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Dissolved Oxygen	mg/L	Report daily minimum			Effluent	1/month	grab
Cadmium, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Chromium, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Chromium VI, Dissolved	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Conductivity	µmhos/cm	Report	—	—	Effluent	1/quarter[8]	grab
Copper, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Cyanide, Weak Acid Dissociable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Dissolved Organic Carbon (DOC)	mg/L	Report	—	—	Effluent	1/quarter[8]	grab
Hardness, total	mg/L as $CaCO_3$	Report	—	—	Effluent	1/quarter[8]	grab
Lead, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Mercury, Total	µg/L	Report	—	—	Effluent	1/quarter[8]	grab
Nickel, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Silver, Total Recoverable	µg/L	Report	—	—	Influent and Effluent	1/quarter[8]	grab
Zinc, Total Recoverable	µg/L	Report	—	—	Effluent	1/quarter[8]	grab
Oil and Grease	mg/L	Report	—	Report	Effluent	2/year	grab
Total Dissolved Solids	mg/L	Report	—	Report	Effluent	2/year	24-hr. comp.

Table 1: Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type

1. The average monthly E. Coli bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3-7 days within a calendar month. See Part V for a definition of geometric mean.
2. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Parts I.B.2. and III.G.
3. These effluent limits and monitoring requirements are subject to a compliance schedule. See I.D.
4. The effluent limits for total residual chlorine are not quantifiable using EPA-approved methods. EPA will use the minimum level (ML), 50 µg/L, as the compliance evaluation level for this parameter. The permittee will be compliant with the total residual chlorine limitations if the average monthly and maximum daily chlorine concentrations are less than 50 µg/L and the average monthly and maximum daily mass discharges of chlorine are less than 0.17 lb/day.
5. Temperature data must be recorded using micro-recording temperature devices known as thermistors. Set the recording device to record at one-hour intervals. Report the following temperature monitoring data on the DMR: monthly instantaneous maximum, maximum daily average, seven-day running average of the daily instantaneous maximum.
6. Use the temperature device manufacturer's software to generate (export) an Excel text or electronic ASCII text file. The file must be submitted annually to the EPA and IDEQ by January 31 for the previous monitoring year along with the placement log. The placement logs should include the following information for both thermistor deployment and retrieval: date, time, temperature device manufacturer ID, location, depth, whether it measured air or water temperature, and any other details that may explain data anomalies. The permittee may submit the file as an electronic attachment to NetDMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_temperature_43599, where YYYY_MM_DD is the date that the permittee submits the file.
7. The average monthly effluent limit for total phosphorus is not quantifiable using EPA-approved methods. EPA will use the minimum level (ML), 10 µg/L, as the compliance evaluation level for this parameter. The permittee will be compliant with the average monthly total phosphorus limitation if the average monthly total phosphorus concentration is less than 10 µg/L and the average monthly mass discharge of total phosphorus is less than 0.033 lb/day.
8. Monitoring for cadmium, chromium, conductivity, copper, cyanide, dissolved organic carbon, hardness, lead, mercury, nickel, silver and zinc is required for the final three full calendar years of the permit cycle. Quarters are defined as: January 1 to March 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31. Results must be reported on the DMR for the last month of the quarter. Effluent samples for conductivity, copper, dissolved organic carbon, hardness, and pH must be collected on the same day.
9. The average monthly effluent limit for total nitrogen is not quantifiable using EPA-approved methods. EPA will use the minimum level (ML), 400 µg/L, as the compliance evaluation level for this parameter. The permittee will be compliant with the average monthly total phosphorus limitation if the average monthly total phosphorus concentration is less than 400 µg/L and the average monthly mass discharge of total nitrogen is less than 1.33 lb/day.

2. The permittee must report within 24 hours any violation of the maximum daily limits or instantaneous maximum limits for the following pollutants: total residual chlorine, total ammonia as N, and E. coli. Violations of all other effluent limits are to be reported at the time that discharge monitoring reports are submitted (see III.B and III.H).

3. Narrative limitations for floating, suspended or submerged matter:

   a) The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

   b) The permittee must observe the surface of the receiving water in the vicinity of where the effluent enters the surface water. The permittee must maintain a written log of the observation which includes the date, time, observer, and whether there is presence of floating, suspended or submerged matter. The log must be retained and made available to EPA or IDEQ upon request.

4. The permittee must collect effluent samples from the effluent stream after the last treatment unit prior to discharge into the receiving waters.

5. For all effluent monitoring, the permittee must use sufficiently sensitive analytical methods which meet the following:

   a) Parameters with an effluent limit. The method must achieve a minimum level (ML) less than the effluent limitation unless otherwise specified in *Table 1 Effluent Limitations and Monitoring Requirements*.

   b) Parameters that do not have effluent limitations.

      (i) The permittee must use a method that detects and quantifies the level of the pollutant, or

      (ii) The permittee must use a method that can achieve a maximum ML less than or equal to those specified in Appendix A.

   c) For parameters that do not have an effluent limit, the permittee may request different MLs. The request must be in writing and must be approved by EPA.

   d) See also Part III.C *Monitoring Procedures*.

6. For purposes of reporting on the DMR for a single sample, if a value is less than the MDL, the permittee must report "less than {numeric value of the MDL}" and if a value is less than the ML, the permittee must report "less than {numeric value of the ML}."

7. For purposes of calculating monthly averages, zero may be assigned for values less than the MDL, and the {numeric value of the MDL} may be assigned for values between the MDL and the ML. If the average value is less than the MDL, the permittee must report "less than {numeric value of the MDL}" and if the average value is less than the ML, the permittee must report "less than {numeric value of the ML}." If a value is equal to or greater than the ML, the permittee must report and use the actual value. The resulting average value must be compared to the compliance level, the ML, in assessing compliance.

C. Surface Water Monitoring

The permittee must conduct surface water monitoring. The program must meet the following requirements:

1. Monitoring stations must be established at the following locations:

   a) Above the influence of the facility's discharge in the unnamed tributary to Boyer Slough that receives the discharge (upstream), and

   b) Downstream from the discharge, in Boyer Slough near Whiskey Jack Road (downstream)

2. Surface water monitoring must occur during the final full calendar year of the permit term.

3. The permittee must seek approval of the surface water monitoring stations from IDEQ.

4. A failure to obtain IDEQ approval of surface water monitoring stations does not relieve the permittee of the surface water monitoring requirements of this permit.
5. To the extent practicable, surface water sample collection must occur on the same day as effluent sample collection.
6. The flow rate must be measured as near as practicable to the time that other ambient parameters are sampled.
7. Samples must be analyzed for the parameters listed in Table 3 and must achieve minimum levels (MLs) that are equivalent to or less than those listed in Table 3. The permittee may request different MLs. The request must be in writing and must be approved by EPA.
8. The permittee must use EPA Method 445.0, 446.0 or 447.0 for analysis of chlorophyll a.
9. Field sampling procedures for periphyton chlorophyll a must be consistent with Section 6.1.1 of *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers* (EPA 841-B-99-002).
10. Quality assurance/quality control plans for all the monitoring must be documented in the Quality Assurance Plan required under Part II.B., "Quality Assurance Plan".
11. Submission of SW Monitoring
    a) Surface water monitoring results must be reported on the monthly DMR.
    b) Surface water monitoring results must also be submitted with the application for renewal of this permit (see Part V.B of this permit, Duty to Reapply) as a spreadsheet- or text-format electronic file. The file shall be in the format of one analytical result per row and include the following information: name and contact information of laboratory, sample identification number, sample location in latitude and longitude (decimal degrees format), or other real-world coordinate system (e.g., State Plane), method of location determination (i.e., GPS, survey etc.), date and time of sample collection, water quality parameter (or characteristic being measured), analysis result, result units, detection limit and definition (i.e., MDL etc.), analytical method, date completed, and any applicable notes.
    c) The permittee may submit the surface water monitoring report as an attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_SWMRP, where YYYY_MM_DD is the date that the permittee submits the report. The surface water monitoring report is due March 4, 2023.

Table 3: Receiving Water Monitoring Requirements

Parameter and Units	Locations	Frequency	Sample Type	Maximum ML
Flow (Unnamed arm of Boyer Slough, CFS)	Upstream	1/month	Measu	—
Dissolved Oxygen (mg/L)	Upstream	1/month	Grab	See Appendix A

why not upstream too?

Dissolved Oxygen (mg/L)	Downstream	Continuous[3]	Recording	
Dissolved Oxygen (% saturation)	Downstream	Continuous[3]	Recording	
Temperature (°C)	Upstream & Downstream	Continuous	Recording	
BOD, 5-day (20°C)	Upstream & Downstream	1/month	Grab	
Total Phosphorus (µg/L)	Downstream	1/month	Grab	
Total Nitrogen (µg/L)	Downstream	1/month	Grab	
Water column chlorophyll a (µg/L)	Downstream	1/month	Grab	1 µg/L
Periphyton chlorophyll a (mg/m^2)	Downstream	1/month	See I.C.9.	—
Secchi depth (m)	Downstream	1/month	Measure	—

1. Temperature data must be recorded using a micro-recording temperature devices known as thermistors. Set the recording device to record at 15-minute intervals. Report the following temperature monitoring data on the DMR: monthly instantaneous maximum, maximum daily average, seven-day running average of the daily instantaneous maximum.
2. Use the temperature device manufacturer's software to generate (export) an Excel text or electronic ASCII text file. The file must be submitted annually to the EPA and IDEQ by January 31 for the previous monitoring year along with the placement log. The placement logs should include the following information for both thermistor deployment and retrieval: date, time, temperature device manufacturer ID, location, depth, whether it measured air or water temperature, and any other details that may explain data anomalies.
3. Dissolved oxygen concentrations must be logged at least once every 15 minutes.

D. Schedules of Compliance

1. The permittee must comply with all effluent limitations and monitoring requirements in Part I.B of this permit immediately upon the effective date of this permit except the effluent limitations for the following parameters:

   a) Total ammonia as N effluent limits.

   b) Nitrate + nitrite effluent limits in effect from October – May.

   c) Total Nitrogen as N effluent limits in effect from June – September.

   d) Total phosphorus as P effluent limits in effect from June – September.

2. While the schedules of compliance specified in Part I.D.1 are in effect, the permittee must comply with interim effluent limitations and monitoring requirements as specified in Table 4, below.

Table 4: Interim Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Units	Effluent limits	Monitoring Requirements		
		Monthly Total[1]	Location	Frequency	Sample Type
Total Nitrogen as N (June)	lb/month	2,091	Effluent	1/week	24-Hr. Comp.
Total Nitrogen as N (July)	lb/month	249	Effluent	1/week	24-Hr. Comp.
Total Nitrogen as N (August)	lb/month	380	Effluent	1/week	24-Hr. Comp.
Total Nitrogen as N (September)	lb/month	482	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (June)	lb/month	468	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (July)	lb/month	56	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (August)	lb/month	85	Effluent	1/week	24-Hr. Comp.
Total Phosphorus as P (September)	lb/month	108	Effluent	1/week	24-Hr. Comp.
Ammonia (Year – round)	mg/L	Report monthly average and daily maximum	Effluent	1/month	24-Hr. Comp.

Table 4: Interim Effluent Limits and Monitoring Requirements for Outfall 001					
Parameter	**Units**	**Effluent limits**	**Monitoring Requirements**		
		Monthly Total[1]	**Location**	**Frequency**	**Sample Type**
Nitrate + Nitrite (October – May)	mg/L	Report monthly average and daily maximum	Effluent	1/month	24-Hr. Comp.
Notes: 1. The monthly total must be calculated as the arithmetic mean of all daily discharges measured during a calendar month multiplied by the number of discharging days during that calendar month.					

3. Interim Requirements for Compliance Schedule Options A and B:

   a) By August 31, 2019, a Progress Report shall be submitted to EPA and DEQ indicating that facility planning is underway and is on schedule to comply with these interim requirements. The Progress Report shall include preliminary investigation of alternatives to meet final effluent limits.

   b) By February 28, 2021, the permittee must notify EPA and DEQ in writing that a preferred compliance schedule option has been selected (Option A or B). If Option B is selected at this time, a facility plan shall be submitted to EPA and DEQ for review and approval that identifies a preferred alternative that will meet final effluent limits along with project phasing, financing strategy and implementation timeline.

4. Interim Requirements for Compliance Schedule Option A

   a) By November 30, 2018, a Lake Study strategy paper shall be submitted to DEQ for review and approval that describes how assimilative capacity of Pend Oreille Lake (Lake Study) in the proximity of the proposed lake outfall will be determined and how water quality would be affected by the placement of the outfall. The Lake Study strategy paper must include one year of flow direction and velocity monitoring in the proposed affected area and two years of water quality monitoring. The Lake Study strategy paper and subsequent Lake Study shall be developed and managed by limnologists experienced in developing and finalizing similar lake studies.

   b) By November 30, 2018, a draft Field Sampling Plan (FSP) shall be submitted to DEQ for review and approval that describes in detail how the monitoring will be executed. The FSP shall also be accompanied by a Quality Assurance Project Plan (QAPP). The QAPP shall be written to the standard required by EPA for projects that involve surface water monitoring and the collection and analysis of water samples. Information can be found here: https://www.epa.gov/quality/quality-assurance-project-plan-development-tool

   c) By February 28, 2019, a final FSP and QAPP shall be submitted to DEQ for review and approval.

   d) By February 29, 2020, one (1) year of monitoring shall be completed per FSP and QAPP. Permittee shall submit to DEQ for review and approval monitoring data, data analysis and interim report, quality assurance report and if necessary, a revised FSP/QAPP.

e) By February 28, 2021, two (2) years of monitoring shall be completed per FSP and QAPP. Permittee shall submit to DEQ for review and approval monitoring data, data analysis and interim report, and quality assurance report.

f) By February 28, 2022, three years of monitoring shall be completed per FSP and QAPP. Permittee shall submit to DEQ for review and approval monitoring data, data analysis and Final Report, and quality assurance report.

g) By February 28, 2023, a Final Facility Plan including project phasing, financing strategy and implementation timeline shall have been approved by DEQ.

h) By February 28, 2024, the permittee shall provide EPA and DEQ with a progress report on funding for their preferred alternative in the form of a notice of bond approval or notice of judicial confirmation.

i) By February 28, 2025, the permittee must provide EPA and DEQ with written notice that design has been completed and approved by DEQ.

j) By August 31, 2025, the permittee must provide EPA and DEQ with a notice that bids for construction have been awarded to achieve final effluent limitations.

k) By August 31, 2026 and August 31, 2027, the permittee must provide EPA and DEQ with brief progress reports of construction as they relate to meeting the compliance schedule timeline and final effluent limits.

l) By August 31, 2028, the permittee must provide EPA and DEQ with written notice that construction has been substantively completed on the facilities to achieve final effluent limitations.

m) By February 28, 2029, the permittee must provide EPA and DEQ with a written report providing details of a completed start up and optimization phase of the new treatment system (if applicable) and must achieve compliance with the final effluent limitations of Part I.B.

5. Interim Requirements for Compliance Schedule Option B:

a) By August 31, 202[redacted] facility plan shall be submitted to EPA and DEQ for review and approval. The facility plan shall identify a preferred alternative that will meet final effluent limits along with project phasing, financing strategy and implementation timeline.

b) By August 31, 2021, the permittee must provide EPA and DEQ with a progress report on funding for the preferred alternative in the form of a notice of bond approval or notice of judicial confirmation.

c) By August 31, 2022, the permittee must provide EPA and DEQ with written notice that design has been completed and approved by DEQ.

d) By August 31, 2023, the permittee must provide EPA and DEQ with a notice that bids for construction have been awarded to achieve final effluent limitations.

e) By August 31, 2024 and August 31, 2025, the permittee must provide EPA and DEQ with brief progress reports of construction as they relate to meeting the compliance schedule timeline and final effluent limits.

where is that foot-note?

f) By August 31, 2026, the permittee must provide EPA and DEQ with written notice that construction has been substantively completed on the facilities to achieve final effluent limitations.

g) By August 31, 2027, the permittee must provide EPA and DEQ with a written report providing details of a completed start up and optimization phase of the new treatment system (if applicable) and must achieve compliance with the final effluent limitations of Part I.B.

6. The interim tasks for the compliance schedule are summarized in Table 5, below:

Table 5. Compliance Schedule Options A and B Timeline and Tasks

Deadline	Lake Study[1] Option A	Other Alternative Option B	Required for both Options A and B
November 30, 2018	Study strategy paper	—	—
November 30, 2018	draft FSP, QAPP	—	—
February 28, 2019	final FSP, QAPP	—	—
August 31, 2019	—	—	Facility planning Progress Report w/ investigation of alternatives
February 29, 2020	-one year data per FSP/QAPP -data analysis and Interim Report -Quality Assurance Report -revised FSP/QAPP if necessary	—	—
August 31, 2020	—	facility plan with preferred alternative OR	—
February 28, 2021	-two years data per FSP/QAPP -data analysis and Interim Report -Quality Assurance Report	facility plan with preferred alternative (if moving from Option A to Option B)	Decision to pursue Option A or B —
August 31, 2021	—	funding approval	—
February 28, 2022	-3 years of data per FSP/QAPP -data analysis and Final Report -Quality Assurance Report	—	—
August 31, 2022	—	completed design	—
February 28, 2023	final facility plan	—	—
August 31, 2023	—	bids awarded	—
February 28, 2024	funding approval	—	—

Table 5: Compliance Schedule Options A and B Timeline and Tasks			
Deadline	**Lake Study[1] Option A**	**Other Alternative Option B**	**Required for both Options A and B**
August 31, 2024	completed design	construction update	—
August 31, 2025	bids awarded	construction update	—
August 31, 2026	construction update	construction completed	—
August 31, 2027	construction update	optimization completed	—
August 31, 2028	construction completed	—	—
February 28, 2029	optimization completed	—	—

II. Special Conditions

A. Operation and Maintenance Plan

In addition to the requirements specified in Section IV.E. of this permit (Proper Operation and Maintenance), by February 28, 2019, the permittee must provide written notice to EPA and IDEQ that an operations and maintenance plan for the current wastewater treatment facility has been developed and implemented by February 28, 2019. The plan shall be retained on site and made available on request to EPA and IDEQ. Any changes occurring in the operation of the plant shall be reflected within the Operation and Maintenance plan. The permittee may submit the written notification as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_O&M_50108, where YYYY_MM_DD is the date that the permittee submits the written notification.

B. Quality Assurance Plan (QAP)

The permittee must develop a quality assurance plan (QAP) for all monitoring required by this permit. The permittee must submit written notice to EPA and IDEQ that the Plan has been developed and implemented November 30, 2018. The permittee may submit written notification as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_QAP_55099, where YYYY_MM_DD is the date that the permittee submits the written notification. Any existing QAPs may be modified for compliance with this section.

1. The QAP must be designed to assist in planning for the collection and analysis of effluent and receiving water samples in support of the permit and in explaining data anomalies when they occur.

2. Throughout all sample collection and analysis activities, the permittee must use the EPA-approved QA/QC and chain-of-custody procedures described in *EPA Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5). The QAP must be prepared in the format that is specified in these documents.

3. Mercury samples must be collected using guidance provided in EPA Method 1669, *Sampling Ambient Water for Determination of Metals at EPA Ambient Criteria Levels* (July 1996).
4. At a minimum, the QAP must include the following:
   a) Details on the number of samples, type of sample containers, preservation of samples, holding times, analytical methods, analytical detection and quantitation limits for each target compound, type and number of quality assurance field samples, precision and accuracy requirements, sample preparation requirements, sample shipping methods, and laboratory data delivery requirements.
   b) Map(s) indicating the location of each sampling point.
   c) Qualification and training of personnel.
   d) Name(s), address(es) and telephone number(s) of the laboratories used by or proposed to be used by the permittee.
5. The permittee must amend the QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP.
6. Copies of the QAP must be kept on site and made available to EPA and/or IDEQ upon request.

C. Industrial Waste Management

1. The Permittee must not authorize the introduction of pollutants that would inhibit, interfere, or otherwise be incompatible with operation of the treatment works including interference with the use or disposal of municipal sludge.
2. The Permittee must not authorize, under any circumstances, the introduction of the following pollutants to the POTW from any source of nondomestic discharge:
   a) Any pollutant which may cause Pass Through or Interference;
   b) Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 60° C (140° F) using the test methods specified in 40 CFR 261.21;
   c) Pollutants which will cause corrosive structural damage to the POTW, but in no case indirect discharges with a pH of lower than 5.0 s.u., unless the treatment facilities are specifically designed to accommodate such indirect discharges;
   d) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, or other interference with the operation of the POTW;
   e) Any pollutant, including oxygen demanding pollutants (e.g., BOD_5), released in an indirect discharge at a flow rate and/or pollutant concentration which will cause Interference with any treatment process at the POTW;
   f) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at

the POTW treatment plant exceeds 40° C (104° F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits;

g) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause Interference or Pass Through at the POTW;

h) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

i) Any trucked or hauled pollutants, except at discharge points designated by the POTW

j) Any specific pollutant which exceeds a local limitation established by the Permittee in accordance with the requirements of 40 CFR 403.5(c) and (d).

3. The Permittee must develop and maintain a master list of the industrial users introducing pollutants to the POTW. Industrial user means any source of indirect discharge from a non-domestic source. This list must identify:

   a) Names and addresses of all industrial users;

   b) Which industrial users are significant industrial users (SIUs) (see Paragraph 5 of this Part);

   c) Which SIUs are subject to categorical Pretreatment Standards (see 40 CFR 405-471);

   d) Which standards are applicable to each industrial user (if any);

   e) Which industrial users are subject to local standards that are more stringent than the categorical Pretreatment Standards; and

   f) Which industrial users are subject only to local requirements.

4. The Permittee must submit this list, along with a summary description of the sources and information gathering methods used to develop this list, to EPA within two years following the effective date of the NPDES permit. The permittee may submit the list as an electronic attachment to NetDMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_Industrial User_12099, where YYYY_MM_DD is the date that the permittee submits the written notification.

5. For the purposes of this list development, the term SIU means:

   a) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and

   b) Any other industrial user that:

      (i) discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater);

(ii) contributes a process waste stream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(iii) is designated as such by EPA or the Permittee on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violation any Pretreatment Standard or requirement in accordance with 40 CFR 403.8(f)(6).

6. The Permittee must have or develop a legally enforceable municipal code to authorize or enable the POTW to apply and enforce the requirements of sections 307 (b) and (c) and 402(b)(8) and (9) of the Act and comply with the minimum requirements of 40 CFR 403.8(f)(1). Within three years of the effective date of the permit, the Permittee must adopt, implement, and enforce the local pretreatment legal authority.

7. The Permittee must submit the municipal code to the Director, Office of Compliance and Enforcement, with a copy to the NPDES Pretreatment Coordinator, at the following addresses:

US EPA Region 10
Attn: ICIS Data Entry Team
1200 Sixth Avenue, Suite 155
OCE-101
Seattle, Washington 98101-3123

Pretreatment Coordinator
U.S. Environmental Protection Agency
Region 10, OWW-191
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3123

D. Emergency Response and Public Notification Plan

1. The permittee must develop and implement an overflow emergency response and public notification plan that identifies measures to protect public health from overflows that may endanger health and unanticipated bypasses or upsets that exceed any effluent limitation in the permit. At a minimum the plan must include mechanisms to:

a) Ensure that the permittee is aware (to the greatest extent possible) of all overflows from portions of the collection system over which the permittee has ownership or operational control and unanticipated bypass or upset that exceed any effluent limitation in the permit;

b) Ensure appropriate responses including assurance that reports of an overflow or of an unanticipated bypass or upset that exceed any effluent limitation in the permit are immediately dispatched to appropriate personnel for investigation and response;

c) Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;

d) Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained; and

e) Provide emergency operations.

2. The permittee must submit written notice to EPA and IDEQ that the plan has been developed and implemented by February 28, 2019. Any existing emergency response and public notification plan may be modified for compliance with this section.

3. The permittee may submit the written notification as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_ERPNP, where YYYY_MM_DD is the date that the permittee submits the written notification.

E. Pollutant Trading

1. The permit does not authorize pollutant trading. Trading provisions must be incorporated into a NPDES permit prior to engaging in any trading activity to meet the NPDES permit limits. The permittee may request the EPA to modify the permit to incorporate trading if:

a) The permittee submits a trading plan to IDEQ, and IDEQ approves the trading plan. The trading plan must provide detail (or incorporate detail from an approved watershed trading framework) on how trades shall be conducted.

b) After IDEQ approves the trading plan, the permittee must submit a request for permit modification to the EPA. If the EPA determines that modification is warranted, the EPA will incorporate the details of the plan into the permit through a permit modification process. The permit modification request must be submitted to the EPA and IDEQ.

III. Monitoring, Recording and Reporting Requirements

A. Representative Sampling (Routine and Non-Routine Discharges)

Samples and measurements must be representative of the volume and nature of the monitored discharge.

In order to ensure that the effluent limits set forth in this permit are not violated at times other than when routine samples are taken, the permittee must collect additional samples at the appropriate outfall whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample. The permittee must analyze the additional samples for those parameters limited in Part I.B. of this permit that are likely to be affected by the discharge.

The permittee must collect such additional samples as soon as the spill, discharge, or bypassed effluent reaches the outfall. The samples must be analyzed in accordance with paragraph III.C ("Monitoring Procedures"). The permittee must report all additional monitoring in accordance with paragraph III.D ("Additional Monitoring by Permittee").

B. Reporting of Monitoring Results

The permittee must submit monitoring data and other reports electronically using NetDMR.

1. Monitoring data must be submitted electronically to EPA no later than the 20th of the month following the completed reporting period.
2. The permittee must sign and certify all DMRs, and all other reports, in accordance with the requirements of Part V.E of this permit, *Signatory Requirements*.
3. The permittee must submit copies of the DMRs and other reports to IDEQ.
4. Submittal of Reports as NetDMR Attachments. Unless otherwise specified in this permit, the permittee may submit all reports to EPA and IDEQ as NetDMR attachments rather than as hard copies. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ID0021229_Report Type Name_Identifying Code, where YYYY_MM_DD is the date that the permittee submits the attachment.
5. The permittee may use NetDMR after requesting and receiving permission from US EPA Region 10. NetDMR is accessed from: https://netdmr.epa.gov

C. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR 136, unless another method is required under 40 CFR subchapters N or O, or other test procedures have been specified in this permit or approved by EPA as an alternate test procedure under 40 CFR 136.5.

D. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the permittee must include the results of this monitoring in the calculation and reporting of the data submitted in the DMR.

Upon request by EPA, the permittee must submit results of any other sampling, regardless of the test method used.

E. Records Contents

Records of monitoring information must include:

1. the date, exact place, and time of sampling or measurements;
2. the name(s) of the individual(s) who performed the sampling or measurements;

3. the date(s) analyses were performed;
4. the names of the individual(s) who performed the analyses;
5. the analytical techniques or methods used; and
6. the results of such analyses.

F. Retention of Records

The permittee must retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of DMRs, a copy of the NPDES permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of EPA or IDEQ at any time.

G. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee must report the following occurrences of noncompliance by telephone within 24 hours from the time the permittee becomes aware of the circumstances:
   a) any noncompliance that may endanger health or the environment;
   b) any unanticipated bypass that exceeds any effluent limitation in the permit (See Part IV.F., "Bypass of Treatment Facilities");
   c) any upset that exceeds any effluent limitation in the permit (See Part IV.G., "Upset Conditions"); or
   d) any violation of a maximum daily discharge limitation for applicable pollutants identified by Part I.B.2.
   e) any overflow prior to the treatment works over which the permittee has ownership or has operational control. An overflow is any spill, release or diversion of municipal sewage including:
      (i) an overflow that results in a discharge to waters of the United States; and
      (ii) an overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral) that does not reach waters of the United States.
2. The permittee must also provide a written submission within five days of the time that the permittee becomes aware of any event required to be reported under subpart 1 above. The written submission must contain:
   a) a description of the noncompliance and its cause;
   b) the period of noncompliance, including exact dates and times;

c) the estimated time noncompliance is expected to continue if it has not been corrected; and

d) steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

e) if the noncompliance involves an overflow, the written submission must contain:

(i) The location of the overflow;

(ii) The receiving water (if there is one);

(iii) An estimate of the volume of the overflow;

(iv) A description of the sewer system component from which the release occurred (e.g., manhole, constructed overflow pipe, crack in pipe);

(v) The estimated date and time when the overflow began and stopped or will be stopped;

(vi) The cause or suspected cause of the overflow;

(vii) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;

(viii) An estimate of the number of persons who came into contact with wastewater from the overflow; and

(ix) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps.

3. The Director of the Office of Compliance and Enforcement may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the NPDES Compliance Hotline in Seattle, Washington, by telephone, (206) 553-1846.

4. Reports must be submitted to the addresses in Part III.B ("Reporting of Monitoring Results").

H. Other Noncompliance Reporting

The permittee must report all instances of noncompliance, not required to be reported within 24 hours, at the time that monitoring reports for Part III.B ("Reporting of Monitoring Results") are submitted. The reports must contain the information listed in Part III.G.2 of this permit ("Twenty-four Hour Notice of Noncompliance Reporting").

I. Public Notification

The permittee must immediately notify the public, health agencies and other affected entities (e.g., public water systems) of any overflow which the permittee owns or has operational control; or any unanticipated bypass or upset that exceeds any effluent limitation in the permit in accordance with the notification procedures developed in accordance with Part II.G.

J. Notice of New Introduction of Toxic Pollutants

The permittee must notify the Director of the Office of Water and Watersheds and IDEQ in writing of:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to Sections 301 or 306 of the Act if it were directly discharging those pollutants; and
2. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For the purposes of this section, adequate notice must include information on:
   a) The quality and quantity of effluent to be introduced into the POTW, and
   b) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
4. The permittee must notify the Director of the Office of Water and Watersheds at the following address:

   US EPA Region 10
   Attn: NPDES Permits Unit Manager
   1200 6th Avenue
   Suite 155 OWW-191
   Seattle, WA 98101-3123

K. Compliance Schedules

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

IV. Compliance Responsibilities

A. Duty to Comply

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

B. Penalties for Violations of Permit Conditions

1. Civil and Administrative Penalties. Pursuant to 40 CFR Part 19 and the Act, any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461

note) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701 note) (currently $52,414 per day for each violation).

2. Administrative Penalties. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Pursuant to 40 CFR 19 and the Act, administrative penalties for Class I violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701 note) (currently $20,965 per violation, with the maximum amount of any Class I penalty assessed not to exceed $52,414). Pursuant to 40 CFR 19 and the Act, penalties for Class II violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701 note) (currently $20,965 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $262,066).

3. Criminal Penalties:

   a) Negligent Violations. The Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

   b) Knowing Violations. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

   c) Knowing Endangerment. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to

a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

d) False Statements. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

C. Need To Halt or Reduce Activity not a Defense

It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this permit.

D. Duty to Mitigate

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

E. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for

essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this Part.

2. Notice.

   a) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it must submit prior written notice, if possible at least 10 days before the date of the bypass.

   b) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required under Part III.G ("Twenty-four Hour Notice of Noncompliance Reporting").

3. Prohibition of bypass.

   a) Bypass is prohibited, and the Director of the Office of Compliance and Enforcement may take enforcement action against the permittee for a bypass, unless:

      (i) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

      (iii) The permittee submitted notices as required under paragraph 2 of this Part.

   b) The Director of the Office of Compliance and Enforcement may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 3.a. of this Part.

G. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee meets the requirements of paragraph 2 of this Part. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. To establish the affirmative defense of upset, the permittee must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a) An upset occurred and that the permittee can identify the cause(s) of the upset;

   b) The permitted facility was at the time being properly operated;

c) The permittee submitted notice of the upset as required under Part III.G, "Twenty-four Hour Notice of Noncompliance Reporting;" and

d) The permittee complied with any remedial measures required under Part IV.D, "Duty to Mitigate."

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

H. Toxic Pollutants

The permittee must comply with effluent standards or prohibitions established under Section 307(a) and with standards for sewage sludge use or disposal established under section 405(d) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

I. Planned Changes

The permittee must give written notice to the Director of the Office of Water and Watersheds as specified in part III.J.4. and IDEQ as soon as possible of any planned physical alterations or additions to the permitted facility whenever:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this permit.
3. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application site.

J. Anticipated Noncompliance

The permittee must give written advance notice to the Director of the Office of Compliance and Enforcement and IDEQ of any planned changes in the permitted facility or activity that may result in noncompliance with this permit.

K. Reopener

This permit may be reopened to include any applicable standard for sewage sludge use or disposal promulgated under section 405(d) of the Act. The Director may modify or revoke and reissue the permit if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or controls a pollutant or practice not limited in the permit.

V. General Provisions

A. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR 122.62, 122.64, or 124.5. The filing of a request by the permittee for a permit modification, revocation and reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B. Duty to Reapply

If the permittee intends to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. In accordance with 40 CFR 122.21(d), and unless permission for the application to be submitted at a later date has been granted by the Regional Administrator, the permittee must submit a new application by March 4, 2023.

C. Duty to Provide Information

The permittee must furnish to EPA and IDEQ, within the time specified in the request, any information that EPA or IDEQ may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee must also furnish to EPA or IDEQ, upon request, copies of records required to be kept by this permit.

D. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or that it submitted incorrect information in a permit application or any report to EPA or IDEQ, it must promptly submit the omitted facts or corrected information in writing.

E. Signatory Requirements

All applications, reports or information submitted to EPA and IDEQ must be signed and certified as follows.

1. All permit applications must be signed as follows:
    a) For a corporation: by a responsible corporate officer.
    b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
    c) For a municipality, state, federal, Indian tribe, or other public agency: by either a principal executive officer or ranking elected official.
2. All reports required by the permit and other information requested by EPA or IDEQ must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    a) The authorization is made in writing by a person described above;

b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; and

c) The written authorization is submitted to the Director of the Office of Compliance and Enforcement and IDEQ.

3. Changes to authorization. If an authorization under Part V.E.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part V.E.2. must be submitted to the Director of the Office of Compliance and Enforcement and IDEQ prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this Part must make the following certification:

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

F. Availability of Reports

In accordance with 40 CFR 2, information submitted to EPA pursuant to this permit may be claimed as confidential by the permittee. In accordance with the Act, permit applications, permits and effluent data are not considered confidential. Any confidentiality claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice to the permittee. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR 2, Subpart B (Public Information) and 41 Fed. Reg. 36902 through 36924 (September 1, 1976), as amended.

G. Inspection and Entry

The permittee must allow the Director of the Office of Compliance and Enforcement, EPA Region 10; IDEQ; or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

H. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, nor any infringement of federal, tribal, state or local laws or regulations.

I. Transfers

This permit is not transferable to any person except after written notice to the Director of the Office of Water and Watersheds as specified in part III.J.4. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act. (See 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory).

J. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

VI. Definitions

1. “Act” means the Clean Water Act.
2. “Administrator” means the Administrator of the EPA, or an authorized representative.
3. “Average monthly discharge limitation” means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.
4. “Average weekly discharge limitation” means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily

discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

5. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
6. "Composite" - see "24-hour composite".
7. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.
8. "Director of the Office of Compliance and Enforcement" means the Director of the Office of Compliance and Enforcement, EPA Region 10, or an authorized representative.
9. "Director of the Office of Water and Watersheds" means the Director of the Office of Water and Watersheds, EPA Region 10, or an authorized representative.
10. "DMR" means discharge monitoring report.
11. "EPA" means the United States Environmental Protection Agency.
12. "Geometric Mean" means the n^{th} root of a product of n factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.
13. "Grab" sample is an individual sample collected over a period of time not exceeding 15 minutes.
14. "IDEQ" means the Idaho Department of Environmental Quality.
15. "Indirect Discharge" means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.
16. "Industrial User" means a source of "Indirect Discharge."
17. "Interference" is defined in 40 CFR 403.3.
18. "Maximum daily discharge limitation" means the highest allowable "daily discharge."
19. "Method Detection Limit (MDL)" means the minimum concentration of a substance (analyte) that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.
20. "Minimum Level (ML)" means either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), 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 MDL in a method, or the MDL 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."

21. "NPDES" means National Pollutant Discharge Elimination System, the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits . . . under sections 307, 402, 318, and 405 of the CWA.
22. "Pass Through" means a Discharge which exits the POTW into waters of the United States 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).
23. "QA/QC" means quality assurance/quality control.
24. "Regional Administrator" means the Regional Administrator of Region 10 of the EPA, or the authorized representative of the Regional Administrator.
25. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
26. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
27. "24-hour composite" sample means a combination of at least 8 discrete sample aliquots of at least 100 milliliters, collected over periodic intervals from the same location, during the operating hours of a facility over a 24 hour period. The composite must be flow proportional. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.

Appendix A
Minimum Levels

The Table below lists the maximum Minimum Level (ML) for pollutants not subject to concentration effluent limits in the permit. The permittee may request different MLs. The request must be in writing and must be approved by EPA. If the Permittee is unable to obtain the required ML in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL) and a ML to EPA with appropriate laboratory documentation.

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
Ammonia, total (as N)	50
Biochemical oxygen demand	2 mg/L
Cadmium, total recoverable (7440-43-9)	0.1
Chlorine, total residual	50.0
Chromium, total (7440-47-3)	1.0
Chromium VI, dissolved (18540-29-9)	1.2
Copper, total recoverable (7440-50-8)	2.0
Cyanide, weak acid dissociable	10
Dissolved oxygen	+/- 0.2 mg/L
Mercury, total (7439-97-6)	0.0005
Nickel, total recoverable (7440-02-0)	0.5
Nitrate + nitrite nitrogen (as N)	100
Nitrogen, total Kjeldahl (as N)	300
Oil and Grease (HEM) (hexane extractable material)	5,000
pH	N/A
Phosphorus, soluble reactive (as P)	10
Phosphorus, total (as P)	10
Silver, total recoverable (7440-22-4)	0.2
Temperature	+/- 0.2º C
Total dissolved solids	20 mg/L
Total suspended solids	5 mg/L
Zinc, total recoverable (7440-66-6)	2.5

United States
Environmental Protection
Agency
1200 6th Avenue
Suite 900 M/S OWW-191
Seattle, WA 98101

Revised Fact Sheet

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

Kootenai-Ponderay Sewer District
Wastewater Treatment Plant

Public Comment Start Date: January 25, 2018
Public Comment Expiration Date: February 25, 2018

Technical Contact: Brian Nickel
206-553-6251
800-424-4372, ext. 6251 (within Alaska, Idaho, Oregon and Washington)
Nickel.Brian@epa.gov

The EPA Proposes to Reissue NPDES Permit
The EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

State Certification
The EPA is requesting that the Idaho Department of Environmental Quality (DEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
(208) 769-1422

Public Comment
Pursuant to 40 CFR 124.14(c), at this time, the EPA is only accepting comments on aspects of the draft permit that are different from those in the draft permit that was issued for public comment on June 9, 2017. These are as follows:

- Effluent limits for total residual chlorine have been changed.
- Effluent limits for total ammonia as N have been changed.
- Effluent limits for nitrate + nitrite have been changed, and, from June – September, effluent limits for nitrate + nitrite have been replaced by newly proposed effluent limits for total nitrogen.
- Effluent monitoring requirements for phosphorus and nitrogen compounds have been changed.
- A compliance schedule is proposed for the new water quality-based effluent limits for total nitrogen.
- Minor changes have been made to the surface water monitoring and reporting requirements.

Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permit, Fact Sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-191
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The Fact Sheet and draft permit are also available at:

Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
(208) 769-1422

EPA Idaho Operations Office
950 W Bannock, Suite 900
Boise, ID 83702
(208) 378-5746

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q5	30 day, 5 year low flow
AML	Average Monthly Limit
AWL	Average Weekly Limit
BA	Biological Assessment
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DEQ	Department of Environmental Quality
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FR	Federal Register
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day

LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
P	Phosphorus
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards

WWTP Wastewater treatment plant

I. Applicant

A. General Information

This Fact Sheet provides information on the draft NPDES permit for the following entity:

Kootenai-Ponderay Sewer District (KPSD)
Wastewater Treatment Plant (WWTP)
NPDES Permit # ID0021229

Physical Address:
511 Whiskey Jack Road
Sandpoint, ID 83864

Mailing Address:
P.O. Box 562
Kootenai, ID 83840

Contact:
Tanner Weisgram, Operations Manager

II. Scope of Reopened Public Comment Period

Federal regulations state that comments filed during a reopened comment period shall be limited to the substantial new questions that caused its reopening, and that the public notice under 40 CFR 124.10 shall define the scope of the reopening (40 CFR 124.14). As stated in the public notice, the EPA is only accepting comments on permit conditions that are different from those proposed in the draft permit that was issued for public review and comment on June 9, 2017.

The EPA is making significant changes to the draft permit as it was proposed in June 2017. These changes result from comments made during the initial public comment period, Idaho's 2014 Integrated Report, and a revised draft Clean Water Act (CWA) Section 401 certification prepared by the Idaho Department of Environmental Quality (DEQ). To allow the public an opportunity to comment on all of these changes, the EPA has decided to reopen the public comment period to accept comments on these specific changes. The changed conditions are as follows:

- Effluent limits for total residual chlorine have been changed.
- Effluent limits for total ammonia as N have been changed.
- Effluent limits for nitrate + nitrite have been changed, and from June – September, effluent limits for nitrate + nitrite have been replaced by newly proposed effluent limits for total nitrogen (TN).
- Effluent monitoring requirements for phosphorus and nitrogen compounds have been changed.
- A compliance schedule is proposed for the new water quality-based effluent limits for TN.

- Minor changes have been made to the surface water monitoring and reporting requirements.

III. Facility Information

Facility information is provided in the Fact Sheet for the initial public comment period dated June 9, 2017.

IV. Receiving Water

In general, the receiving water is described in the Fact Sheet dated June 9, 2017. Revised information about low flow conditions and beneficial use support status is provided below.

A. Low Flow Conditions

The low flow conditions of a water body are used to assess the need for and develop water quality based effluent limits (see Appendix B of this Fact Sheet for additional information on flows).

In the June 2017 Fact Sheet, the EPA used ambient flow data measured by the permittee, as a condition of the prior permit (see the 2002 permit at Page 5), to estimate the critical low flow conditions for the unnamed tributary to Boyer Slough, upstream from the point of discharge.

The EPA received a comment on the June 2017 draft permit stating that the EPA should not have used these flow data to estimate the critical low flow rates of the unnamed tributary to Boyer Slough, because the 2002 permit stated that the receiving water monitoring stations shall be "on the Boyer Slough," as opposed to the unnamed tributary.

However, the receiving water monitoring stations were, in fact, in the unnamed tributary to Boyer Slough which receives the discharge, immediately upstream and downstream of the discharge pipe (personal communication with Brett Converse, J.U.B. Engineers, September 22, 2017 and September 25, 2017). Thus, it is appropriate to use the flow data collected by the permittee to estimate the critical low flows of the unnamed tributary to Boyer Slough that receives the discharge.

In addition, after the public comment period, the EPA discovered that, on September 19, 2001, Idaho DEQ measured a flow rate of 0.02 CFS in the unnamed tributary to Boyer Slough.[1] Idaho DEQ also measured a flow rate of 1.6 CFS in the unnamed tributary to Boyer Slough on February 14, 2017 (personal communication with June Bergquist, Idaho DEQ, January 3, 2017). The EPA included these additional measurements in the revised estimation of critical low flows for the unnamed tributary to Boyer Slough. Since the flow rate measured by Idaho DEQ in 2001 was substantially lower than the flow rates measured by the permittee, the inclusion of this additional flow measurement resulted in lower estimated flow rates for the unnamed tributary to Boyer Slough. The revised estimated 1Q10, 7Q10, 30Q5, and harmonic mean flows of the unnamed tributary to Boyer Slough, upstream from the point of discharge, are 0.020, 0.034, 0.037, and 0.15 CFS, respectively.

[1] https://www2.deq.idaho.gov/water/BurpViewer/BurpSite/Flow?BurpID=2001SCDAA047

B. Water Quality Limited Waters

This facility discharges to an unnamed tributary to Boyer Slough. The June 2017 Fact Sheet had referenced Idaho's 2012 Integrated Report to describe the beneficial use support status of Boyer Slough, which was the most recent EPA-approved integrated report when the June 2017 Fact Sheet was being developed. Idaho's 2012 Integrated Report listed the aquatic life uses of Boyer Slough as impaired due to unknown causes, based on a benthic macroinvertebrate bioassessment.

On June 5, 2017, four days prior to the opening of the public comment period on the prior draft permit, the EPA approved Idaho's 2014 Integrated Report. In the 2014 Integrated Report, the cold water aquatic life, primary contact recreation, and salmonid spawning uses of Boyer Slough are listed as impaired due to TN and total phosphorus (TP). The major difference between the 2012 and 2014 Integrated Reports is that the 2014 Integrated Report identified TN and TP to be the causes of the beneficial use impairments, whereas the 2012 Integrated Report did not identify the cause of the impairment. Specifically, the 2014 Integrated Report states that, "nonpoint sources of the total phosphorus and total nitrogen are runoff from a subdivision adjacent to Boyer Slough and from agriculture and ranchettes on tributaries to Boyer Slough. Point source nitrogen and phosphorus pollution is from the Kootenai-Ponderay Wastewater Treatment Plant."

The 2014 Integrated Report also lists the aquatic life and recreation uses of Lake Pend Oreille, downstream from the discharge, as impaired due to concentrations of methylmercury in fish tissue that exceed Idaho's fish tissue criterion of 0.3 mg/kg.

No TMDLs have been completed by the State of Idaho to address these impairments, and none of the effluent limitations proposed in the draft permit are based on TMDL wasteload allocations.

In 2002, Idaho DEQ prepared and EPA approved a nutrient TMDL for the nearshore waters of Lake Pend Oreille, downstream from the discharge (Nearshore TMDL). In its comments on the June 2017 draft permit, KPSD stated that "some portion of the District's phosphorus load was accounted for and accepted in the Nearshore TMDL as background." This statement is contradicted by the *Nutrient TMDL for the Nearshore Waters of Lake Pend Oreille, Idaho: TMDL Five-Year Review* (IDEQ 2015), which states, on Page x, that:

> *The TMDL was written to represent average loading limits for the entire nearshore area of the lake, with loading based solely on runoff from nearshore land and septic seepage through ground water immediately adjacent to the lake. Stormwater likely was incorporated as a general nonpoint source. However, the loading calculations did not take into account other loading sources to the lake, including the following:*
>
> - *The Clark Fork River*
> - *The Pack River*
> - *Other tributaries to the lake*
> - *Specific stormwater from the towns of Kootenai, Ponderay, Hope, and Bayview*
>
> *The loads from the above sources are significant, particularly in the spring during runoff, when the highest loading of nutrients has been observed.*

Thus, the Nearshore TMDL did not account for loading of phosphorus to Lake Pend Oreille from KPSD's discharge or from Boyer Slough as a whole.

C. Antidegradation

The Idaho DEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix E for the State's draft 401 water quality certification. The EPA has reviewed this antidegradation review and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification, including the antidegradation review, can be submitted to the Idaho DEQ as set forth above (see State Certification).

V. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

B. Proposed Effluent Limitations

The following summarizes the proposed effluent limits that are in the draft permit. Effluent limits printed in bold, italic type are different from the limits in the June 2017 draft permit. The EPA is specifically requesting comments on these revised proposed limits. The basis for the revised effluent limits proposed in the draft permit is provided in Appendices D and E.

1. The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.
2. Removal Requirements for BOD_5 and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.

Table 2, below, presents the proposed effluent limits for the KPSD.

Table 2: Proposed Final Effluent Limits				
Parameter	**Units**	**Effluent Limits**		
		Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—
	lb/day	86	129	—
	% removal	85% (min.)	—	—
Total Suspended Solids (TSS)	mg/L	30	45	—
	lb/day	100	150	—
	% removal	85% (min.)	—	—
E. coli	#/100 ml	126 (geometric mean)	—	406 (instantaneous maximum)
Total Residual Chlorine	***µg/L***	***7.3***	—	***18.3***
	lb/day	***0.024***	—	***0.061***
Nitrate + Nitrite (as N)	***mg/L***	***10.0***	***20.1***	—
(October – May)	***lb/day***	***33.4***	***67.1***	—
Total Ammonia (as N)	***mg/L***	***1.77***	—	***4.63***
(October – May)	***lb/day***	***5.90***	—	***15.4***
Total Ammonia (as N)	***mg/L***	***1.56***	—	***4.07***
(June – September)	***lb/day***	***5.20***	—	***13.6***
Total Nitrogen (as N)	***µg/L***	***200***	***401***	—
(June – September)	***lb/day***	***0.667***	***1.34***	—
Total Phosphorus (as P)	µg/L	9.0	18.0	—
(June – September)	lb/day	0.030	0.060	—

C. Schedules of Compliance and Interim Limits

Schedules of compliance are authorized by federal NPDES regulations at 40 CFR 122.47 and by Section 400.03 of the Idaho Water Quality Standards. The Idaho water quality standards allow for compliance schedules "when new limitations are in the permit for the first time." The proposed effluent limits for ammonia, nitrate + nitrite, TN, and TP are new limits that are in the permit for the first time.

The federal regulation allows schedules of compliance "when appropriate," and requires that such schedules require compliance as soon as possible. When the compliance schedule is longer than 1 year, federal regulations require that the schedule shall set forth interim requirements and the dates for their achievement. The time between the interim dates shall generally not exceed 1 year, and when the time necessary to complete any interim requirement is more than one year, the schedule shall require reports on progress toward completion of these interim requirements. Federal regulations also require that interim effluent limits be at least as stringent as the final limits in the previous permit (40 CFR 122.44(l)(1)).

EPA policy states that, in order to grant a compliance schedule, a permitting authority must make a reasonable finding that the permittee cannot comply with the effluent limit immediately upon the effective date of the final permit (see the *US EPA NPDES Permit Writers' Manual* at Section 9.1.3).

The EPA received a comment on the June 2017 draft permit requesting that EPA explain the basis for its determination that the KPSD cannot comply with certain effluent limits proposed

in the June 2017 draft permit and to explain whether EPA considered KPSD's capacity to reuse water through land application when making that determination.

The EPA has determined that the KPSD cannot comply with the new water quality-based effluent limits for ammonia, nitrate + nitrite, TN and TP immediately upon the effective date of the final permit based on the following factors:

- Historical effluent concentrations and loads of ammonia, nitrate + nitrite, TN, and TP exceed the proposed effluent limits for those parameters.
- The KPSD WWTP is not designed to remove nitrogen or phosphorus.
- Although KPSD can use their storage and re-use capacity to reduce their surface water discharges of phosphorus and nitrogen during the growing season, KPSD's current storage and land application capacity is not adequate to allow them to eliminate their discharge to surface water (and thereby comply with new water quality-based effluent limits) under critical conditions.

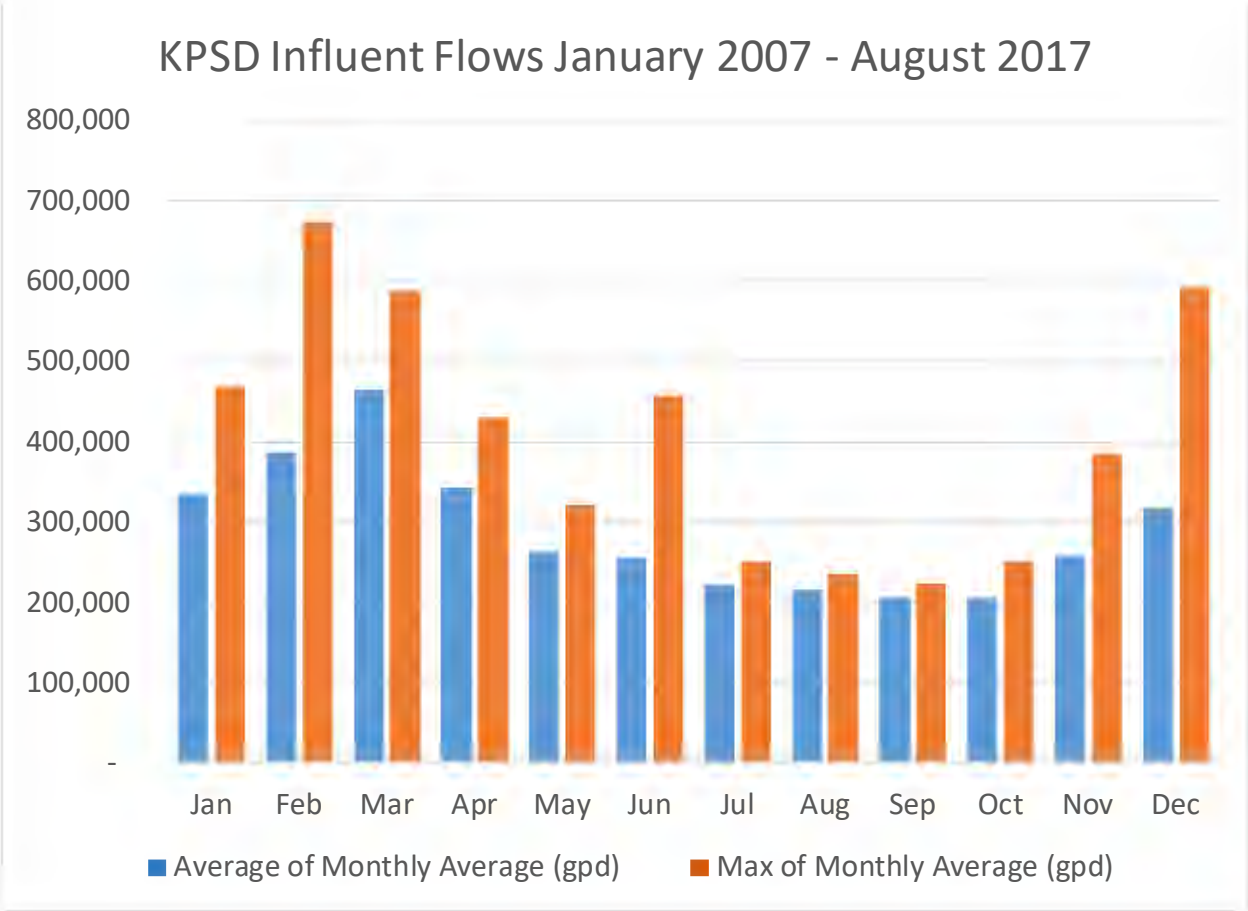
Therefore, the draft permit proposes a schedule of compliance for the new ammonia, nitrate + nitrite, TN and TP effluent limits.

The commenter also stated that many KPSD customers are not year-round residents and that, consequently, KPSD's wastewater flows are low except during the summer months and during November and December. The commenter stated that this variation in wastewater flow could allow KPSD to comply with the new effluent limits in the draft permit through storage and growing season re-use.

The EPA requested and obtained influent flow data from KPSD. The EPA analyzed these data and found that influent flows are relatively low during the summer months and relatively high during the winter and early spring (see Figure 1, below). Thus, even though some KPSD customers may not be year-round residents, this has not resulted in low wastewater flows except during the summer and November and December.

Although the EPA found that KPSD's storage and re-use capacity were not adequate to allow them to comply with new water quality based effluent limits for phosphorus and nitrogen, KPSD's storage and re-use capacity were important factors in the derivation of interim effluent limits for TN (which includes nitrate + nitrite and ammonia) and TP, as described below.

Figure 1: KPSD Influent Flows January 2007 – August 2017



The interim limits are expressed as monthly total loads (in pounds per month) and are equal to the loadings of TP and TN that the facility would discharge each month from June – September under the following circumstances:

- The influent flow rate is equal to the maximum monthly average influent flow rate observed for a given month between January 2007 and August 2017 (see Figure 1).
- The permittee diverts 3.38 million gallons, which is 25% of their total active storage volume of 13.5 million gallons (personal communication with Brett Converse, JUB Engineers, October 4, 2013), to storage each month from June – September. This will result in the entire 13.5 million gallon storage capacity being used over this four-month period. This reduces the average effluent flow rate by 0.113 mgd each month from June – September.
- The permittee irrigates 17.5 acres with effluent from June – September. Although KPSD is authorized to irrigate 36.5 acres under their current permit, they currently only have the equipment necessary to irrigate 17.5 acres. Irrigation demand was based on a 1-in-5-year (20%) exceedance probability (i.e., one year out of every 5, on average, there would be less irrigation demand than assumed).
- The effluent concentrations of phosphorus and nitrogen are equal to the 95th percentile concentrations observed between January 2012 and August 2017.

- Other than storage and re-use, the KPSD facility does not have any treatment processes that remove significant amounts of nitrogen or phosphorus.

Based upon the above information, Idaho DEQ included the proposed interim limits for TN and TP for June – September in the draft Clean Water Act Section 401 certification. The interim limits are shown in Table 3, below.

Table 3: Interim Effluent Limits

Month	Interim Total Nitrogen Limit (lb/month)	Interim Total Phosphorus Limit (lb/month)
June	2,091	468
July	249	56
August	380	85
September	482	108

The EPA has also clarified how the monthly total loadings of TN and TP are to be calculated. The permit now states, in note #1 to Table 4, "The monthly total must be calculated as the arithmetic mean of all daily discharges measured during a calendar month multiplied by the number of discharging days during that calendar month." For example:

- On June 1, the permittee measures a flow rate of 0.3 mgd and a TP concentration of 5 mg/L, resulting in a daily discharge of 12.51 lb/day.
- On June 8, the permittee measures a flow rate of 0.25 mgd and a TP concentration of 4 mg/L, resulting in a daily discharge of 8.34 lb/day.
- On June 17, the permittee measures a flow rate of 0.2 mgd and a TP concentration of 6 mg/L, resulting in a daily discharge of 10.0 lb/day.
- The permittee does not discharge from June 23 – 30, resulting in 22 discharging days for the month.

In this case, the arithmetic mean of the daily discharges of TP would be:

$(12.51 \text{ lb/day} + 8.34 \text{ lb/day} + 10 \text{ lb/day}) \div 3 = 10.3 \text{ lb/day}$

The monthly total discharge for June would therefore be:

$10.3 \text{ lb/day} \times 22 \text{ days} = 227 \text{ lb}$

VI. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

Monitoring requirements printed in bold, italic type in Table 3, below, are different from the limits in the June 2017 draft permit. The EPA is specifically requesting comments on these

monitoring requirements. Most of the proposed changes in monitoring requirements result from the proposed changes to the effluent limits for ammonia, nitrate + nitrite, and total nitrogen.

The EPA also proposes to require grab samples for mercury, instead of 24-hour composite samples as proposed in the June 2017 draft permit. Grab samples will reduce the risk of sample contamination.

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

The permit also requires the permittee to perform effluent monitoring required by part B.6 of the NPDES Form 2A application[2], so that these data will be available when the permittee applies for a renewal of its NPDES permit. The required monitoring frequency for those pollutants listed in part B.6 of the application form, which are not subject to effluent limits (total dissolved solids, and oil and grease), is twice per year. This monitoring frequency will ensure that there are at least 10 results for these pollutants at the end of the permit cycle. If there are less than 10 data points available, the uncertainty is too large to calculate an average or a standard deviation with sufficient confidence (see the TSD at Page 53).

Table 4, below, presents the proposed effluent monitoring requirements for the KPSD WWTP. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 4: Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	Continuous	recording
Temperature	°C	Effluent	Continuous	recording
BOD_5	mg/L	Influent & Effluent	2/month	24-hour composite
	lb/day			calculation[1]
	% Removal	% Removal	1/month	calculation[2]
TSS	mg/L	Influent & Effluent	2/month	24-hour composite
	lb/day			calculation[1]
	% Removal	% Removal	1/month	calculation[2]
pH	standard units	Effluent	5/week	grab
E. Coli	#/100 ml	Effluent	5/month	grab
Total Residual Chlorine	µg/L	Effluent	5/week	grab
	lb/day	Effluent		calculation[1]

[2] See also Appendix J to 40 CFR 122.

Table 4: Effluent Monitoring Requirements				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
Total Ammonia as N (October – May until 10 years after the effective date of the final permit)	mg/L	Effluent	1/month	24-hour composite
Total Ammonia as N (Beginning 10 years after the effective date of the final permit)	***mg/L***	***Effluent***	***1/week***	***24-hour composite***
	lb/day	***Effluent***		***calculation[1]***
Nitrate + Nitrite as N (October – May until 10 years after the effective date of the final permit)	***mg/L***	***Effluent***	***1/month***	***24-hour composite***
				calculation[1]
Nitrate + Nitrite as N (October - May beginning 10 years after the effective date of the final permit)	***mg/L***	***Effluent***	***1/week***	***24-hour composite***
	lb/day	***Effluent***		***calculation[1]***
Total Phosphorus as P (October – May)	mg/L	Effluent	1/month	24-hour composite
Total Phosphorus as P (June – September until 10 years after the effective date of the final permit)	mg/L	Effluent	1/week	24-hour composite
	lb/month	Effluent		calculation[1]
Total Phosphorus as P (June – September beginning 10 years after the effective date of the final permit)	***µg/L***	Effluent	1/week	24-hour composite
	lb/day	Effluent		calculation[1]
Total Nitrogen as N (June – September until 10 years after the effective date of the final permit)	***mg/L***	***Effluent***	***1/week***	***24-hour composite***
	lb/month	***Effluent***		***calculation[1]***
Total Nitrogen as N (June – September beginning 10 years after the effective date of the final permit)	***µg/L***	***Effluent***	***1/week***	***24-hour composite***
	lb/day	***Effluent***		***calculation[1]***
Dissolved Oxygen	mg/L	Effluent	1/month	grab
Total Kjeldahl Nitrogen (October – May)	***mg/L***	***Effluent***	***1/month***	***24-hour composite***
Oil and Grease	mg/L	Effluent	2/year	24-hour composite
Total Dissolved Solids	mg/L	Effluent	2/year	24-hour composite
Total Mercury	µg/L	Effluent	1/quarter[3]	***grab***

Notes:
1. Loading is calculated by multiplying the concentration in mg/L by the flow in mgd and a conversion factor of 8.34. If the concentration is measured in µg/L, the conversion factor is 0.00834.
2. Percent removal is calculated using the following equation: (average monthly influent – average monthly effluent) ÷ average monthly influent.
3. Effluent monitoring for mercury is required for the final three full calendar years of the permit cycle.

C. Surface Water Monitoring

The proposed surface water monitoring requirements are generally unchanged from the June 2017 draft permit and are explained in the Fact Sheet dated June 9, 2017.

Since none of the effluent limits proposed in the revised draft permit are based on the flow rate of the main stem of Boyer Slough, the EPA has removed the requirement to measure the flow rate of the main stem of Boyer Slough as proposed in the June 2017 draft permit.

The June 2017 draft permit had proposed to require submission of a surface water monitoring report with the application for renewal of the permit. The EPA has changed the submittal date for the surface water monitoring report to February 20th of the year following the completion of the monitoring. Because the surface water monitoring is required during the final full calendar year of the permit term, it may not be complete by the time the application for renewal is due, which is 180 days before the expiration date of the permit.

D. Pollutant Trading

Under Idaho's *Water Quality Trading Guidance*, trading provisions must be incorporated into a NPDES permit prior to engaging in any trading activity to meet the NPDES permit limits.

At this time, the permittee has not provided a trading plan, nor is there a watershed trading framework detailing how trades would be conducted for this facility. Therefore, the permit does not allow for pollutant trading.

If the permittee is interested in pursuing pollutant trading, the permit includes conditions which the permittee must take in order for the EPA to modify the permit to allow for trading activity to occur. First, as required by *Idaho's Water Quality Trading Guidance*, the permittee must develop and submit a trading plan to IDEQ for approval. The trading plan may incorporate details from an approved watershed trading framework, if applicable. Second, the approved trading plan's monitoring and reporting requirements must be incorporated into the permit through a permit modification or reissuance process.

VII. Other Legal Requirements

A. State Certification

Section 401 of the CWA requires the EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation.

B. Permit Expiration

The permit will expire five years from the effective date.

VIII. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001. https://www3.epa.gov/npdes/pubs/owm0264.pdf

EPA. 2010. *NPDES Permit Writers' Manual*. Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001. https://www3.epa.gov/npdes/pubs/pwm_2010.pdf

IDEQ. 2015. *Nutrient TMDL for the Nearshore Waters of Lake Pend Oreille, Idaho: TMDL Five-Year Review.* June 2015. Coeur d'Alene, Idaho. http://www.deq.idaho.gov/media/60176823/nutrient-tmdl-nearshore-waters-lake-pend-oreille-tmdl-five-year-review.pdf

Appendix A: Map

Appendix B: Low Flow Conditions and Dilution

A. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho's water quality standards require criteria be evaluated at the following low flow receiving water conditions (See IDAPA 58.01.02.210.03) as defined below:

Table B-1: Critical Low Flow Rates	
Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3, 30Q10 or 30Q5

1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years.
2. The 1B3 is biologically based and indicates an allowable exceedance of once every 3 years.
3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.
4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.
5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.
7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

Idaho's water quality standards do not specify a low flow to use for acute and chronic ammonia criteria, however, the EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia; Notice* (64 FR 71976, December 22, 1999) identifies the appropriate flows to be used. For the 30-day average chronic aquatic life criterion for ammonia in fresh water, the 30B3 biologically-based low flow rate is recommended, but the 30Q5 or 30Q10 hydrologically-based flow rates are at least as protective as the 30B3 and may be used instead of the 30B3 (see 64 FR 71976). The EPA has estimated the 30Q5 flow rate in this case, however, since Idaho DEQ did not authorize a mixing zone for ammonia or for human health non-carcinogens (e.g., nitrate + nitrite) in its draft Clean Water Act Section 401 certification, this flow rate was not used to calculate a dilution factor. Similarly, the harmonic mean flow rate was not used to calculate a dilution factor because Idaho DEQ did not authorize a mixing zone for any carcinogenic parameters with human health water quality criteria.

The EPA estimated the critical low flows upstream from the point of discharge from flow data measured by the KPSD, as a condition of the 2002 permit (see the 2002 permit at Page 5). As explained in the body of this Fact Sheet, the EPA determined that these flow measurements were taken in the unnamed tributary of Boyer Slough which receives the discharge, and therefore can be used to estimate the critical low flow rates of the unnamed tributary, even though the 2002 permit states that the receiving water monitoring stations are to be located "on the Boyer Slough."

After the public comment period, the EPA discovered that, on September 19, 2001, Idaho DEQ measured a flow rate of 0.02 CFS in the unnamed tributary to Boyer Slough.[1] Idaho DEQ also

[1] https://www2.deq.idaho.gov/water/BurpViewer/BurpSite/Flow?BurpID=2001SCDAA047

measured a flow rate of 1.6 CFS in the unnamed tributary to Boyer Slough on February 14, 2017 (personal communication with June Bergquist, Idaho DEQ, January 3, 2017). The EPA included this additional measurement in the estimation of critical low flows for the unnamed tributary to Boyer Slough. Since the flow rate measured by Idaho DEQ in 2001 was substantially lower than the flow rates measured by the permittee, the inclusion of this additional flow measurement resulted in lower estimated flow rates for the unnamed tributary to Boyer Slough, relative to those estimated in the Fact Sheet dated June 9, 2017. The estimated low flows are presented in Table B-2 below.

Table B-2: Estimated Critical Flows of Unnamed Tributary to Boyer Slough Upstream from the KPSD Discharge

Flows	CFS
1Q10	0.020
7Q10	0.034
30Q5	0.037
Harmonic Mean	0.15

B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and where certain numeric water quality criteria may be exceeded (EPA 2014). The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances."

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The policy allows the Idaho DEQ to authorize a mixing zone for a point source discharge after a biological, chemical, and physical appraisal of the receiving water and the proposed discharge. Because the mixing zone policy adopted by the State of Idaho in 2015 has not yet been approved by EPA, the prior mixing zone policy remains in effect for Clean Water Act purposes.[2]

The following formula is used to calculate a dilution factor based on the allowed mixing.

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$

Where:

D = Dilution Factor
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10, 30B3, etc.)
%MZ = Percent Mixing Zone

[22] http://www.deq.idaho.gov/epa-actions-on-proposed-standards

In its most recent draft Clean Water Act section 401 certification of this permit, the Idaho DEQ proposes to authorize a mixing zone for chlorine encompassing 25% of the volume of the stream flow. Mixing zones were not authorized for any other parameters.

The EPA calculated dilution factors for year round critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.4 mgd. The dilution factors are listed in Table B-3.

Table B-3: Dilution Factors

Flows	Associated Criteria	Dilution Factor
1Q10	Acute aquatic life	1.008
7Q10	Chronic aquatic life	1.014

C. References

EPA. 2014. *Water Quality Standards Handbook Chapter 5: General Policies*. Environmental Protection Agency. Office of Water. EPA 820-B-14-004. September 2014. https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf

Appendix C: Basis for Effluent Limits

The following discussion explains the derivation of technology and water quality based effluent limits proposed in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, Part C discusses anti-backsliding provisions, Part D discusses the effluent limits imposed due to the State's anti-degradation policy, and Part E presents a summary of the facility specific limits.

A. Technology-Based Effluent Limits

Technology-based effluent limits applicable to the KPSD WWTP are described in Appendix D of the Fact Sheet dated June 9, 2017.

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if the pollutant parameters in the effluent are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State/Tribal water quality criterion, the EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body.

Mixing zones must be authorized by the State. The Idaho DEQ's draft certification proposes to authorize a mixing zone of 25 percent of the receiving water flow volume for total residual chlorine.

If Idaho DEQ does not grant the mixing zone for chlorine in its final certification of this permit, the water quality-based effluent limits will be re-calculated such that the chlorine criteria are met before the effluent is discharged to the receiving water.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based Wasteload Allocation

   Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

   There are no TMDLs that include wasteload allocations for the KPSD WWTP. Thus, no effluent limits in the draft permit are calculated from TMDL-based wasteload allocations. However, there is an approved TMDL for nutrients in the nearshore waters of Lake Pend Oreille, downstream from the discharge.

2. Mixing zone based WLA

   When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant. The WLAs for chlorine were derived using a mixing zone.

3. Criterion as the Wasteload Allocation

   In some cases, a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an

exceedance of the criteria. The WLAs for E. coli, pH, ammonia, nitrate + nitrite, total nitrogen (TN), and total phosphorus (TP) were derived using this method.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

Summary – Revised Water Quality-based Effluent Limits

The bases for the revised water quality based effluent limits in the revised draft permit are summarized below.

Total Nitrogen

As explained below, the EPA has determined that the TN in the discharge has the reasonable potential to cause or contribute to excursions above Idaho's narrative water quality criterion for nutrients from June – September.

Limiting Nutrient

Both nitrogen and phosphorus can contribute to violations of WQS that result from excess nutrients (i.e., nuisance algae or aesthetics, DO, and pH). In the Fact Sheet dated June 9, 2017, the EPA had stated that TP was the most likely limiting nutrient in Boyer Slough because TP had been identified as the most likely limiting nutrient in Lake Pend Oreille, downstream from Boyer Slough, and because available data indicated that nitrogen-to-phosphorus (N:P) ratios in Boyer Slough were greater than 7.2:1.

However, Idaho's 2014 Integrated Report states that both TP and TN are causing impairment of the cold water aquatic life, salmonid spawning, and primary contact recreation uses in Boyer Slough. Therefore, it is necessary to control both TN and TP to protect beneficial uses in Boyer Slough.

Interpretation of the Narrative Criterion for Nutrients

The State of Idaho has a narrative water quality criterion for nutrients which reads, "surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses." Where a State or Tribe has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State or Tribal water quality standard, the permitting authority must establish effluent limits using one or more of the options provided in 40 CFR 122.44(d)(1)(vi).

Similar to the water quality-based effluent limits for TP which were set forth in the 2017 draft permit, the EPA is establishing water quality-based effluent limits for TN. The TN limits are based on 40 CFR 122.44(d)(1)(vi)(B), which allows the permitting authority to establish effluent limits using EPA's water quality criteria, published under section 304(a) of the CWA. The EPA's recommended criterion for TN, for rivers and streams in aggregate nutrient ecoregion II, level III ecoregion 15, is 0.2 mg/L or 200 µg/L. See the *Ambient Water Quality Criteria*

Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria: Rivers and Streams in Nutrient Ecoregion II at Table 3h (EPA 2000).

The EPA is applying this interpretation of the narrative nutrient criterion for TN from June through September. This is the season during which the receiving waters are most vulnerable to effects from nutrient loading. This is also the season during which the Nearshore TMDL establishes concentration targets and load allocations (Tetra Tech 2002).

A water quality criterion should have an averaging period or duration, in addition to a magnitude. The criteria recommendations document states that "EPA does not recommend identifying nutrient concentrations that must be met at all times, rather a seasonal or annual averaging period…is considered appropriate" (EPA 2000).

Therefore, for TN, the EPA is interpreting the State of Idaho's narrative water quality criterion for nutrients as a concentration of 200 µg/L, averaged over the season of June 1st through September 30th.

Ambient Concentration

The KPSD sampled the receiving water for nitrate, nitrite, and total Kjeldahl nitrogen upstream and downstream from the discharge from March 2002 through February 2003.

Upstream from the discharge, all results for nitrite were less than the practical quantification limit (PQL) of 0.1 mg/L. Since nitrite is rapidly oxidized to nitrate in oxygenated natural water systems (EPA 1986), the EPA assumed the upstream nitrite concentration was zero. Of the 12 upstream results for total Kjeldahl nitrogen (TKN) four (33%) were non-detect. All of the upstream results for nitrate were quantifiable. If the four non-detect TKN results are assumed to be zero, the average upstream TN concentration observed in data collected by the permittee was 2.015 mg/L or 2,015 µg/L. If the four non-detect TKN results are assumed to be equal to the practical quantification limit of 2 mg/L, the average upstream TN concentration observed in data collected by the permittee was 2.682 mg/L, or 2,682 µg/L. The true average TN concentration would be between these extremes.

Downstream from the discharge, all but one of the 12 samples for nitrite were less than the PQL of 0.1 mg/L, and, consistent with the analysis of the upstream data, such results were assumed to be zero. All downstream results for nitrate and total Kjeldahl nitrogen were quantifiable. The average downstream TN concentration from the data collected by the permittee was 12.142 mg/L or 12,142 µg/L.

Idaho DEQ sampled the receiving water for TN in 2017. Results are summarized in Tables C-1 and C-2, below.

Table C-1: Idaho DEQ TN Results for Unnamed Tributary to Boyer Sough Upstream of WWTP

Date	Total Nitrogen as N (mg/L)
5/18/2017	0.597
6/15/2017	1.33
7/28/2017	1.31
Average	1.08

Table C-2: Idaho DEQ TN Results for Unnamed Tributary to Boyer Sough Downstream of WWTP	
Date	Total Nitrogen as N (mg/L)
2/14/17	11.7
2/16/17	7.41
2/21/17	9.53
3/13/17	3.04
3/17/13	2.46
4/25/17	6.83
5/18/17	1.78
7/12/17	0.67
Average	5.42

Lake Pend Oreille Waterkeeper has collected water quality data in the unnamed tributary to Boyer Slough which receives the discharge in the summer months since 2013 and provided the results with their comments on the draft permit. The monitoring location is downstream from the discharge (personal communication with Shannon Williamson, Lake Pend Oreille Waterkeeper, September 21, 2017). The average TN concentration measured at this location by Lake Pend Oreille Waterkeeper was 2.076 mg/L or 2,076 µg/L. The average TN concentration for months during which KPSD was not discharging to surface water was 0.615 mg/L or 615 µg/L.

These data indicate that the ambient concentration of TN is greater than the interpretation of Idaho's narrative criterion for nutrients (200 µg/L), thus, there is no assimilative capacity in the receiving water. Therefore, the interpreted narrative criterion must be applied at the end-of-pipe, without allowing for dilution (i.e., a mixing zone).

Reasonable Potential

Federal regulations require that effluent limitations in NPDES permits "must control all pollutants or pollutant parameters…which…are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality (40 CFR 122.44(d)(1)(i))."

Reasonable potential analyses may account for the dilution of the effluent in the receiving water, where appropriate (40 CFR 122.44(d)(1)(ii)). However, as explained above, the average concentration of nitrogen upstream from the discharge is higher than the interpreted narrative criterion of 200 µg/L. Therefore, the receiving water cannot provide dilution of the nitrogen in the effluent and dilution may not be considered in the reasonable potential analysis.

The prior permit required effluent monitoring for nitrate, nitrite, and total Kjeldahl nitrogen once per month. These results were summed to calculate the TN concentrations. The average effluent concentration of TN measured between January 2012 and August 2017 is 20.78 mg/L (20,780 µg/L), and the maximum concentration is 35.53 mg/L (35,530 µg/L). Because dilution may not be considered in this reasonable potential analysis and the discharge concentration is greater than the interpreted narrative criterion, the discharge of TN has the reasonable potential to cause or contribute to excursions above water quality standards for nutrients. Therefore, EPA must establish effluent limits for TN in the permit (40 CFR 122.44(d)(1)(i – iii)).

Furthermore, the measured concentrations of TN in the unnamed tributary to Boyer Slough, downstream from the discharge, are generally higher than the upstream concentrations. For example, Idaho DEQ measured an average concentration of 1.08 mg/L upstream from the discharge (Table D-1) and an average concentration of 5.42 mg/L downstream from the discharge (Table D-2). Thus, the ambient water quality data demonstrates that the WWTP contributes to high TN concentrations in the receiving water.

Wasteload Allocation

According to Section 6.2.1.2 of the 2010 *U.S. EPA Permit Writers' Manual* and Section 5.4 of the TSD, wasteload allocations need not be established by a total maximum daily load (TMDL), but may instead be calculated for an individual point source as part of the permitting process. The wasteload allocation is the amount of TN that the permittee may discharge, while ensuring a level of water quality that is derived from and complies with all applicable water quality standards (40 CFR 122.44(d)(1)(vii)(A)).

Because dilution may not be considered in this case due to concentrations of TN upstream from the discharge that exceed the interpreted narrative criterion, the WLA is equal to the interpreted narrative criterion.

$$C_e = WLA = C_d = 200\ \mu g/L$$

Translating the Wasteload Allocation to Effluent Limits

NPDES regulations at 40 CFR 122.45(f) require effluent limits in NPDES permits to be expressed in terms of mass, and states that "pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations." Section 5.7.1 of the TSD states that the EPA "recommends that permit limits on both mass and concentration be specified for effluents discharging into waters with less than 100 fold dilution." Because there is less than 100-fold dilution in this case, the permit proposes both mass and concentration limits for TN.

NPDES regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits unless impracticable.

In this case, the interpretation of the narrative criterion, and, in turn, the wasteload allocation, is a seasonal average concentration. However, the season lasts only four months. The EPA has set the average monthly limit equal to the 200 µg/L TN WLA. This is somewhat conservative, because it is possible that the average discharge over a four-month period could be 200 µg/L or less, even if the average discharge within a particular month is greater than 200 µg/L.

Consistent with 40 CFR 122.45(d)(2), EPA has also established an average weekly discharge limitation for TP, in addition to the average monthly discharge limitation. To calculate the average weekly limit, the EPA used Table 5-3 of the *Technical Support Document for Water Quality-based Toxics Control*. This table provides ratios between the average monthly and the maximum daily limit, however, when the required sampling frequency is once per week or less frequent, there is no practical difference between an average weekly limit and a maximum daily limit unless the permittee samples more frequently than required by the permit. The draft permit proposes a sampling frequency of once per week for TN. Attainment of the proposed average monthly effluent limits for TN will require upgrades to the POTW. Therefore, the historic effluent variability for TN may not be representative of future effluent variability. Therefore, the

EPA has assumed that the CV is equal to 0.6, consistent with the recommendation of the TSD when effluent data are not available (see TSD at Page E-3). The EPA has used the 95th percentile probability basis for the average monthly limit and the 99th percentile probability basis for the average weekly limit. This results in a ratio between the average monthly and average weekly limit of 2.01:1. Therefore, the average weekly limit is 401 µg/L (200 µg/L × 2.01 = 401 µg/L).

Nitrate + Nitrite (October – May)

The Idaho WQS do not include numeric criteria for nitrate + nitrite. However, the State of Idaho does have a narrative water quality criterion for toxic substances, which reads "surface waters of the state shall be free from toxic substances in concentrations that impair designated beneficial uses" (IDAPA 58.01.02.200.2). Where a State or Tribe has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State or Tribal water quality standard, the permitting authority must establish effluent limits using one or more of the options provided in 40 CFR 122.44(d)(1)(vi). The EPA is establishing water quality-based effluent limits for nitrate + nitrite based on 40 CFR 122.44(d)(1)(vi)(B), which allows the permitting authority to establish effluent limits using EPA's water quality criteria, published under Section 304(a) of the CWA.

The EPA-recommended water quality criterion for nitrate for the consumption of water and organisms is 10 mg/L (EPA 1986). EPA has used this recommended criterion to interpret the State of Idaho's narrative water quality criterion for toxic substances.

From June – September, water quality-based effluent limits for nitrate + nitrite are not necessary because the effluent limits for TN will ensure that the discharge of all forms of nitrogen, including nitrate + nitrite, will be less than 0.2 mg/L on a monthly average basis.

The EPA has determined that the discharge has the reasonable potential to cause or contribute to excursions above the 10 mg/L criterion, from October – May, when TN is not proposed to be limited by the permit. The reasonable potential analysis specifically considered the effluent concentration of nitrate. However, in oxygenated natural water systems, nitrite is rapidly oxidized to nitrate (EPA 1986). Therefore, the permit contains a water quality-based effluent limit for nitrate + nitrite.

In its draft Clean Water Act Section 401 certification dated July 1, 2016, Idaho DEQ authorized a mixing zone for nitrate + nitrite. In its revised draft Clean Water Act Section 401 certification, Idaho DEQ did not authorize a mixing zone for nitrate + nitrite. Therefore, the wasteload allocation is equal to the interpreted narrative criterion of 10 mg/L. Consistent with the recommendations of section 5.4.4 of the TSD for establishing effluent limits based on human health criteria, the average monthly limit has been set equal to the wasteload allocation of 10 mg/L.

NPDES regulations require that effluent limitations for POTWs that discharge continuously be expressed as average monthly and average weekly discharge limitations, unless impracticable (40 CFR 122.45(d)(2)). Therefore, in addition to the average monthly limit, the permit proposes an average weekly limit for nitrate + nitrite. To calculate the average weekly limit, EPA used the equation printed Table 5-3 of the TSD. This table provides ratios between the average monthly and the maximum daily limit, however, when the required sampling frequency is once per week

or less frequent, there is no practical difference between an average weekly limit and a maximum daily limit unless the permittee samples more frequently than required by the permit. The draft permit proposes a sampling frequency of once per week for nitrate + nitrite. Attainment of the proposed average monthly effluent limits for nitrate + nitrite will require upgrades to the POTW. Therefore, the historic effluent variability for nitrate + nitrite may not be representative of future effluent variability. Therefore, the EPA has assumed that the CV is equal to 0.6, consistent with the recommendation of the TSD when effluent data are not available (see TSD at Page E-3). The EPA has used the 95th percentile probability basis for the average monthly limit and the 99th percentile probability basis for the average weekly limit. This results in a ratio between the average monthly and average weekly limit of 2.01:1. Therefore, the average weekly limit is 20.1 mg/L (10 mg/L × 2.01 = 20.1 mg/L).

Ammonia

As shown in Appendix D, a reasonable potential calculation showed that the KPSD WWTP discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. In addition, ammonia concentrations as high as 19 mg/L have been measured in the unnamed tributary to Boyer Slough, downstream from the discharge. This concentration exceeds Idaho's water quality criteria for ammonia. Therefore, the draft permit contains a water quality-based effluent limit for ammonia.

In its draft Clean Water Act Section 401 certification dated July 1, 2016, Idaho DEQ authorized a mixing zone for ammonia. In its revised draft Clean Water Act Section 401 certification, Idaho DEQ did not authorize a mixing zone for ammonia. Therefore, the effluent limits for ammonia have been re-calculated so that they ensure compliance with water quality criteria at the end-of-pipe.

The EPA is proposing effluent limits for ammonia year-round, even though the permit proposes an effluent limit for TN (of which ammonia is a component) from June – September. Both ammonia and TN limits are included because:

- The limits address different water quality criteria. Ammonia limits are required to address ammonia toxicity impacts on aquatic life; TN limits are needed to address narrative nutrient criteria.
- The averaging period for ammonia criteria and nitrogen criteria are different. The averaging period for nutrient criteria are longer. The proposed average monthly and average weekly limits for TN may not ensure compliance with the State of Idaho's acute ammonia criterion, which is averaged over a period of only 1 hour. The KPSD WWTP is currently a continuous discharge, thus, average monthly limits for ammonia are necessary in addition to maximum daily limits, to ensure compliance with 40 CFR 122.45(d).
- Including both limits provides flexibility to the facility to meet the nutrient limits. The State's 401 certification allows the facility to meet the nutrient limits through trading. Trading is not an option to meet ammonia limits developed to protect aquatic life from toxicity.

See Appendix D for reasonable potential and effluent limit calculations for ammonia.

Chlorine

The prior permit included water quality-based effluent limits for chlorine, and the draft permit issued for public comment on June 9, 2017 proposed water quality-based effluent limits for chlorine.

As explained in Appendix B, the EPA has revised its estimates of the critical low flow rates of the unnamed tributary to Boyer Slough which receives the discharge. When the EPA recalculated water quality-based effluent limits for chlorine based on the water quality criteria and the dilution available in the unnamed tributary, the EPA determined that the chlorine effluent limits proposed in the June 2017 draft permit are not stringent enough to ensure compliance with water quality criteria for chlorine. Therefore, the EPA has calculated more-stringent water quality-based effluent limits for chlorine.

Other Water Quality-based Effluent Limits

The proposed water quality-based effluent limits for TP, E. coli, pH, and residues are unchanged from those in the draft permit issued for public comment on June 9, 2017. The bases for those limits are explained in Appendix D to the Fact Sheet dated June 9, 2017.

C. References

EPA. 1986. *Quality Criteria for Water 1986*. Environmental Protection Agency. Office of Water. Regulations and Standards. Washington, DC. May 1, 1986. EPA-440-5-86-001. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=00001MGA.txt

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Appendix D: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

A detailed explanation of the reasonable potential analysis and the calculation of water quality-based effluent limits is provided in Appendix E to the Fact Sheet dated June 9, 2017 as well as the EPA's *Technical Support Document for Water Quality-based Toxics Control* (EPA 1991).

The following tables summarize the revised reasonable potential analyses and effluent limit calculations.

Table E-1: Reasonable Potential Calculations

Effluent Percentile value	99%			State Water Quality Standard		Max concentration at edge of...											
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Pn	Max effluent conc. measured (metals as total recoverable)	Coeff Variation CV	s	# of samples n	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
Ammonia June - September (mg/L)	1.00	1.00	0.0400	4.63	1.68	47.63	47.63	YES	0.920	27.10	0.67	0.61	55	1.76	1.00	1.00	
Ammonia October - May (mg/L)	1.00	1.00	0.0400	4.63	2.10	47.63	47.63	YES	0.920	27.10	0.67	0.61	55	1.76	1.00	1.00	
Nitrate (mg/L)	1.00	1.00	0.6000		10		58.16	YES	0.920	19.90	1.69	1.16	55	2.92		1.00	
Chlorine (µg/L)	1.01	1.01				19.00	19.00	YES	N/A	19.00	N/A	N/A	N/A	1.00	1.008	1.014	Previous MDL
TP (µg/L)	1.00	1.00	31		9.0		7620	YES	N/A	7620	N/A	N/A	N/A	1.00		1.00	
TN (µg/L)	1.00	1.00	680		200		35530	YES	N/A	35530	N/A	N/A	N/A	1.00		1.00	

Table E-2: Effluent Limit Calculations – Aquatic Life Criteria

Statistical variables for permit limit calculation	
LTA Probability Basis	99%
MDL Probability Basis	99%
AML Probability Basis	95%

Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.

						Permit Limit Calculation Summary					Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations						
PARAMETER	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator Acute	Metal Criteria Translator Chronic	Ambient Concentration ug/L	Water Quality Standard Acute ug/L	Water Quality Standard Chronic ug/L	Average Monthly Limit (AML) ug/L	Maximum Daily Limit (MDL) ug/L	Comments	WLA Acute ug/L	WLA Chronic ug/L	LTA Acute ug/L	LTA Chronic ug/L	Limiting LTA ug/L	Coeff. Var. (CV) decimal	# of Samples per Month n
Ammonia October - May (mg/L)	1.000	1.000	1.00	1.00	0.0400	4.63	2.10	**1.77**	**4.63**		4.628	2.097	1.486	1.636	1.486	0.60	30.00
Ammonia June - September (mg/L)	1.000	1.000	1.00	1.00	0.0400	4.63	1.68	**1.56**	**4.07**		4.628	1.675	1.486	1.307	1.307	0.60	30.00
Chlorine	1.008	1.014	1.00	1.00		19.00	11.00	**7.3**	**18.3**		19.2	11.2	6.1	5.9	5.9	0.60	20.00

Table E-3: Effluent Limit Calculations: TP, TN, and Nitrate + Nitrite

Revised 3/00										
Parameter	Ambient Concentration	Water Quality Criteria	Max concentration at edge of chronic mixing zone.	LIMIT REQ'D?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT	MAXIMUM DAILY EFFLUENT LIMIT	Coeff Variation CV	Dilution Factor
Nitrate + Nitrite, October - May (mg/L)	0.60	10.00	58.16	YES	4	10.0	20.1	0.60	1.00
TP, June - September (µg/L)	31	9.0	7620	YES	4	9.0	18	0.60	1.00
TN June - September (µg/L)	680	200	35530	YES	4	200	401	0.60	1.00

A. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001. https://www3.epa.gov/npdes/pubs/owm0264.pdf

Appendix E: Clean Water Act Section 401 Certification

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway • Coeur d'Alene, Idaho 83814 • (208) 769-1422
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippets, Director

January 5, 2018

Ms. Susan Poulsom
US Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101- 3140

RE: Revised Draft §401 Water Quality Certification for the Draft NPDES Permit No. ID-0021229 for the Kootenai Ponderay Wastewater Treatment Plant

Dear Ms. Poulsom:

The State of Idaho Department of Environmental Quality (DEQ) received a revised preliminary draft NPDES permit dated December 12, 2017. After review of the revised draft permit and fact sheet, DEQ submits the enclosed draft §401 water quality certification which includes a narrative description of our antidegradation review for this permit and conditions necessary to meet these rules. After the public comment period ends, DEQ will address any comments, review the proposed final permit and issue a final certification decision.

Please direct any questions to June Bergquist at 208.666.4605 or june.bergquist@deq.idaho.gov .

Sincerely,

Daniel Redline
Regional Administrator
Coeur d'Alene Regional Office

Enclosure

C: Loren Moore, DEQ State Office
Brian Nickel, EPA Region 10, Seattle
Tanner Weisgram, Kootenai Ponderay Sewer District

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

January 5, 2018

NPDES Permit Number(s): ID-0021229; Kootenai-Ponderay Wastewater Treatment Plant

Receiving Water Body: Unnamed tributary to Boyer Slough

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced revised permit and associated fact sheet, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The Kootenai-Ponderay Sewer District Wastewater Treatment Plant (KPSD) discharges the following pollutants of concern: *BOD, TSS, E. coli*, chlorine, nitrate + nitrite, ammonia, total nitrogen and phosphorus. Effluent limits have been developed for all pollutants of concern. There is no proposed increase in design flow for this facility.

Receiving Water Body Level of Protection

The KPSD discharges to an unnamed tributary of Boyer Slough within the Pend Oreille Lake Subbasin assessment unit (AU) 17010214PN018_02b (Boyer Slough). The unnamed tributary of Boyer Slough, as well as Boyer Slough itself, is designated for cold water aquatic life, salmonid spawning, primary contact recreation and domestic water supply. Boyer Slough and its tributaries have these designated uses because they are part of the Pend Oreille Lake waterbody unit P-18 (IDAPA 58.01.02.010.110 and 58.01.02.110.05). In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

According to DEQ's 2014 Integrated Report, this AU is not fully supporting its cold water aquatic life, salmonid spawning, and primary contact recreation uses. Causes of impairment are nitrogen and phosphorus. As such, DEQ will provide Tier 1 protection (IDAPA 58.01.02.051.01) for the aquatic life and contact recreation beneficial uses.

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the KPSD permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations for point source discharges, which are set at levels designed to help restore the water body to a condition

that supports existing and designated beneficial uses. Discharge permits must contain limitations that are consistent with wasteload allocations in the approved TMDL.

A TMDL has not yet been developed for Boyer Slough and its tributaries; however this effort is currently underway. Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04) (see Table 1).

In summary, the effluent limitations and associated requirements contained in the KPSD permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS. Therefore, DEQ has determined the permit will protect and maintain existing beneficial uses in the unnamed tributary of Boyer Slough in compliance with the Tier 1 provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

Table 1. Comparison of current and proposed permit limits for pollutants of concern.

Pollutant	Units	Current Permit			Proposed Permit			Change[ab]
		Average Monthly Limit	Average Weekly Limit	Max. Daily Limit	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit	
Pollutants with limits in both the current and proposed permit								
Five-Day BOD_5	mg/L	30	45	—	30	45	—	NC
	lb/day	86	129	—	86	129	—	
	% removal	85%	—	—	85%	—	—	
TSS	mg/L	30	45	—	30	45	—	NC
	lb/day	101	152	—	100	150	—	
	% removal	85%	—	—	85%	—	—	
pH	standard units	6.5–9.0 all times			6.5–9.0 all times			NC
E. coli	no./100 mL	126		406	126	—	406	NC
Total Residual Chlorine (final)	µg/L	11	—	19	7.3	—	18.3	D
	lb/day	—	—	—	0.024	—	0.061	
Pollutants with new limits in the proposed permit								
Nitrate + Nitrite (October –May)	mg/L	—	—	—	10	20.1	—	D
	lb/day	—	—	—	33.4	67.1	—	D
Total Ammonia (October – May)	mg/L	—	—	—	1.77	—	4.63	D
	lb/day	—	—	—	5.90	—	15.4	D
Total Ammonia (June – Sept)	mg/L	—	—	—	1.56	—	4.07	D
	lb/day	—	—	—	5.20	—	13.6	D
Total Nitrogen (June-Sept)	µg/L	—	—	—	200	401		D
	lb/day	—	—	—	0.667	1.34		D
Total Phosphorus (June – Sept)	µg/L	—	—	—	9.0	18.0	—	D
	lb/day	—	—	—	0.030	0.060	—	D

[a] NC = no change, I = increase, D = decrease.
[b] Table 1 is for comparative purposes only.

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Compliance Schedule

Pursuant to IDAPA 58.01.02.400.03, DEQ may authorize compliance schedules for water quality-based effluent limits issued in a permit for the first time. The KPSD cannot immediately

achieve compliance with the effluent limits for ammonia, nitrate + nitrite, total nitrogen and phosphorus due to the following factors:

- Historical effluent concentrations and loads of ammonia, nitrate + nitrite, TN and TP exceed the proposed effluent limits for those parameters.
- The KPSD WWTP is not designed to remove nitrogen or phosphorus.
- Although KPSD can use their storage and re-use (land application) capacity to reduce their surface water discharges of phosphorus and nitrogen during the growing season, KPSD's current storage and re-use capacity is not adequate to allow them to eliminate their discharge to surface water (and thereby comply with new water quality-based effluent limits) under critical conditions.

Therefore, DEQ authorizes a compliance schedule and interim requirements as set forth below. This compliance schedule provides the permittee a reasonable amount of time to achieve the final effluent limits as specified in the permit. At the same time, the schedule ensures that compliance with the final effluent limits is accomplished as soon as possible. At the request of KPSD, this schedule allows time for a master planning effort and to implement the preferred option to achieving their new effluent limits. Options include but are not limited to an expansion of their reuse site; construction of a mechanical treatment plant; significant upgrades to the existing lagoon system or regionalization with City of Sandpoint.

Each of these options requires considerable amounts of time to plan, fund and construct (May 20, 2016 email and May 26, 2015 letter from KPSD). Regionalization also requires close coordination with the City of Sandpoint and their new NPDES draft permit compliance schedule. To facilitate a coordinated effort between Sandpoint and KPSD to allow for regionalization to occur, their compliance schedules are closely aligned.

DEQ authorizes interim limits in Table 2 for a period of ten (10) years from the date of the final permit. The permittee must comply with all other effluent limitations beginning on the effective date of the permit. After ten years, final limits for ammonia, nitrate + nitrite, total nitrogen and phosphorus shall be met.

Interim Requirements for Compliance Schedule

1. By one (1) year after the effective date of the final permit, a progress report shall be submitted to EPA and DEQ indicating that funding has been secured for a master planning effort.
2. By two (2) years after the effective date of the final permit, a progress report shall be submitted to EPA and DEQ indicating that master planning is underway and is on schedule to comply with these interim requirements.
3. By three (3) years after the effective date of the final permit, a master plan shall be submitted to EPA and DEQ for review and approval. The master plan shall identify a preferred alternative that will meet final effluent limits along with project phasing, financing strategy and implementation timeline.

4. By four (4) years after the effective date of the final permit, the permittee must provide EPA and DEQ with a progress report on funding for the preferred alternative in the form of a notice of bond approval or notice of judicial confirmation.
5. By five (5) years after the effective date of the final permit, the permittee must provide EPA and DEQ with written notice that design has been completed and approved by DEQ.
6. By six (6) years after the effective date of the final permit, the permittee must provide EPA and DEQ with a notice that bids for construction have been awarded to achieve final effluent limitations.
7. By seven (7) and eight (8) years after the effective date of the final permit, the permittee must provide EPA and DEQ with brief progress reports of construction as they relate to meeting the compliance schedule timeline and final effluent limits.
8. By nine (9) years after the effective date of the final permit, the permittee must provide EPA and DEQ with written notice that construction has been substantively completed on the facilities to achieve final effluent limitations.
9. By ten (10) years after the effective date of the final permit, the permittee must provide EPA and DEQ with a written report providing details of a completed start up and optimization phase of the new treatment system (if applicable) and must achieve compliance with the final effluent limitations of Part I.B.

Table 2. Interim Effluent Limits

Month	Interim Total Nitrogen Limit (lb/month)	Interim Total Phosphorus Limit (lb/month)
June	2,091	468
July	249	56
August	380	85
September	482	108

Mixing Zones

The KPSD outfall discharges to a small tributary of Boyer Slough. The Boyer Slough watershed encompasses approximately 5,400 acres, the majority of which is sparsely populated farm land. Boyer Slough joins Pend Oreille Lake approximately 0.68 miles from the wastewater treatment plant outfall pipe. During the summer months, Pend Oreille Lake is held at an elevation of 2062' to 2062.5' for recreational use which creates a backwater effect in Boyer Slough that extends upstream almost to the outfall. During the rest of the year, Boyer Slough is a small shallow

stream. Pursuant to IDAPA 58.01.02.060, DEQ authorizes the mixing zones summarized in Table 3. The mixing zone provisions in IDAPA 58.01.02.060 adopted in 2015 have not yet been approved by EPA. However, there are several reasons why it is appropriate to reference these provisions. First, DEQ is not limited to relying upon WQS when it considers certification under section 401 of the Clean Water Act (CWA). It is also allowed to include conditions necessary to ensure compliance with "any other appropriate requirement of state law" (CWA section 401(d)). The mixing zone provisions are an appropriate requirement of state law.

Second, like the new provisions, the prior mixing zone provisions that were approved by EPA prohibit mixing zones that cause an unreasonable interference with, or danger to beneficial uses. While not yet effective for CWA purposes, the new provisions assist in DEQ's interpretation and application of the mixing zone provisions that have been approved by EPA. As long as this mixing zone does not cause unreasonable interference with, or danger to, beneficial uses it can be used.

Table 3. Mixing Zone for Final Permit Limit

Pollutant	Mixing Zone (% of critical flow volumes of Tributary to Boyer Slough)
chlorine	25

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Pollutant Trading

Pursuant to IDAPA 58.01.02.055.06, DEQ authorizes pollutant trading for phosphorus and nitrogen. Trading must be conducted in a manner that is consistent with the most recent version of DEQ's *Water Quality Pollutant Trading Guidance*, available at: http://www.deq.idaho.gov/media/488798-water_quality_pollutant_trading_guidance_0710.pdf.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to June Bergquist, Coeur d'Alene Regional Office at 208.666.4605 or via email at june.bergquist@deq.idaho.gov.

DRAFT

Daniel Redline
Regional Administrator
Coeur d'Alene Regional Office

APPENDIX B

Land Application Permit

Idaho Department of Environmental Quality
Reuse Permit
M-182-03

(Previous Permit No. LA-000182-02)

Kootenai-Ponderay Sewer District (hereafter "permittee") is hereby authorized to construct, install, and operate a reuse facility in accordance with (1) this permit; (2) IDAPA 58.01.17 "Recycled Water Rules"; (3) an approved plan of operation; and (4) all other applicable federal, state, and local laws, statutes, and rules. This permit is effective from the date of signature and expires on (120 months from issue date).

Signature

June 25, 2013
Date

Daniel Redline
Regional Administrator
Coeur d'Alene Regional Office
Idaho Department of Environmental Quality

Department of Environmental Quality
Coeur d'Alene Regional Office
2110 Ironwood Pky.
Coeur d'Alene, ID 83814
(208) 769-1422

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1. Common Acronyms/Abbreviations and Definitions

cwt	a unit of weight measurement equal to 100 pounds
DEQ	Idaho Department of Environmental Quality
DEQ Guidance	DEQ Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater, latest revision
Director	Director of the Idaho Department of Environmental Quality or designee unless otherwise specified
EPA	Environmental Protection Agency
E_i	irrigation efficiency
FM	flow measurement or monitoring description or identifier
GW	prefix for ground water reporting serial number
IDAPA	Idaho Administrative Procedures Act
IDWR	Idaho Department of Water Resources
IWR	irrigation water requirement - any combination of wastewater and supplemental irrigation water applied at rates commensurate to the moisture requirements of the crop, and calculated monthly during the growing season (GS). The equation used to calculate the IWR is: $IWR = P_{def} / E_i$
KPSD	Kootenai-Ponderay Sewer District
LG	prefix for lagoon reporting serial number
MG	million gallons
mg/kg	milligram per kilogram
mg/L	milligram per liter
MU	prefix for management unit reporting environmental serial number
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
P_{def}	precipitation deficit - is synonymous with the net irrigation water requirement of the crop and for the purposes of this permit can be found at the following website: http://data.kimberly.uidaho.edu/ETIdaho/ (Sandpoint KSPT Station)
PO	plan of operation
QAPP	quality assurance project plan
SU	prefix for soil monitoring unit reporting serial number
SW	prefix for supplemental irrigation water reporting serial number

WW	prefix for wastewater reporting serial number

2. Facility Information

Information Type	Information Specific to This Permit
Type(s) of recycled water	Municipal, Class C and Class D
Method of treatment and reuse	Aerated and facultative lagoons, chlorine disinfection and growing season only, slow rate irrigation
System Classification	Collection – Class II, Treatment – Class II, Land Application
Facility location	Bonner County. Approximately 0.75 mile north of Hwy 200 and the city of Kootenai, on east side of railroad tracks. Latitude: 48°19'31.82"N Longitude: 116°30'25.00"W
Facility mailing address	Kootenai-Ponderay Sewer District 511 Whiskey Jack Road, Sandpoint, Idaho 83864
Facility responsible official and authorized representative	Responsible Official: Jim Osman, Chairman, (208)290-5979 Authorized Representative: Mr. Tim Closson, Operations Manager, (208)263-0229 (Office), (208)290-5979 (Cell Phone), Email - tim.closson@nctv.com
Ground Water	Aquifer Depths - Upper aquifer depth varies seasonally - 7 feet below ground surface (bgs) in August. Lower aquifer - 50 feet bgs. Type of Aquifer - General Resource Aquifer General Flow Direction – Not known Beneficial uses of ground water – Primarily agriculture Nearby public water supply wells – None within 1,000 feet.
Surface Water	Seasonal tributary to Boyer Slough – 200 feet from northeast corner of property. Beneficial Uses – Cold Water Communities and Primary and Secondary Contact Recreation as an “undesignated surface water”. Lake Pend Oreille – approx. 1.25 miles to the south. Beneficial Uses – Cold Water Communities, Salmonid Spawning, Primary and Secondary Contact Recreation, Domestic Water Supplies Seasonal drainage channel in south portion of site

3. Compliance Schedule for Required Activities

Compliance Activity (CA) Number and Completion Due Date	Compliance Activity Description
CA-182-01 Twelve (12) months after permit issuance	**Plan of Operation (PO)**: The permittee shall submit for review and approval an update to the existing Plan of Operation (PO) that reflects current operations and incorporates the requirements of this permit. The PO shall comply with the applicable requirements stated in IDAPA 58.01.17.300.05 and shall address applicable items in the Plan of Operation Checklist in the DEQ Guidance. The PO shall include the following site management plans or the permittee may submit the site management plans individually: 1. Buffer zone plan; 2. Cropping plan for fodder crop; 3. Silviculture management plan for trees; 4. Instrumentation plan; 5. Emergency operating plan; 6. Irrigation management and scheduling plan; 7. Nuisance and odor management plan; 8. Runoff management plan; The PO shall be updated as needed to reflect current operations. The permittee shall notify DEQ of material changes to the PO and copies must be kept on site and made available to DEQ upon request.

Compliance Activity (CA) Number and Completion Due Date	Compliance Activity Description
CA-182-02 Twelve (12) months after permit issuance	**Quality Assurance Project Plan (QAPP)**: The permittee shall prepare and implement a QAPP that incorporates all monitoring and reporting required by this permit. A copy of the QAPP along with written notice that the permittee has implemented the QAPP shall be provided to DEQ. The QAPP shall be designed to assist in planning for the collection, analysis, and reporting of all monitoring in support of this permit and in explaining data anomalies when they occur. At a minimum, the QAPP must include the following: 1. Details on the number of measurements, number of samples, type of sample containers, preservation of samples, holding times, analytical methods, analytical detection, and quantitation limits for each target compound, type and number of quality assurance field samples, precision and accuracy requirements, sample preparation requirements, sample shipping methods, and laboratory data delivery requirements. 2. Maps indicating the location of each monitoring, and sampling point. 3. Qualification and training of personnel. 4. Names, addresses, and telephone numbers of the laboratories used by or proposed to be used by the permittee. 5. Example formats and tables that will be used by the permittee to summarize and present all data in the annual report. The format and content of the QAPP should adhere to the recommendations and references in the Quality Assurance and Data Processing sections of the DEQ Guidance. The permittee shall amend the QAPP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAPP. The permittee shall notify DEQ of material changes to the QAPP and copies must be kept on site and made available to DEQ upon request.

<table>
<tr><th>Compliance Activity (CA) Number and Completion Due Date</th><th>Compliance Activity Description</th></tr>
<tr><td>CA-182-03
As specified</td><td>Seepage Testing (for EXISTING FACILITIES): The following table shows the date by which the permittee shall complete seepage testing on the specified lagoons:
<table><tr><td>Lagoon:</td><td>Seepage Test Due Date:</td></tr><tr><td>Primary Aerated Lagoon</td><td>November 2013</td></tr><tr><td>Secondary Aerated Lagoon</td><td>November 2013</td></tr><tr><td>Chlorine Contact Basin</td><td>November 2013</td></tr><tr><td>Reservoir Polishing Lagoon</td><td>November 2013</td></tr></table>Submit to DEQ for review and approval a proposed schedule and procedure for performing the required seepage tests at least 42 days prior to the planned seepage test. Seepage test procedures are available at: http://www.deq.idaho.gov/water-quality/wastewater/lagoon-seepage-testing.aspx The seepage test procedures shall be sealed by the Idaho licensed professional engineer or professional geologist in responsible charge for the test.

Seepage tests shall be completed in accordance with the procedures approved by DEQ. The seepage test report shall be sealed by the person in responsible charge and submitted within 90 days after completion of the seepage test.

Alternatively, if it can be shown to DEQ that accurate seepage testing of all or some of the lagoons cannot be performed, a DEQ approved ground water monitoring plan must be implemented by November 2013 to evaluate the impacts to ground water from any lagoon seepage.</td></tr>
<tr><td>CA-182-04
1 year prior to permit expiration</td><td>Pre-Application Workshop: If the permittee intends to continue operating the reuse facility beyond the expiration date of this permit, the permittee shall contact DEQ and schedule a pre-application workshop to discuss the compliance status of the facility and the content required for the reuse permit application package.</td></tr>
<tr><td>CA-182-05
180 days prior to permit expiration</td><td>Renewal Permit Application: The permittee shall submit to DEQ a complete permit renewal application package, which fulfills the requirements specified at the pre-application workshop identified in CA-182-04.</td></tr>
</table>

4. Permit Limits and Conditions

4.1 Hydraulic Management Unit Descriptions

Serial Number	Description	Irrigation System Type and Irrigation Efficiency	Maximum Acres[a] Allowed
MU-182-01	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-02	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-03	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-04	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-05	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-06	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-07	Hay Field	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	2.5
MU-182-08	Hay Field	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	2.5
MU-182-09	Native trees	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	5.6
MU-182-10	Native trees	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	10.9
		Total Acreage	36.5

a. Maximum acres represent the total permitted acreage of the MU as provided by the permittee. If the permittee uses less acreage in any season or year, then loading rates shall be presented and compliance shall be determined based on the actual acreage utilized during each season or year.

4.2 Hydraulic Loading Limits and Vegetation

Serial Number	Growing Season Hydraulic Loading	Nongrowing Season Maximum Hydraulic Loading, inches	Allowed Vegetation
MU-182-01	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-02	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-03	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-04	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-05	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-06	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-07	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Hay Crop
MU-182-08	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Hay Crop
MU-182-09	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Native Conifer Trees
MU-182-10	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Native Cottonwood Trees

a. For compliance purposes, the source of P_{def} data used to calculate the IWR shall be specified in the PO.

4.3 Constituent Loading Limits

Serial Number	Nitrogen (pounds/acre-year)
MU-182-01	150% of typical crop uptake[a]
MU-182-02	150% of typical crop uptake[a]
MU-182-03	150% of typical crop uptake[a]
MU-182-04	150% of typical crop uptake[a]
MU-182-05	150% of typical crop uptake[a]
MU-182-06	150% of typical crop uptake[a]
MU-182-07	150% of typical crop uptake[a]
MU-182-08	150% of typical crop uptake[a]
MU-182-09	150% of typical crop uptake[a]
MU-182-10	150% of typical crop uptake[a]

a. Typical crop uptake is the median constituent crop uptake from the 3 most recent years the crop has been grown. For crops having less than 3 years of on-site crop uptake data, other crop yield data or nutrient content values may only be used if approved in writing by DEQ in advance of use. If written approval is not provided by DEQ, compliance with the 150% nitrogen loading limit shall be determined by comparing the current year nitrogen loading to the current year nitrogen uptake.

4.4 Management Unit Buffer Zones

Serial Number	Minimum Buffer Distances (in feet) from Hydraulic Management Units					
	Public Water Supplies	Private Water Supplies	Inhabited Dwellings	Permanent and Intermittent Surface Water, if Water is Present	Irrigation Ditches and Canals	Areas Accessible to the Public
MU-182-01	1,000	500	500	100	50	300
MU-182-02	1,000	500	500	100	50	300
MU-182-03	1,000	500	500	100	50	300
MU-182-04	1,000	500	500	100	50	300
MU-182-05	1,000	500	500	100	50	300
MU-182-06	1,000	500	500	100	50	300
MU-182-07	1,000	500	500	100	50	300
MU-182-08	1,000	500	500	100	50	300
MU-182-09	1,000	500	200[a,b]	100	50	0
MU-182-10	1,000	500	200[a]	100	50	0

a. A minimum 200 foot buffer from all inhabited dwellings on the eastern side of the MUs and the irrigated areas. A minimum 50 foot coniferous and deciduous vegetative buffer between any irrigated area and the eastern border of the MUs where an inhabited dwelling is closer than 300 feet to any irrigated area. Any proposed thinning and/or harvesting of the vegetative buffer on the eastern side of the MUs will require consultation with DEQ to determine if the vegetative buffer will continue to provide adequate public health protection. If the vegetative buffer is determined to be inadequate at any time by DEQ, a minimum 300 foot buffer from all inhabited dwellings to the irrigated areas will be required.

b. A minimum 300 foot buffer from the inhabited dwelling on the northern side of the MU.

4.5 Other Permit Limits and Conditions

Category	Permit Limits and Conditions
Growing season	May 1 through September 30 (153 days) Irrigation can start when GW-182-01 through GW-182-03 show the depth to ground water below the ground surface is at least three (3) feet October 1 to October 15 (15 days) – Irrigation may occur if: 1. There is visible crop stress; 2. Soil moisture probe readings indicate the soil is not saturated; 3. Day time temperatures reach 50°F;and 4. No standing water is on the surface to freeze at night.
Non-growing season	October 16 through April 30 (212 days)
Reporting year for annual loading rates	January 1 through December 31
Disinfection limits in recycled water: MU-182-09 & MU-182-10	Class C: The median number of total coliform organisms does not exceed 23 total coliform organisms/100 mL, as determined from the bacteriological results of the last 5 days for which analyses have been completed. No sample shall exceed 230 total coliform organisms/100 mL in any confirmed sample.
MU-182-01 through MU-182-08	Class D: The median number of total coliform organisms does not exceed 230 total coliform organisms/100 mL, as determined from the bacteriological results of the last 3 days for which analyses have been completed. No sample shall exceed 2,300 total coliform organisms/100 mL in any confirmed sample.
Allowed crops or vegetation	Poplars, Willows, Hay Crop, Native Conifers, Native Cottonwoods
Grazing	Grazing is not allowed.
Posting	Signs shall read “Warning: Recycled Water—Do Not Drink,” or equivalent signage both in English and Spanish. Signs to be posted every 500 feet and at each corner of the outer perimeter of the irrigated site. Signs are required where management unit border areas accessible to the public.
Fencing	MU-182-01 through MU-182-10: three-wire fencing, minimum

Category	Permit Limits and Conditions
Construction plans	Pursuant to Idaho Code §39-118, IDAPA 58.01.16, and IDAPA 58.01.17, detailed plans and specifications shall be submitted to DEQ for review and approval prior to construction, modification, or expansion of any wastewater treatment, storage, conveyance structures, or reuse facility. Inspection requirements shall be satisfied and within 30 days of completion of construction and the permittee shall submit as-built plans or a letter from an Idaho Professional Engineer certifying the facilities or structures were constructed in substantial accordance with the approved plans and specifications.
Backflow prevention and testing requirements	Backflow prevention is required to protect surface water and ground water from an unauthorized discharge of recycled water or wastewater. Refer to section 9.1.1 of this permit.
Records retention requirements	Keep records generated to meet the requirements of this permit for the duration of permit, including administrative extensions, plus 2 years.

5. Monitoring Requirements

5.1 Recycled Water and Supplemental Irrigation Water Sampling and Analyses

5.1.1 Constituent Monitoring

Monitoring Point Serial Number and Location	Sample Description	Sample Type and Frequency	Constituents (Units in mg/L Unless Otherwise Specified)
WW-182-01 Recycled water from Lagoon LG-182-04 at sample tap (post chlorination)	Recycled water to MU-182-01 through MU-182-10	Grab/weekly (when irrigating)	- Total Coliform (CFU/100 mL)
WW-182-01 Recycled water from Lagoon LG-182-04 at sample tap (post chlorination)	Recycled water to MU-182-01 through MU-182-10	Grab/monthly (when irrigating)	- Total Kjeldahl nitrogen, as N - Nitrite + nitrate-nitrogen, as N - Total phosphorus, as P

5.1.2 Management Unit and Other Flow Monitoring

Management Unit or Flow Measurement Serial Number and Location	Sample Description	Sample Type and Frequency	Measured Parameters, each MU
MU-182-01 through MU-182-10 Flow meter at the Irrigation Pump Station	Recycled water flow from LG-182-01	- Daily meter reading - Monthly compilation of data	- Volume (MG/month) - Application Depth (inches/acre-month)

5.2 Ground Water Monitoring

5.2.1 Ground Water Monitoring Point Descriptions

Monitoring Point Serial Number	Common Designation	Well Type
GW-182-01	MW 1 (north)	Monitoring well
GW-182-02	MW 2 (middle)	Monitoring well
GW-182-03	MW 3 (south)	Monitoring well

5.2.2 Ground Water Monitoring, Sampling, and Analyses

Monitoring Point Serial Number	Sampling Point Description	Sample Type and Frequency	Constituents (Units in mg/L Unless Otherwise Specified)
GW-182-01 through GW-182-09	Monitoring wells	Prior to the start of irrigation season. Depth to ground water below the ground surface must be at least three (3) feet.	- Water table depth below the ground surface (feet)

5.3 Soil Monitoring

5.3.1 Soil Monitoring Unit Descriptions

Monitoring Point Serial Number	Description	Associated Hydraulic Management Unit
SU-182--01	Field 3 (Poplars and Willows)	MU-182-03
SU-182-02	Field 5 (Poplars and Willows)	MU-182-05
SU-182-03	Field 7 (Hay)	MU-182-07
SU-182-04	Field 9 (Conifers)	MU-182-09
SU-182-05	Field 10 (Cottonwoods)	MU-182-10

5.3.2 Soil Monitoring, Sampling, and Analyses

Monitoring Point Serial Number	Sample Type	Sample Frequency	Constituents (Units in mg/kg Soil Unless Otherwise Specified)
SU-182-01 SU-182-02 SU-182-03 SU-182-04 SU-182-05	Composite samples	Annually, prior to the start of irrigation	- Plant available nitrate-nitrogen - Plant available ammonium nitrogen - Plant available phosphorus
The number of sample locations specified in the PO or QAPP for each SU shall be sampled. At each location, samples shall be obtained from two (2) depths: 0–12 inches and 12–24 inches or refusal. The samples obtained from each depth shall be composited by depth to yield three composite samples for each soil monitoring unit; one composite sample for each depth.			

5.4 Plant Tissue Monitoring

5.4.1 Crop Harvest Monitoring

Associated Hydraulic Management Units	Sample Type	Sample Frequency	Parameters[a]
MU-182-01 through MU-182-10	Harvested portion, each crop, each MU	Each harvest	- Crop type - Harvest date - Sample collection date - Harvested acreage (acres); - As-harvested ('wet') yield in customary harvested units (tons, bushels, cwt, etc.); - As-harvested (field) moisture content (%); - Dry yield (lbs.)

a. Documentation of reported yields shall be provided for each harvest from each MU

5.4.2 Plant Tissue Monitoring

Associated Hydraulic Management Units	Sample Type	Sample Frequency	Parameters[a]
MU-182-01 through MU-182-08	Harvested portion, each crop, each harvest	Each harvest	- Lab moisture content (%); - Total Nitrogen, as N (%); - Phosphorus as P (ppm)

a. Report dry-basis results for all parameters except lab moisture content

5.5 Lagoon Information

Serial number	Description	Surface Area, acres	Maximum Operating Volume, MG	Liner Type
LG-182-01	Primary Aerated Lagoon	0.9	1.8	Clay
LG-182-02	Secondary Aerated Lagoon	2.0	3.3	Clay
LG-182-03	Chlorine Contact Basin	0.8	0.5	Clay
LG-182-04	Reservoir Polishing Lagoon	5.7	25	60 mil HDPE

6. Reporting Requirements

6.1 Annual Report Requirements

The permittee shall submit to DEQ an Annual Report prepared by a competent environmental professional covering the previous reporting year.

6.1.1 Due Date

The Annual Report is due no later than January 31 of each year, which shall cover the previous reporting year.

6.1.2 Required Contents

The Annual Report shall include the following:

1. A brief interpretive discussion of all required monitoring data. The discussion shall address data quality objectives, validation, and verification; permit compliance; and reuse facility environmental impacts. The reporting year for this permit is specified in Section 0.
2. Results of the required monitoring as described in Section 5 of this permit. If the permittee monitors any parameter for compliance purposes more frequently than required by this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Annual Report. The report shall present all monitoring data in organized data summary tables to expedite review.
3. Status of all work described in Section 3 of this permit.
4. Results of all backflow testing, repairs, and replacements required by Section 9.1.1 of this permit.
5. Discussion of major maintenance activities such as major equipment replacement, lagoon liner maintenance, and wastewater treatment and reuse facility maintenance.
6. A summary of all noncompliance events that occurred during the reporting year. Examples of noncompliance events that must be discussed include, but are not limited to: complaints, missed monitoring events, incorrect monitoring dates or frequencies, dry monitoring wells, uncontained spills causing runoff, construction without DEQ engineering plan approval, construction without engineering inspection, and reporting incorrect acreage.
7. Submittal of the calculations and observations for hydraulic management units specified in the table below.
8. All laboratory analytical reports, chain of custody forms, and crop yield documentation.
9. The parameters in the following table:

Monitoring Point Serial Number	Parameter (Calculate for each MU)	Units
MU-182-01 MU-182-02 MU-182-03 MU-182-04 MU-182-05 MU-182-06 MU-182-07 MU-182-08 MU-182-09 MU-182-10	Recycled water loading rate	- Million gallons/month - Inches/acre-month
	Irrigation water requirement (IWR) for each crop grown	- Inches/acre-month - Inches/GS
	Recycled water total nitrogen and phosphorus loading rates	Pounds/acre-year
	Fertilizer nitrogen and phosphorus application rates, reported as elemental N and P	Pounds/acre-year
	Waste solids and/or biosolids nitrogen and phosphorus application rates	Pounds/acre-year
	Crop Harvest and Yield Report each harvest and the annual totals for each MU.	- Crop Types Harvested - Total Harvested Area (acres) - Total 'wet' yield (pounds/year, pounds/acre-year) - Total 'dry' yield (pounds/year, pounds/acre-year)
	Crop nitrogen, phosphorus, and ash removal rates (dry-basis) Report each harvest and the annual totals for each MU.	- Pounds-N/acre-year - Pounds-P/acre-year

6.1.3 Submittals

All applications, annual reports, or information submitted to DEQ as required by this permit shall be signed and certified as follows:

1. Permit applications shall be signed as follows:
    a. For a corporation: by a responsible corporate officer;
    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
    c. For a municipality, state, federal, Indian tribe, or other public agency: by either the principal executive officer or ranking elected official.
2. Annual reports and other information requested by DEQ shall be signed by the responsible official or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    a. The authorization is made in writing by the responsible official;

b. The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual having overall responsibility for environmental matters for the company; and

c. The written authorization is submitted to DEQ.

Submit the annual report to the following DEQ regional office at this address:

Engineering Manager
Idaho Department of Environmental Quality
Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

The annual report shall include the following certification statement and be signed, dated, and certified by the permittee's Responsible Official or Authorized Representative:

> "*I certify under penalty of law that this report and all attachments were prepared under my direction or supervision and the data and information presented in this report was collected, evaluated and prepared in conformance with the Quality Assurance Project Plan required by the permit. I also certify that the information provided in this submission is, to the best of my knowledge, true, accurate and complete and I acknowledge that knowing submission of false or incomplete information may result in permit revocation as provided for in IDAPA 58.01.17.920.01 or other enforcement action as provided for under Idaho law."*

6.2 Emergency and Noncompliance Reporting

Report noncompliance incidents to DEQ's regional office at 208-769-1422.

In case of emergencies, call the emergency 24-hour number at 1-800-632-8000 and DEQ's regional office.

See Section 8, "Standard Permit Conditions," and IDAPA 58.01.17.500.06 for reporting requirements for facilities.

All instances of unpermitted discharges of wastewater to Surface Waters of the United States shall also be reported to the Environmental Protection Agency by telephone within 24 hours from the time the permittee becomes aware of the discharge and in writing within five days at this address:

NPDES/Stormwater Coordinator, USEPA Idaho Operations Office
950 W. Bannock, Suite 900
Boise, ID 83702
208-378-5746 / 208-378-5744 and EPA Hot Line (206) 553-1846

7. Reserved

8. Standard Permit Conditions

The following standard permit conditions are included as terms of this permit as required by the "Recycled Water Rules," (IDAPA 58.01.17.500).

500. STANDARD PERMIT CONDITIONS.
The following conditions shall apply to and be included in all permits. (4-1-88)

01. Compliance Required. The permittee shall comply with all conditions of the permit. (4-1-88)

02. Renewal Responsibilities. If the permittee intends to continue operation of the permitted facility after the expiration of an existing permit, the permittee shall apply for a new permit in accordance with these rules. (4-1-88)

03. Operation of Facilities. The permittee shall at all times properly maintain and operate all structures, systems, and equipment for treatment, control and monitoring, which are installed or used by the permittee to achieve compliance with the permit or these rules. (4-1-88)

04. Provide Information. The permittee shall furnish to the Director within a reasonable time, any information including copies of records, which may be requested by the Director to determine whether cause exists for modifying, revoking, re-issuing, or terminating the permit, or to determine compliance with the permit or these rules. (4-1-88)

05. Entry and Access. The permittee shall allow the Director, consistent with Title 39, Chapter 1, Idaho Code, to: (4-1-88)

a. Enter the permitted facility. (4-1-88)

b. Inspect any records that must be kept under the conditions of the permit. (4-1-88)

c. Inspect any facility, equipment, practice, or operation permitted or required by the permit. (4-1-88)

d. Sample or monitor for the purpose of assuring permit compliance, any substance or any parameter at the facility. (4-1-88)

06. Reporting. The permittee shall report to the Director under the circumstances and in the manner specified in this section: (4-1-88)

a. In writing at least thirty (30) days before any planned physical alteration or addition to the permitted facility or activity if that alteration or addition would result in any significant change in information that was submitted during the permit application process. When the alteration or addition results in a need for a major modification, such alteration or addition shall not be made prior to Department approval issued in accordance with these rules. (4-7-11)

b. In writing thirty (30) days before any anticipated change which would result in noncompliance with any permit condition or these rules. (4-1-88)

c. Orally within twenty-four (24) hours from the time the permittee became aware of any noncompliance which may endanger the public health or the environment at telephone numbers provided in the permit by the Director. (4-1-88)

d. In writing as soon as possible but within five (5) days of the date the permittee knows or should know of any noncompliance unless extended by the Department. This report shall contain: (4-1-88)

i. A description of the noncompliance and its cause; (4-1-88)

ii. The period of noncompliance including to the extent possible, times and dates and, if the noncompliance has not been corrected, the anticipated length of time it is expected to continue; and (4-7-11)

iii. Steps taken or planned, including timelines, to reduce or eliminate the continuance or reoccurrence of the noncompliance. (4-7-11)

e. In writing as soon as possible after the permittee becomes aware of relevant facts not submitted or incorrect information submitted, in a permit application or any report to the Director. Those facts or the correct information shall be included as a part of this report. (4-1-88)

07. Minimize Impacts. The permittee shall take all necessary actions to eliminate and correct any adverse impact on the public health or the environment resulting from permit noncompliance. (4-1-88)

08. Compliance with "Ground Water Quality Rule." Permits issued pursuant to these rules shall require compliance with IDAPA 58.01.11, "Ground Water Quality Rule." (4-7-11)

9. General Permit Conditions

The following general permit conditions are identical to the cited rules at the time of issuance and are enforceable as part of this permit. Note that the rules cited in this section, and elsewhere in this permit, are supplemented by the rules themselves. Rules applicable to your facility are enforceable whether or not they appear in this permit.

9.1 Operations

9.1.1 Backflow Prevention

Reuse facilities with existing or planned cross-connections or interconnections between the recycled water system and any water supply (potable or nonpotable) or surface water, shall have backflow prevention assemblies, devices, or methods as required by applicable rule or as specified in this permit and approved by DEQ.

For public water systems, backflow assemblies shall meet the requirements of IDAPA 58.01.08.543. Assemblies shall be adequately maintained and shall be tested annually by a certified backflow assembly tester, and repaired or replaced as necessary to maintain operational status.

For domestic water supply wells, backflow prevention devices shall meet the requirements of IDAPA 07.02.04 and shall be adequately operated and maintained.

Irrigation water supply wells shall meet the requirements of IDAPA 37.03.09.36 for preventing any waste or contamination of the ground water resource. Backflow prevention assemblies or devices used to protect the ground water shall be adequately operated and maintained.

Discharge of recycled water to surface water is authorized by the EPA NPDES program. An NPDES permit is required for any discharge to surface water and backflow prevention shall be implemented to prevent any unauthorized discharge. Backflow prevention assemblies or devices used to protect surface water shall be adequately operated and maintained.

Records of all testable backflow assembly test results, repairs, and replacements shall be kept at the reuse facility along with other operational records, and shall be discussed in the Annual Report and made available for inspection by DEQ. Other approved means of backflow prevention, such as siphons and air-gap structures that cannot be tested, shall be maintained in operable order.

9.1.2 Restricted to Premises

Wastewaters or recharge waters applied to the land surface must be restricted to the premises of the application site. Wastewater discharges to surface water that require a permit under the Clean Water Act must be authorized by the United States Environmental Protection Agency (IDAPA 58.01.16.600.02).

9.1.3 Health Hazards, Nuisances, and Odors Prohibited

Health hazards, nuisances, and odors are prohibited as follows:

- Wastewater must not create a public health hazard or nuisance condition (IDAPA 58.01.16.600.03).
- No person shall allow, suffer, cause or permit the emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution (IDAPA 58.01.01.776.01).
- Air Pollution. The presence in the outdoor atmosphere of any air pollutant or combination thereof in such quantity of such nature and duration and under such conditions as would be injurious to human health or welfare, to animal or plant life, or to property, or to interfere unreasonably with the enjoyment of life or property (IDAPA 58.01.01.006.06).

9.1.4 Solids Management

Biosolids are the nutrient-rich organic materials resulting from the treatment of sewage sludge. When treated and processed, sewage sludge becomes biosolids which can be safely recycled and applied as fertilizer to sustainably improve and maintain productive soils and stimulate plant growth.

Biosolids generated from sewage sludge are regulated by EPA under 40 CFR Part 503 and require a DEQ approved sludge disposal plan as outlined in IDAPA 58.01.16.650.

Biosolids used on hydraulic management units identified in section 4.1of this permit must be reported as specified in section 6.1.2.

Sludge is the semi-liquid mass produced and removed by wastewater treatment processes. This does not include grit, garbage, and large solids.

Sludge is generated by wastewater treatment processes at municipal and industrial facilities.

Solid Waste is any garbage or refuse, sludge from a waste water treatment plant, water supply treatment plant, or air pollution control facility and other discarded material including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954.

Solid waste does not include inert wastes, manures and crop residues ultimately returned to the soils at agronomic rates, and any agricultural solid waste which is managed and regulated pursuant to rules adopted by the Idaho Department of Agriculture. DEQ reserves the right to use existing authorities to regulate agricultural waste that impacts human health or the environment.

Solid waste is regulated under "Solid Waste Management Rules", IDAPA 58.01.06. Wastes otherwise regulated by DEQ (i.e. this permit) are not regulated under 58.01.06.

Waste Solids include sludge and wastes otherwise regulated by DEQ in accordance with IDAPA 58.01.06.001.03.a.xii. Waste solids may include vegetative waste, silt and mud containing organic matter, and other non-inert solid wastes.

Inert wastes are defined as non-combustible, nonhazardous, and non-putrescible solids wastes that are likely to retain their physical and chemical structure and have a deminimis potential to generate leachate under expected conditions of disposal, which includes resistance to biological attack.

Waste solids require a DEQ approved sludge disposal plan as outlined in IDAPA 58.01.16.650.

9.1.5 Temporary Cessation of Operations and Closure (IDAPA 58.01.17.801)

Temporary cessation of operations and closure must be addressed as follows:

01. Temporary Cessation. A permittee shall implement any applicable conditions specified in the permit for temporary cessation of operations. When the permit does not specify applicable temporary cessation conditions, the permittee shall notify the Director prior to a temporary cessation of operations at the facility greater than sixty (60) days in duration and any cessation not for regular maintenance or repair. Cessation of operations necessary for regular maintenance or repair of a duration of sixty (60) days or less are not required to notify the Department under this section. All notifications required under this section shall include a proposed temporary cessation plan that will ensure the cessation of operations will not pose a threat to human health or the environment. (4-7-11)

02. Closure. A closure plan shall be required when a facility is closed voluntarily and when a permit is revoked or expires. A permittee shall implement any applicable conditions specified in the permit for closure of the facility. Unless otherwise directed by the terms of the permit or by the Director, the permittee shall submit a closure plan to the Director for approval at least ninety (90) days prior to ceasing operations. The closure plan shall ensure that the closed facility will not pose a threat to human health and the environment. Closure plan approval may be conditioned upon a permittee's agreement to complete such site investigations, monitoring, and any necessary remediation activities that may be required. (4-7-11)

9.1.6 Plan of Operation (IDAPA 58.01.17.300.05)

The PO must comply with the following:

05. Reuse Facility Operation and Maintenance Manual or Plan of Operations. A facility's operation and maintenance manual must contain all system components relating to the reuse facility in order to comply with IDAPA 58.01.16 "Wastewater Rules," Section 425. Manuals and manual amendments are subject to the review and approval provision therein. In addition to the content required by IDAPA 58.01.16.425, manuals for reuse facilities shall include, if applicable: operation and management responsibility, permits and standards, general plant description, operation and control of unit operations, land application site maps, wastewater characterization, cropping plan, hydraulic loading rate, constituent loading rates, compliance activities, seepage rate testing, site management plans, monitoring, site operations and maintenance, solids handling and processing, laboratory testing, general maintenance, records and reports, store room and inventory, personnel, an emergency operating plan, and any other information required by the Department. (4-7-11)

9.1.7 Seepage Testing Requirements (IDAPA 58.01.16.493.02.c)

03. Subsequent Tests. All lagoons covered under these rules must be seepage tested by an Idaho licensed professional engineer, an Idaho licensed professional geologist, or by individuals under their supervision every ten (10) years after the initial testing. (5-8-09)

9.1.8 Ground Water Quality Rule (IDAPA 58.01.11)

The permittee shall comply with the requirements of "Ground Water Quality Rule" (IDAPA 58.01.11).

9.2 Administrative

Requirements for administration of the permit are defined as follows.

9.2.1 Permit Modification (IDAPA 58.01.17.700)

01. Modification of Permits. A permit modification may be initiated by the receipt of a request for modification from the permittee, or may be initiated by the Department if one (1) or more of the following causes for modification exist: (4-7-11)

a. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit. (4-7-11)

b. New standards or regulations. The standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. (4-7-11)

c. Compliance schedules. The Department determines good cause exists for modification of a compliance schedule or terms and conditions of a permit. (4-7-11)

d. Non-limited pollutants. When the level of discharge of any pollutant which is not limited in the permit exceeds the level which may cause an adverse impact to surface or ground waters. (4-7-11)

e. To correct technical mistakes, such as errors in calculation, or mistaken interpretations of law made in determining permit conditions. (4-7-11)

f. When a treatment technology proposed, installed, and properly operated and maintained by the permittee fails to achieve the requirements of the permit. (4-7-11)

9.2.2 Permit Transferable (IDAPA 58.01.17.800)

01. General. A permit may be transferred only upon approval of the Department. No transfer is required for a corporate name change as long as the secretary of state can verify that a change in name alone has occurred. An attempted transfer is not effective for any purpose until approved in writing by the Department. (4-7-11)

9.2.3 Permit Revocation (IDAPA 58.01.17.920)

01. Conditions for Revocation. The Director may revoke a permit if the permittee violates any permit condition or these rules, or the Director becomes aware of any omission or misrepresentation of condition or information relied upon when issuing the permit. (4-7-11)

02. Notice of Revocation. Except in cases of emergency, the Director shall issue a written notice of intent to revoke to the permittee prior to final revocation. Revocation shall become final within thirty-five (35) days of receipt of the notice by the permittee, unless within that time the permittee requests an administrative hearing in writing. The hearing shall be conducted in accordance with IDAPA 58.01.23, Rules of Administrative Procedure Before the Board of Environmental Quality." (5-3-03)

03. Emergency Action. If the Director finds the public health, safety or welfare requires emergency action, the Director shall incorporate findings in support of such action in a written notice of emergency revocation issued to the permittee. Emergency revocation shall be effective upon receipt by the permittee. Thereafter, if requested by the permittee in writing, the Director shall provide the permittee a revocation hearing and prior notice thereof. Such hearings shall be conducted in accordance with IDAPA 58.01.23, Rules of Administrative Procedure Before the Board of Environmental Quality." (3-15-02)

04. Revocation and Closure. A permittee shall perform the closure requirements in a permit, the closure requirements of these rules, and complete all closure plan activities notwithstanding the revocation of the permit. (4-7-11)

9.2.4 Violations (IDAPA 58.01.17.930)

Any person violating any provision of these rules or any permit or order issued thereunder shall be liable for a civil penalty not to exceed ten thousand dollars ($10,000) or one thousand dollars ($1,000) for each day of a continuing violation, whichever is greater. In addition, pursuant to Title 39, Chapter 1, Idaho Code, any willful or negligent violation may constitute a misdemeanor. (4-1-88)

9.2.5 Severability

The provisions of this permit are severable, and if a provision or its application is declared invalid or unenforceable for any reason, that declaration will not affect the validity or enforceability of the remaining provisions.

10. Other Applicable Laws

DEQ may refer enforcement of the following provisions to the state agency authorized to enforce that rule. The permittee shall comply with all applicable provisions identified in this section, as well as all other applicable federal, state, and local laws, statutes, and rules.

10.1 Owner Responsibilities for Well Use and Maintenance

10.1.1 Well Use

The well owner must not operate any well in a manner that causes waste or contamination of the ground water resource. Failure to operate, maintain, knowingly allow the construction of any well in a manner that violates these rules, or failure to repair or properly decommission (abandon) any well as herein required will subject the well owner to civil penalties as provided by statute. See IDAPA 37.03.09.036.01 and consult the Idaho Department of Water Resources (IDWR) for more information.

10.1.2 Well Maintenance

The well owner must maintain the well to prevent waste or contamination of ground waters through leaky casings, pipes, fittings, valves, pumps, seals, or through leakage around the outside of the casings, whether the leakage is above or below the land surface. Any person owning or controlling a noncompliant well must have the well repaired by a licensed well driller under a

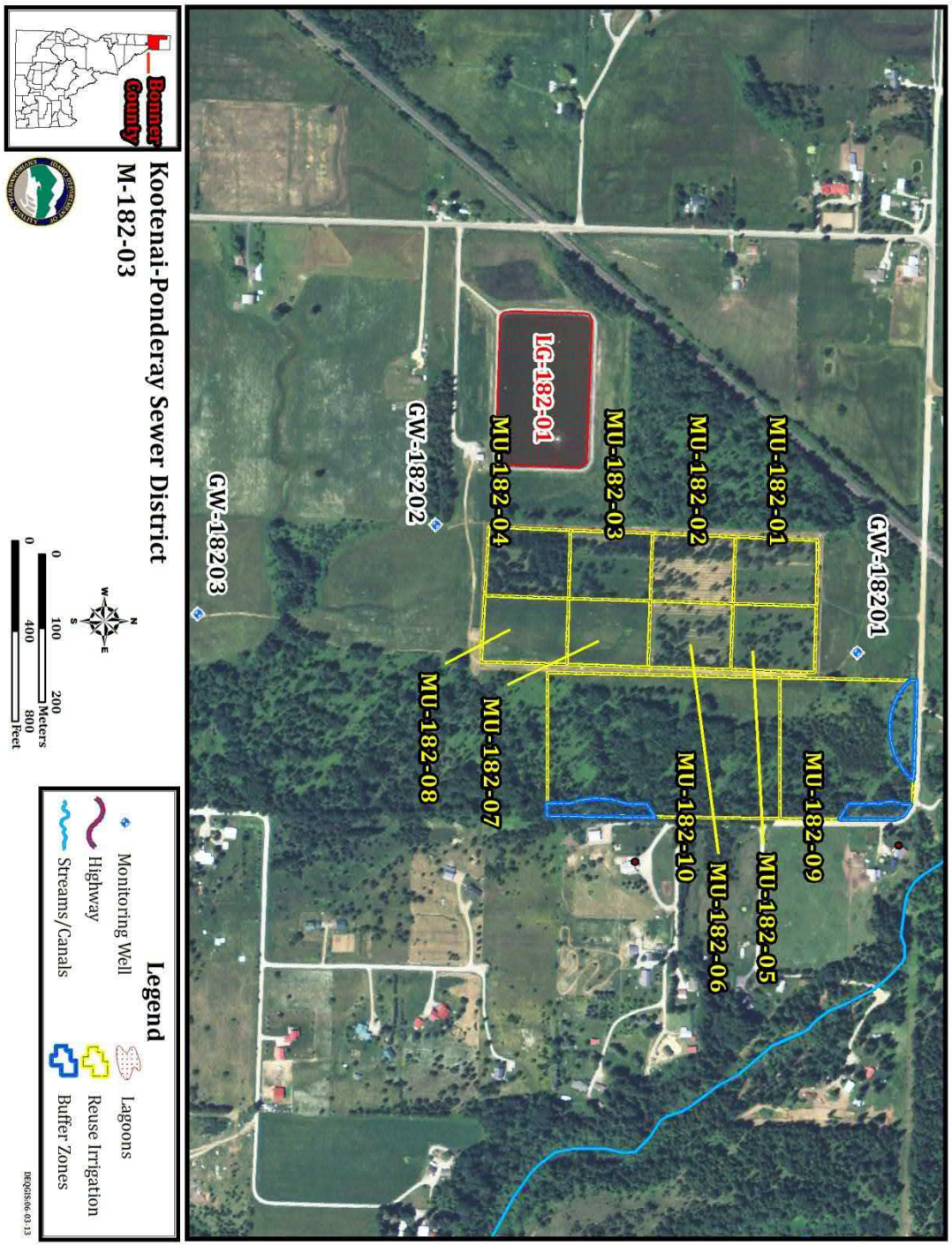
permit issued by the IDWR director in accordance with the applicable rules. See IDAPA 37.03.09.036.02 and consult IDWR for more information.

10.1.3 Wells Posing a Threat to Human Health and Safety or Causing Contamination of the Ground Water Resource

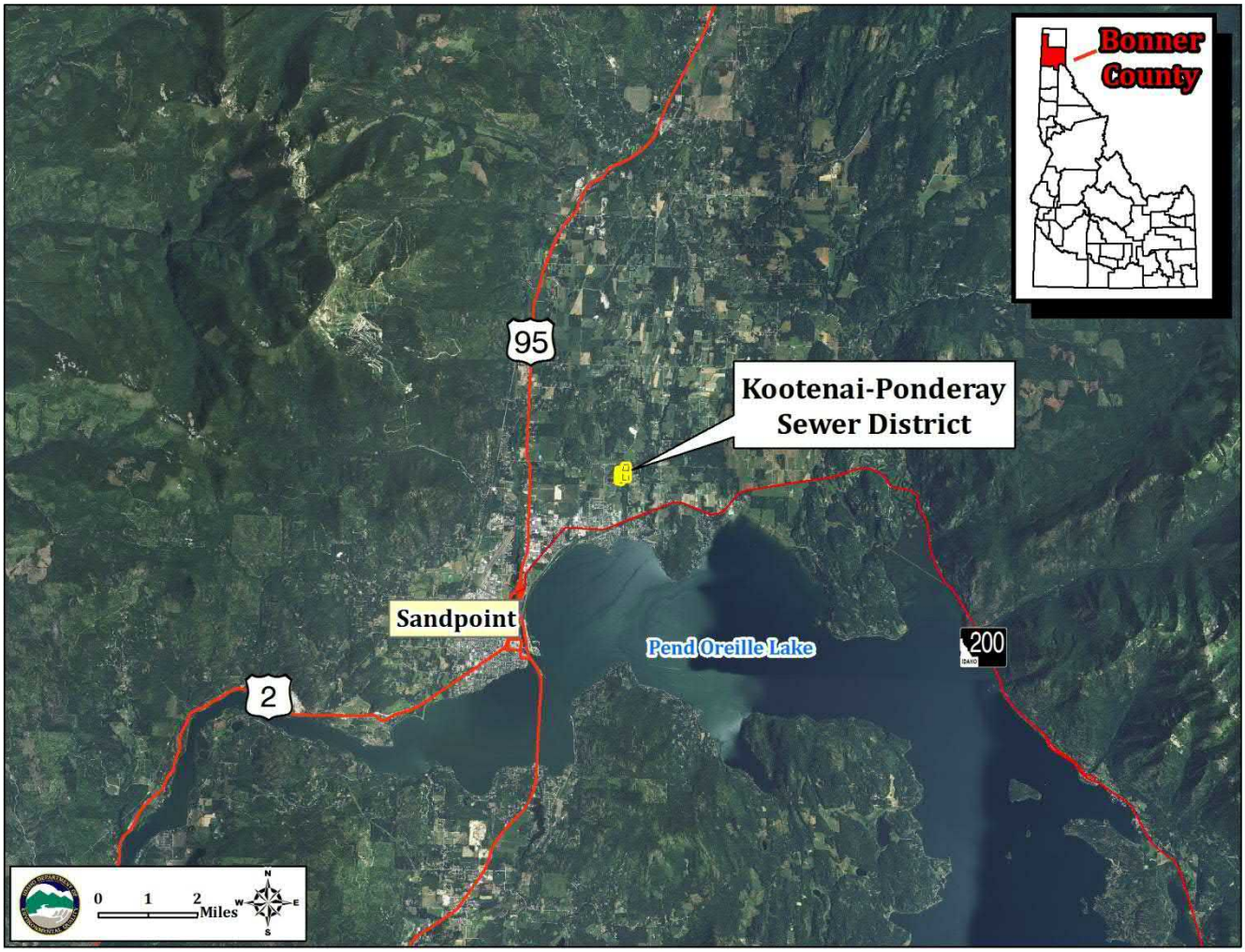
The well owner must have any well shown to pose a threat to human health and safety or cause contamination of the ground water resource immediately repaired or decommissioned (abandoned) by a licensed well driller under a permit issued by the IDWR director in accordance with the applicable rules. See IDAPA 37.03.09.036.06 and consult the IDWR for more information.

11. Site Maps

11.1 Facility Maps



11.2 General Area Maps



IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

REUSE PERMIT

M-182-03 – Modification 2

Permittee Name: **Kootenai-Ponderay Sewer District**

Effective Date of this Modification: **January 30, 2019**

Complete Description of Modification

The purpose of this Minor Permit Modification is to update facility responsible official and duly authorized representative for Reuse Permit No. M-182-03. Items not changed by this modification are covered in Reuse Permit No. M-182-03 and Reuse Permit No. M-182-03-Modification 1.

1. **Section 2. Facility Information.** Page 7 of the Reuse Permit. Replace the table with the following:

Information Type	Information Specific to This Permit
Type(s) of recycled water	Municipal, Class C and Class D
Method of treatment and reuse	Aerated and facultative lagoons, chlorine disinfection and growing season only, slow rate irrigation
Collection and treatment system classification	Collection – Class II, Treatment – Class II, Land Application
Facility location	Bonner County. Approximately 0.75 miles north of Hwy 200 and the city of Kootenai, on east side of railroad tracks. Latitude: 48°19'31.82"N Longitude: 116°30'25.00"W
Facility mailing address	Kootenai-Ponderay Sewer District 511 Whiskey Jack Road Sandpoint, Idaho 83864
Facility responsible official and authorized representative	Responsible Official: James Osman, Chairman (208) 290-5979 ninerfan@nctv.com Authorized Representative: Tanner Weisgram, Operations Manager (208) 263-0229 (Office), (208) 290-5979 (Cell) tannerw@nctv.com Notify DEQ within 30 days if a change in personnel occurs for any of the facility contacts. DEQ will issue a minor permit modification to confirm the change.
Ground water	Aquifer Depths – Upper aquifer depth varies seasonally – 7 feet below ground surface (bgs) in August. Lower aquifer – 50 feet bgs Type of Aquifer – General Resource Aquifer General Flow Direction – Not known Beneficial uses of ground water – Primarily agriculture Nearby public water supply wells – None within 1,000 feet
Surface water	Seasonal tributary to Boyer Slough – 200 feet from northeast corner of property. Beneficial Uses – Cold Water Communities and Primary and Secondary Contact Recreation as an "undesignated surface water". Lake Pend Oreille – approx. 1.25 miles to the south. Beneficial Uses – Cold Water Communities, Salmonid Spawning, Primary and Secondary Contact Recreation, Domestic Water Supplies Seasonal drainage channel in south portion of site

Modification 2 is hereby approved. This modification to the permit is incorporated into, and constitutes a part of, Reuse Permit No. M-182-03. This permit modification must be attached to the permit. The permit is incomplete and unlawful under IDAPA 58.01.17, *Recycled Water Rules*, without this permit modification attached.

Signed,

FOR:

Daniel Redline, Regional Administrator
Coeur d'Alene Regional Office
Department of Environmental Quality

01/30/2019
Date

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

REUSE PERMIT

M-182-03 – Modification 1

Permittee Name: **Kootenai-Ponderay Sewer District**

Effective Date of this Modification: **February 15, 2018**

Complete Description of Modification

The purpose of this Minor Permit Modification is to change the following:

1. The allowed vegetation in MU-182-07 changed from "hay crop" to "poplar and willow trees" as requested by the permittee; and
2. An administrative change to Section 6.1.2.

Items not changed by this modification are covered in Reuse Permit No. M-182-03.

1. **Section 4.1 Hydraulic Management Unit Descriptions.** Page 11 of the Reuse Permit. Change the description of MU-182-07 from "hay crop" to "tree farm" and replace the table with the following:

Serial Number	Description	Irrigation System Type and Irrigation Efficiency	Maximum Acres[a] Allowed
MU-182-01	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-02	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-03	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-04	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-05	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-06	Tree farm	Drip Irrigation: (Ei = 0.85)	2.5
MU-182-07	Tree farm	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	2.5
MU-182-08	Hay Field	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	2.5
MU-182-09	Native trees	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	5.6
MU-182-10	Native trees	Hand line pipes with rotator sprinkler heads (Ei = 0.85)	10.9
		Total Acreage	36.5

a. Maximum acres represent the total permitted acreage of the MU as provided by the permittee. If the permittee uses less acreage in any season or year, then loading rates shall be presented and compliance shall be determined based on the actual acreage utilized during each season or year.

2. **Section 4.2 Hydraulic Loading Limits and Vegetation.** Page 12 of the Reuse Permit. Change the allowed vegetation in MU-182-07 from "hay crop" to "poplar and willow trees" and replace the table with the following:

Serial Number	Growing Season Hydraulic Loading	Nongrowing Season Maximum Hydraulic Loading, inches	Allowed Vegetation
MU-182-01	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-02	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-03	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-04	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-05	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-06	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-07	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Poplar and Willow Trees
MU-182-08	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Hay Crop
MU-182-09	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Native Conifer Trees
MU-182-10	Substantially at the irrigation water requirement (IWR)[a]	Not allowed	Native Cottonwood Trees

a. For compliance purposes, the source of P_{def} data used to calculate the IWR shall be specified in the PO.

3. **Section 5.3.1 Soil Monitoring Unit Descriptions.** Page 19 of the Reuse Permit. Change the description for MU-182-07 from "Field 7 (Hay)" to "Field 7 (Poplars and Willows)" and replace the table with the following:

Monitoring Point Serial Number	Description	Associated Hydraulic Management Unit
SU-182--01	Field 3 (Poplars and Willows)	MU-182-03
SU-182-02	Field 5 (Poplars and Willows)	MU-182-05
SU-182-03	Field 7 (Poplars and Willows)	MU-182-07
SU-182-04	Field 9 (Conifers)	MU-182-09
SU-182-05	Field 10 (Cottonwoods)	MU-182-10

4. **Section 6.1.2 Required Contents.** Page 21 of the Reuse Permit. In Item 1, last sentence, change "Section 0" to "Section 4.5" with the revised paragraph reading as follows:

"The Annual Report shall include the following:

1. A brief interpretive discussion of all required monitoring data. The discussion shall address data quality objectives, validation, and verification; permit compliance; and reuse facility environmental impacts. The reporting year for this permit is specified in Section 4.5."

Modification 1 is hereby approved. This modification to the permit is incorporated into, and constitutes a part of, Reuse Permit No. M-182-03. This permit modification must be attached to the permit. The permit is incomplete and unlawful under IDAPA 58.01.17, *Recycled Water Rules*, without this permit modification attached.

Signed,

Daniel Redline, Regional Administrator
Coeur d'Alene Regional Office
Department of Environmental Quality

2/15/2018
Date

APPENDIX C

Water Balances

Altenative 2 - Water Balance Chart

KPSD

Flow 0.483 MGD Summer Average

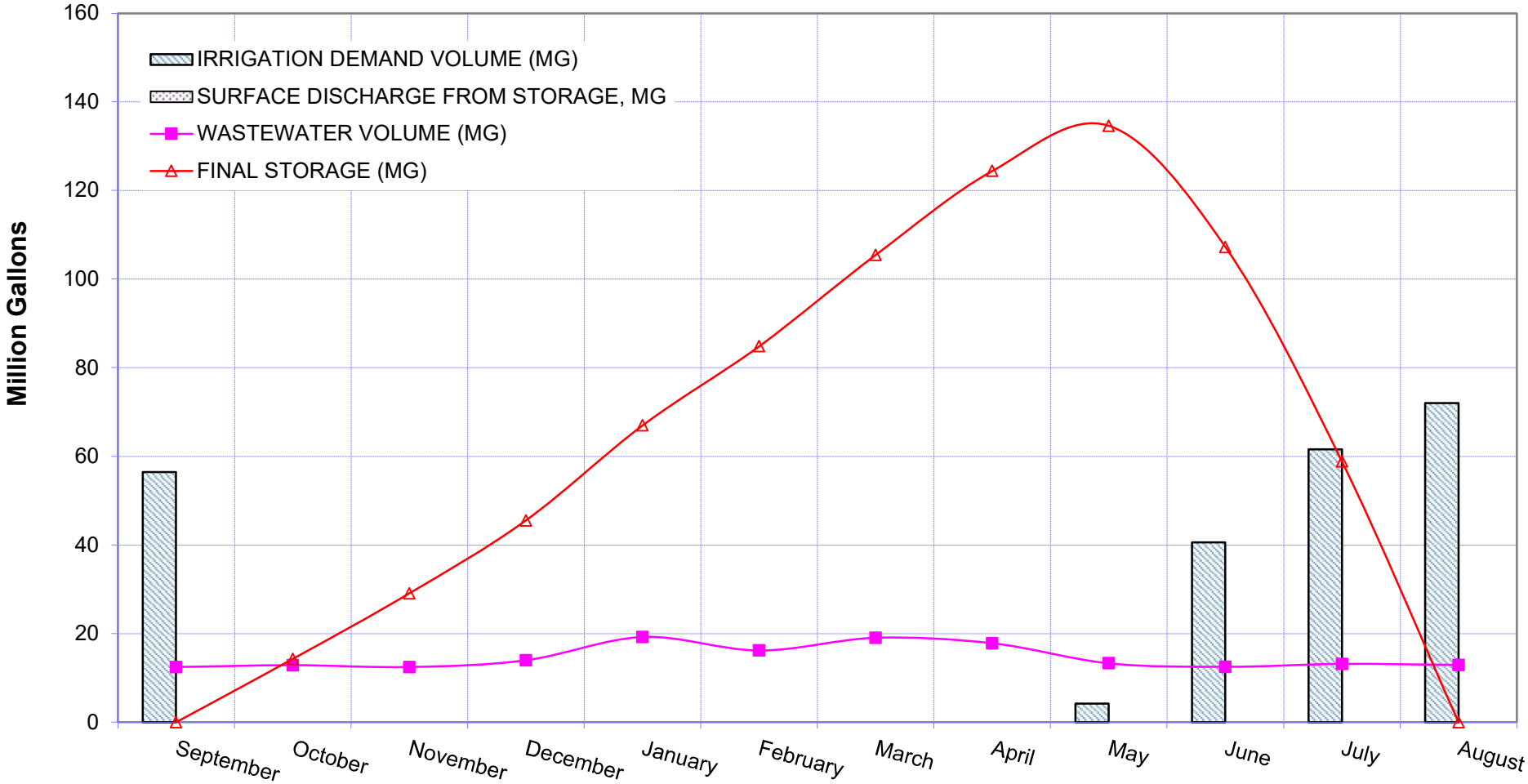
Flow 0.483 MGD Annual Average

Annual Irrigation Demand 22.8 inches

Evaporation Volume 1.73 MG

Storage 135 MG

Area Irrigated 378.8 Acres



KPSD **Annual Irrigation Demand 22.8 inches** **Area Irrigated 378.8 Acres** 0.0

Flow 0.483 MGD Summer Average **Storage 135 MG** **Flow 0.483 MGD Annual Average**

SORAGE LAGOON W/ LAND APPLICATION ON ALFALFA DURING GROWING SEASON

AVG ANN WASTEWATER DESIGN FLOW, MGD	**0.48**	**REQ'D IRRIGATION AREA (AC)**	**378.83**
RAIN CATCHMENT AREA (AC)	20.00 Acres of Storage Ponds		
POND PERIMETER RUNOFF FRACTION	1.00	AVERAGE IRRIGATION REDUCTION	0.90
POND EVAP AREA AT ZERO STOR (AC)	3.00	IRRIGATION EFFICIENCY (DECIMAL FRACT)	0.87
POND EVAP AREA ADD PER UNIT STOR (AC/MG)	0.033	PRECIP/AVG PRECIP RATIO	1.00
		EVAPORATION / AVE EVAPORATION RATION	0.75
		KNOW AVERAGE FLOW / DESIGN FLOW	1.00

PARAMETER

	9	10	11	12	1	2	3	4	5	6	7	8	
INPUT DATA	September	October	November	December	January	February	March	April	May	June	July	August	TOTAL
MONTHLY FLOW RATIOS	0.4150	0.4150	0.4150	0.4507	0.6203	0.5785	0.6148	0.5942	0.4291	0.4168	0.4250	0.4168	
MONTHLY FLOWS (MGD)	0.41500	0.42	0.42	0.45	0.62	0.58	0.61	0.59	0.43	0.42	0.42	0.42	0.483
GIVEN INFLOW-OUTFLOW (MG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
AVG PAN EVAP (IN)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	5.00	6.00	6.00	19.0
AVG PRECIP (IN)	1.67	2.62	4.31	4.57	4.06	3.09	2.84	2.08	2.34	2.28	0.97	1.20	32.03
MONTHLY AVE. TEMP.	64.00	45.50	34.90	28.60	26.30	30.40	37.00	45.60	53.20	59.50	65.20	64.00	
CALCULATIONS													
DAYS IN MONTH	30.0	31.0	30.0	31.0	31.0	28.0	31.0	30.0	31.0	30.0	31.0	31.0	
BEGINNING STORAGE (MG)	0.0	0.0	14.3	29.1	45.5	67.0	84.9	105.5	124.4	134.6	107.2	58.8	
WASTEWATER FLOW (MGD)	0.42	0.42	0.42	0.45	0.62	0.58	0.61	0.59	0.43	0.42	0.42	0.42	14.7
WASTEWATER VOLUME (MG)	12.5	12.9	12.5	14.0	19.2	16.2	19.1	17.8	13.3	12.5	13.2	12.9	176.0
PAN COEFFICIENT	0.683	0.860	0.962	1.000	1.000	1.000	0.935	0.860	0.786	0.730	0.674	0.683	
POND EVAP (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.7	3.0	3.1	10.0
EVAPORATION AREA (AC)	3.0	3.0	3.5	4.0	4.5	5.2	5.8	6.5	7.1	7.4	6.5	4.9	
EVAPORATION VOL (MG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.5	0.4	1.7
PRECIPITATION (IN)	1.7	2.6	4.3	4.6	4.1	3.1	2.8	2.1	2.3	2.3	1.0	1.2	32.0
PRECIPITATION VOL (MG)	0.9	1.4	2.3	2.5	2.2	1.7	1.5	1.1	1.3	1.2	0.5	0.7	17.4
RAIN YET TO FALL (IN)	32.0	30.4	27.7	23.4	18.9	14.8	11.7	8.9	6.8	4.5	2.2	1.2	
MONTHS OF SURFACE DISHARGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SURFACE DISCHARGE FROM STORAGE, MG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
AVG. MONTHLY Pdef (IN)	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.8	5.8	6.8	22.04
Vadose Zone Storage (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
MODELED IRRIG DEMAND (IN)	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	6.0	7.0	22.80
IRRIGATION DEMAND VOLUME (MG)	56.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	40.6	61.6	72.0	234.7
REUSE WATER IRRIGATED	13.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	40.6	61.6	72.0	191.6
STORAGE GAIN (MG)	-43.1	14.3	14.8	16.5	21.4	17.9	20.6	19.0	10.2	-27.4	-48.4	-58.8	
FINAL STORAGE (MG)	0.0	14.3	29.1	45.5	67.0	84.9	105.5	124.4	134.6	107.2	58.8	0.0	
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

ANNUAL INFLOW SUMMARY (MG)	
WASTEWATER	176.0
PRECIPITATION	17.4
GIVEN INFLOWS-OUTFLOWS	0.0
TOTAL	193.4

ANNUAL OUTFLOW SUMMARY (MG)	
POND EVAPORATION	1.7
POND PERCOLATION	0.0
IRRIGATION	191.6
TOTAL	193.4

OVERALL BALANCE	
TOTAL INFLOW-OUTFLOW (MG)	0.0
MAX. REQ'D STORAGE (MG)	**135**

Alternative 3 - Boyer Slough Discharge and Critical Season Land Application With 84 Acres Under Irrigation

KPSD

Flow 0.483 MGD Summer Average

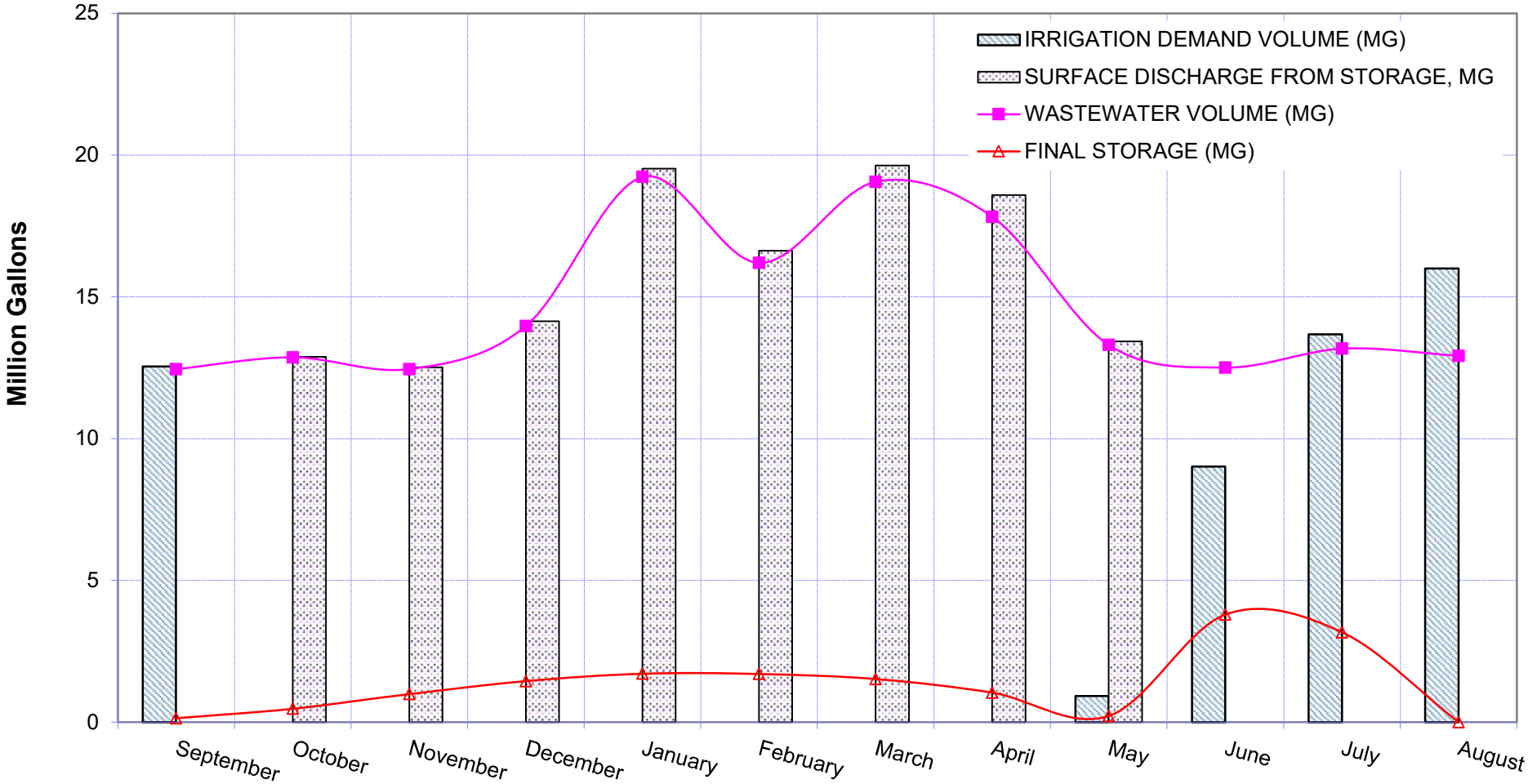
Flow 0.483 MGD Annual Average

Annual Irrigation Demand 22.8 inches

Evaporation Volume 0.84 MG

Storage 4 MG

Area Irrigated 84.2 Acres



KPSD **Annual Irrigation Demand 22.8 inches** **Area Irrigated 84.2 Acres** 0.0

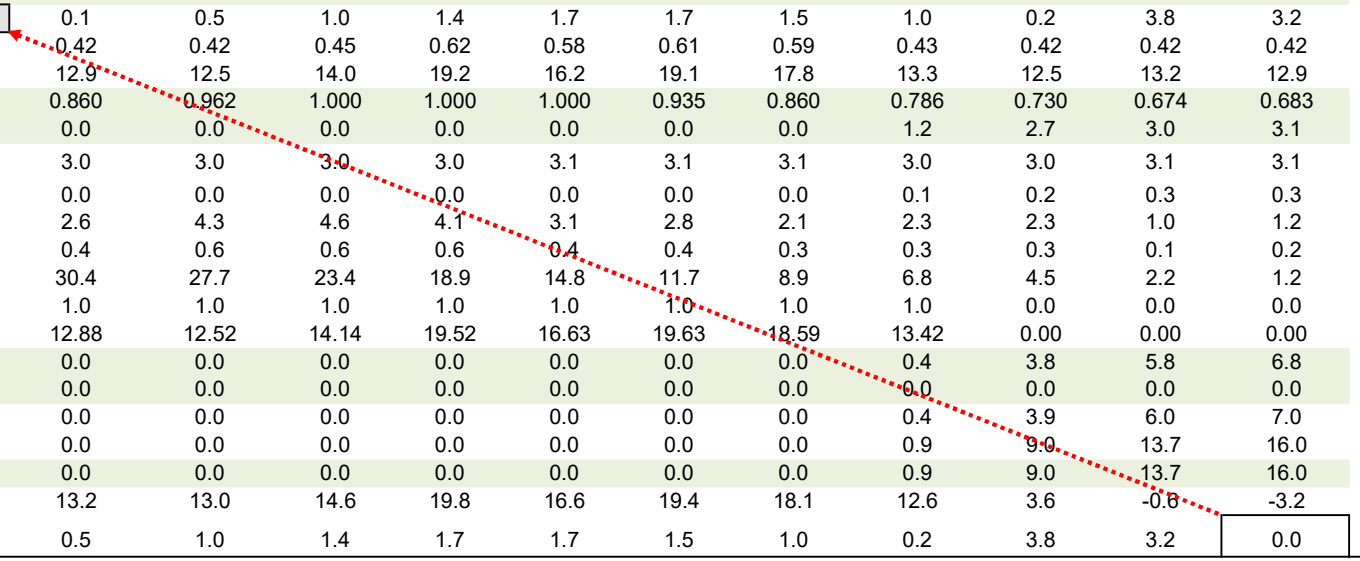
Flow 0.483 MGD Summer Average **Storage 4 MG** **Flow 0.483 MGD Annual Average**

SORAGE LAGOON W/ LAND APPLICATION ON ALFALFA DURING GROWING SEASON

AVG ANN WASTEWATER DESIGN FLOW, MGD	**0.48**		**REQ'D IRRIGATION AREA (AC)**	**84.17**
RAIN CATCHMENT AREA (AC)	5.00	Acres of Storage Ponds		
POND PERIMETER RUNOFF FRACTION	1.00		AVERAGE IRRIGATION REDUCTION	0.90
POND EVAP AREA AT ZERO STOR (AC)	3.00		IRRIGATION EFFICIENCY (DECIMAL FRA	0.87
POND EVAP AREA ADD PER UNIT STOR (AC/MG)	0.033		PRECIP/AVG PRECIP RATIO	1.00
			EVAPORATION / AVE EVAPORATION RA	0.75
		Flow Ratio	KNOW AVERAGE FLOW / DESIGN FLOW	1.00

PARAMETER

	9	10	11	12	1	2	3	4	5	6	7	8	
INPUT DATA	September	October	November	December	January	February	March	April	May	June	July	August	TOTAL
MONTHLY FLOW RATIOS	0.4150	0.4150	0.4150	0.4507	0.6203	0.5785	0.6148	0.5942	0.4291	0.4168	0.4250	0.4168	
MONTHLY FLOWS (MGD)	0.41500	0.42	0.42	0.45	0.62	0.58	0.61	0.59	0.43	0.42	0.42	0.42	0.483
GIVEN INFLOW-OUTFLOW (MG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
AVG PAN EVAP (IN)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	5.00	6.00	6.00	19.0
AVG PRECIP (IN)	1.67	2.62	4.31	4.57	4.06	3.09	2.84	2.08	2.34	2.28	0.97	1.20	32.03
MONTHLY AVE. TEMP.	64.00	45.50	34.90	28.60	26.30	30.40	37.00	45.60	53.20	59.50	65.20	64.00	
CALCULATIONS													
DAYS IN MONTH	30.0	31.0	30.0	31.0	31.0	28.0	31.0	30.0	31.0	30.0	31.0	31.0	
BEGINNING STORAGE (MG)	0.0	0.1	0.5	1.0	1.4	1.7	1.7	1.5	1.0	0.2	3.8	3.2	
WASTEWATER FLOW (MGD)	0.42	0.42	0.42	0.45	0.62	0.58	0.61	0.59	0.43	0.42	0.42	0.42	14.7
WASTEWATER VOLUME (MG)	12.5	12.9	12.5	14.0	19.2	16.2	19.1	17.8	13.3	12.5	13.2	12.9	176.0
PAN COEFFICIENT	0.683	0.860	0.962	1.000	1.000	1.000	0.935	0.860	0.786	0.730	0.674	0.683	
POND EVAP (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.7	3.0	3.1	10.0
EVAPORATION AREA (AC)	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.0	3.0	3.1	3.1	
EVAPORATION VOL (MG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.8
PRECIPITATION (IN)	1.7	2.6	4.3	4.6	4.1	3.1	2.8	2.1	2.3	2.3	1.0	1.2	32.0
PRECIPITATION VOL (MG)	0.2	0.4	0.6	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.1	0.2	4.4
RAIN YET TO FALL (IN)	32.0	30.4	27.7	23.4	18.9	14.8	11.7	8.9	6.8	4.5	2.2	1.2	
MONTHS OF SURFACE DISHARGE	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	
SURFACE DISCHARGE FROM STORAGE, MG	0.00	12.88	12.52	14.14	19.52	16.63	19.63	18.59	13.42	0.00	0.00	0.00	
AVG. MONTHLY Pdef (IN)	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.8	5.8	6.8	22.04
Vadose Zone Storage (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
MODELED IRRIG DEMAND (IN)	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	6.0	7.0	22.80
IRRIGATION DEMAND VOLUME (MG)	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	9.0	13.7	16.0	52.1
REUSE WATER IRRIGATED	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	9.0	13.7	16.0	52.1
STORAGE GAIN (MG)	0.1	13.2	13.0	14.6	19.8	16.6	19.4	18.1	12.6	3.6	-0.6	-3.2	
FINAL STORAGE (MG)	0.1	0.5	1.0	1.4	1.7	1.7	1.5	1.0	0.2	3.8	3.2	0.0	
0.418719547	0.000	0.416	0.417	0.456	0.630	0.594	0.633	0.620	0.433	0.000	0.000	0.000	



ANNUAL INFLOW SUMMARY (MG)	
WASTEWATER	176.0
PRECIPITATION	4.4
GIVEN INFLOWS-OUTFLOWS	0.0
TOTAL	180.3

ANNUAL OUTFLOW SUMMARY (MG)	
POND EVAPORATION	0.8
POND PERCOLATION	0.0
IRRIGATION	52.1
TOTAL	53.0

OVERALL BALANCE	
TOTAL INFLOW-OUTFLOW (MG)	127.3
MAX. REQ'D STORAGE (MG)	**4**

Alternative 3 - Boyer Slough Discharge and Critical Season Land Application With 80 Acres Under Irrigation

KPSD

Flow 0.483 MGD Summer Average

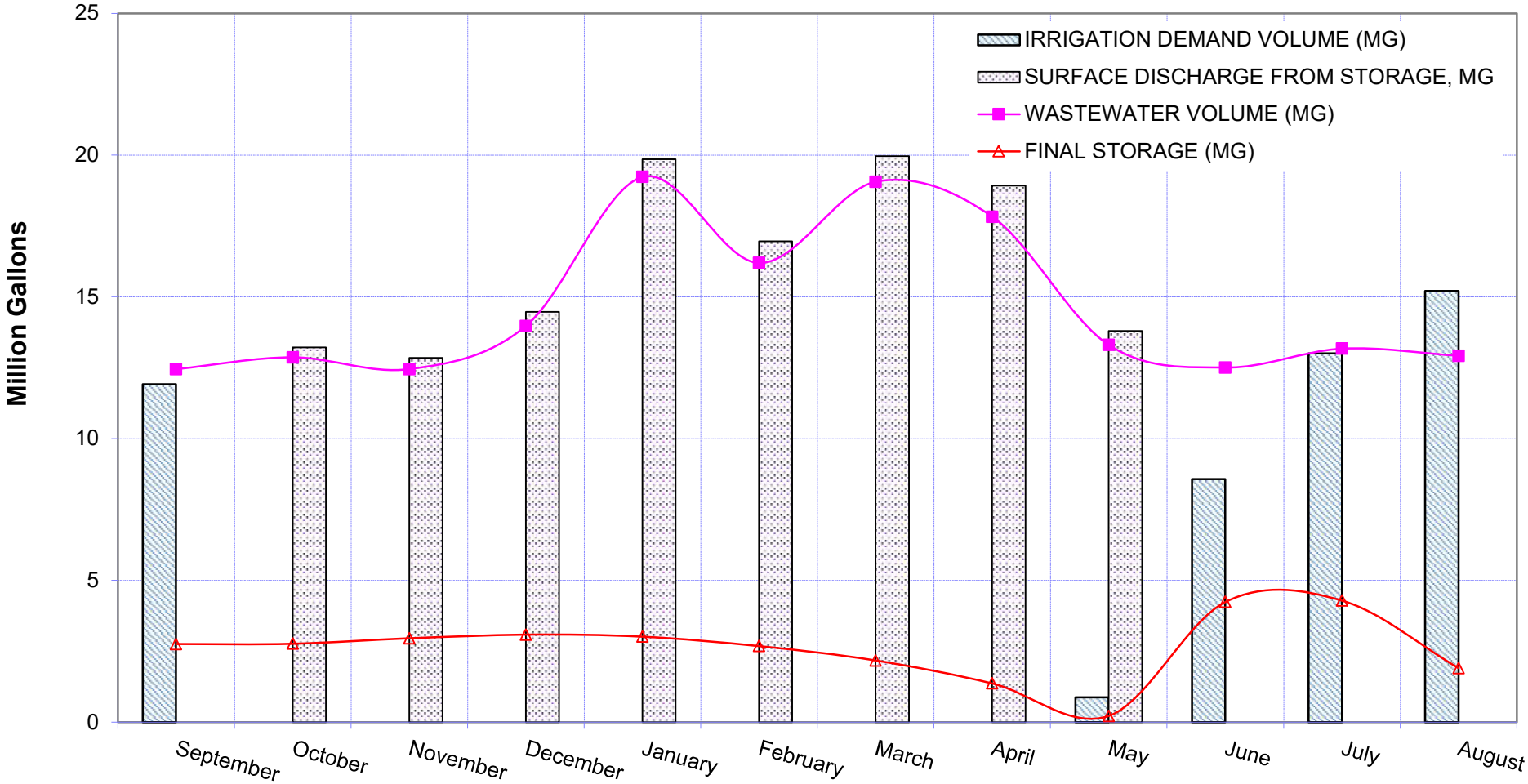
Flow 0.483 MGD Annual Average

Annual Irrigation Demand 22.8 inches

Evaporation Volume 0.84 MG

Storage 4 MG

Area Irrigated 80 Acres



KPSD **Annual Irrigation Demand 22.8 inches** **Area Irrigated 80 Acres** 1.9

Flow 0.483 MGD Summer Average **Storage 4 MG** **Flow 0.483 MGD Annual Average**

SORAGE LAGOON W/ LAND APPLICATION ON ALFALFA DURING GROWING SEASON

AVG ANN WASTEWATER DESIGN FLOW, MGD	**0.48**		**REQ'D IRRIGATION AREA (AC)**	**80.00**
RAIN CATCHMENT AREA (AC)	5.00	Acres of Storage Ponds		
POND PERIMETER RUNOFF FRACTION	1.00		AVERAGE IRRIGATION REDUCTION	0.90
POND EVAP AREA AT ZERO STOR (AC)	3.00		IRRIGATION EFFICIENCY (DECIMAL FRA	0.87
POND EVAP AREA ADD PER UNIT STOR (AC/MG)	0.033		PRECIP/AVG PRECIP RATIO	1.00
			EVAPORATION / AVE EVAPORATION RA	0.75
		Flow Ratio	KNOW AVERAGE FLOW / DESIGN FLOW	1.00

PARAMETER

	9	10	11	12	1	2	3	4	5	6	7	8	
INPUT DATA	September	October	November	December	January	February	March	April	May	June	July	August	TOTAL
MONTHLY FLOW RATIOS	0.4150	0.4150	0.4150	0.4507	0.6203	0.5785	0.6148	0.5942	0.4291	0.4168	0.4250	0.4168	
MONTHLY FLOWS (MGD)	0.41500	0.42	0.42	0.45	0.62	0.58	0.61	0.59	0.43	0.42	0.42	0.42	0.483
GIVEN INFLOW-OUTFLOW (MG)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
AVG PAN EVAP (IN)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	5.00	6.00	6.00	19.0
AVG PRECIP (IN)	1.67	2.62	4.31	4.57	4.06	3.09	2.84	2.08	2.34	2.28	0.97	1.20	32.03
MONTHLY AVE. TEMP.	64.00	45.50	34.90	28.60	26.30	30.40	37.00	45.60	53.20	59.50	65.20	64.00	
CALCULATIONS													
DAYS IN MONTH	30.0	31.0	30.0	31.0	31.0	28.0	31.0	30.0	31.0	30.0	31.0	31.0	
BEGINNING STORAGE (MG)	2.0	2.8	2.8	3.0	3.1	3.0	2.7	2.2	1.4	0.2	4.2	4.3	
WASTEWATER FLOW (MGD)	0.42	0.42	0.42	0.45	0.62	0.58	0.61	0.59	0.43	0.42	0.42	0.42	14.7
WASTEWATER VOLUME (MG)	12.5	12.9	12.5	14.0	19.2	16.2	19.1	17.8	13.3	12.5	13.2	12.9	176.0
PAN COEFFICIENT	0.683	0.860	0.962	1.000	1.000	1.000	0.935	0.860	0.786	0.730	0.674	0.683	
POND EVAP (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.7	3.0	3.1	10.0
EVAPORATION AREA (AC)	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.1	3.1	
EVAPORATION VOL (MG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.8
PRECIPITATION (IN)	1.7	2.6	4.3	4.6	4.1	3.1	2.8	2.1	2.3	2.3	1.0	1.2	32.0
PRECIPITATION VOL (MG)	0.2	0.4	0.6	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.1	0.2	4.4
RAIN YET TO FALL (IN)	32.0	30.4	27.7	23.4	18.9	14.8	11.7	8.9	6.8	4.5	2.2	1.2	
MONTHS OF SURFACE DISHARGE	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	
SURFACE DISCHARGE FROM STORAGE, MG	0.00	13.21	12.85	14.46	19.85	16.95	19.96	18.91	13.80	0.00	0.00	0.00	
AVG. MONTHLY Pdef (IN)	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.8	5.8	6.8	22.04
Vadose Zone Storage (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
MODELED IRRIG DEMAND (IN)	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	6.0	7.0	22.80
IRRIGATION DEMAND VOLUME (MG)	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	8.6	13.0	15.2	49.6
REUSE WATER IRRIGATED	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	8.6	13.0	15.2	49.6
STORAGE GAIN (MG)	0.8	13.2	13.0	14.6	19.8	16.6	19.4	18.1	12.6	4.0	0.0	-2.4	
FINAL STORAGE (MG)	2.8	2.8	3.0	3.1	3.0	2.7	2.2	1.4	0.2	4.2	4.3	1.9	
0.427773505	0.000	0.426	0.428	0.467	0.640	0.606	0.644	0.630	0.445	0.000	0.000	0.000	

ANNUAL INFLOW SUMMARY (MG)	
WASTEWATER	176.0
PRECIPITATION	4.4
GIVEN INFLOWS-OUTFLOWS	0.0
TOTAL	180.3

ANNUAL OUTFLOW SUMMARY (MG)	
POND EVAPORATION	0.8
POND PERCOLATION	0.0
IRRIGATION	49.6
TOTAL	50.4

OVERALL BALANCE	
TOTAL INFLOW-OUTFLOW (MG)	129.9
MAX. REQ'D STORAGE (MG)	**4**

APPENDIX D

Opinions of Probable Cost

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Screening Facility**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
One Automatic Screen					
1	Excavation and earthwork	1	LS	$ 17,348	$ 17,348
2	Concrete	150	CY	$ 810	$ 121,438
3	Screenings building - 20 x 40	800	SF	$ 250	$ 200,000
4	Odor Control	1	LS	$ 17,348	$ 17,348
5	Drumscreen with Washing Compacting	1	EA	$ 250,000	$ 250,000
6	installation and contractor mark-up			25%	$ 62,500
7	Access road	1	LS	$ 11,565	$ 11,565
8	Manual bar screen	1	LS	$ 5,204	$ 5,204
9	Slide gates	4	EA	$ 1,735	$ 6,939
10	Influent flow measurement - Parshall flume	1	LS	$ 4,048	$ 4,048
11	Influent flow proportioned sampling	1	LS	$ 5,783	$ 5,783
12	Electrical	1	LS	$ 57,827	$ 57,827
13					
14					
15					
16					
17					
18					
19					
20	**TOTAL**				**$ 760,000**
21	Additional Elements (estimated % of above)				
22	Contractor mobilization and administration			7.5%	$57,000
23	Site civil			10.0%	$76,000
24	Yard piping			20.0%	$152,000
25	Electrical & instrumentation			30.0%	$228,000
26	Bonding			2.5%	$19,000
27	Contractor overhead and profit			7.5%	$57,000
28					
29				**SUBTOTAL**	**$ 1,349,000**
30				*Construction Contingency: 30%:*	$ 405,000
31				*Geotechnical/Site Stabilization: 0.5%:*	$ 7,000
32				*Prevailing Wages: 7.5%:*	$ 101,000
33				*State Sales Tax: 0%:*	$ -
34				*AIS: 2.5%:*	$ 34,000
35					
36				**SUBTOTAL**	**$ 1,896,000**
37				*Engineering/Design: 15%:*	$ 284,000
38				*CMS: 7.5%:*	$ 142,000
39				*Legal and Administrative: 1%:*	$ 19,000
40	Other Outright Purchases				
41					
42					
43					
44					
45	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 2,341,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Grit Removal**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
One Vortex Grit Chamber 1 mgd Capacity					
1	Earthwork	1	LS	$ 17,348	$ 17,348
2	Concrete	90	CY	$ 694	$ 62,454
3	Grit Removal, Classifying & Washing Equipment	1	LS	$ 95,994	$ 95,994
4	Installation and mark-up			25%	$ 23,998
5	Grit dewatering building - 30x40	1,200	SF	$ 104	$ 124,907
6	Handrailing	1	LS	$ 8,674	$ 8,674
7	Grating	1	LS	$ 8,674	$ 8,674
8	Slide gates	4	EA	$ 1,735	$ 6,939
9	Mechanical piping	1	LS	$ 23,131	$ 23,131
10	8-in Drain piping	1	LS	$ 11,565	$ 11,565
11	Odor Control	1	LS	$ 57,827	$ 57,827
12	Electrical	1	LS	$ 34,696	$ 34,696
13					
14					
15					
16					
17					
18					
19					
20	**TOTAL**				**$ 458,900**
21	Additional Elements (estimated % of above)				
22	Contractor mobilization and administration			7.5%	$34,000
23	Site civil			10.0%	$46,000
24	Yard piping			20.0%	$92,000
25	Electrical & instrumentation			30.0%	$138,000
26	Bonding			2.5%	$11,000
27	Contractor overhead and profit			7.5%	$34,000
28					
29				**SUBTOTAL**	**$ 814,000**
30				*Construction Contingency: 30%:*	$ 244,000
31				*Geotechnical/Site Stabilization: 0.5%:*	$ 4,000
32				*Prevailing Wages: 7.5%:*	$ 61,000
33				*State Sales Tax: 0%:*	$ -
34				*AIS: 2.5%:*	$ 20,000
35					
36				**SUBTOTAL**	**$ 1,143,000**
37				*Engineering/Design: 15%:*	$ 171,000
38				*CMS: 7.5%:*	$ 86,000
39				*Legal and Administrative: 1%:*	$ 11,000
40	Other Outright Purchases				
41					
42					
43					
44					
45	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 1,411,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Anoxic Basins**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Concrete, tank volume	150	CY	$ 694	$ 104,089
2	10 inch pipe	120	FT	$ 58	$ 6,939
3	Mechanical Mixers	2	EA	$ 17,348	$ 34,696
4	installation and mark-up			25%	$ 8,674
4	Earthwork	1	LS	$ 23,131	$ 23,131
5	Dewatering	1	LS	$ 23,131	$ 23,131
6	Electrical	1	LS	$ 17,348	$ 17,348
7					
8	**SUBTOTAL**				**$ 218,000**
9					
10					
11					
12					
13					
14	**TOTAL**				**$ 218,000**
15	Additional Elements (estimated % of above)				
16	Contractor mobilization and administration			7.5%	$16,000
17	Site civil			10.0%	$22,000
18	Yard piping			20.0%	$44,000
19	Electrical & instrumentation			30.0%	$65,000
20	Bonding			2.5%	$5,000
21	Contractor overhead and profit			7.5%	$16,000
22					
23				**SUBTOTAL**	**$ 386,000**
24				*Construction Contingency: 30%:*	$ 116,000
25				*Geotechnical/Site Stabilization: 0.5%:*	$ 2,000
26				*Prevailing Wages: 7.5%:*	$ 29,000
27				*State Sales Tax: 0%:*	$ -
28				*AIS: 2.5%:*	$ 10,000
29					
30				**SUBTOTAL**	**$ 543,000**
31				*Engineering/Design: 15%:*	$ 81,000
32				*CMS: 7.5%:*	$ 41,000
33				*Legal and Administrative: 1%:*	$ 5,000
34	Other Outright Purchases				
35					
36					
37					
38					
39	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 670,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Membrane Biological Reactor**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	MBR and equipment from Vendor	1	LS	$ 1,544,570	$ 1,544,570
2	Installation and contractor mark-up			50%	$ 772,285
3	Concrete for Activated Sludge Tank	310	CY	$ 694	$ 215,118
4	Earthwork	1	LS	$ 28,914	$ 28,914
5	Dewatering	1	LS	$ 28,914	$ 28,914
6	Access Road	1	LS	$ 17,348	$ 17,348
7	Transfer structure	2	EA	$ 11,565	$ 23,131
8	10 inch pipe	200	FT	$ 58	$ 11,565
9	Aeration blowers	2	EA	$ 34,696	$ 69,393
10	Mechanical Piping	1	LS	$ 34,696	$ 34,696
11	Aeration piping	400	FT	$ 58	$ 23,131
12	Handrailing	1	LS	$ 17,348	$ 17,348
13	Blower & Control Building	1,200	SF	$ 250	$ 300,000
14	RAS / WAS piping	400	FT	$ 87	$ 34,696
15	Internal circulation pumps	2	EA	$ 17,348	$ 34,696
16	Internal circulation piping	150	FT	$ 87	$ 13,011
17	Internal selector	50	CY	$ 694	$ 34,696
18	6 inch pipe	200	LF	$ 58	$ 11,565
19	Isolation valves	20	EA	$ 1,735	$ 34,696
20	Electrical	1	LS	$ 462,619	$ 462,619
21					
22	**SUBTOTAL**				**$ 3,712,000**
23					
24					
25					
26					
27					
28	**TOTAL**				**$ 3,712,000**
29	Additional Elements (estimated % of above)				
30	Contractor mobilization and administration			7.5%	$278,000
31	Site civil			10.0%	$371,000
32	Yard piping			20.0%	$742,000
33	Electrical & instrumentation			30.0%	$1,114,000
34	Bonding			2.5%	$93,000
35	Contractor overhead and profit			7.5%	$278,000
36					
37				**SUBTOTAL**	**$ 6,588,000**
38				*Construction Contingency: 30%:*	$ 1,976,000
39				*Geotechnical/Site Stabilization: 0.5%:*	$ 33,000
40				*Prevailing Wages: 7.5%:*	$ 494,000
41				*State Sales Tax: 0%:*	$ -
42				*AIS: 2.5%:*	$ 165,000
43					
44				**SUBTOTAL**	**$ 9,256,000**
45				*Engineering/Design: 15%:*	$ 1,388,000
46				*CMS: 7.5%:*	$ 694,000
47				*Legal and Administrative: 1%:*	$ 93,000
48	Other Outright Purchases				
49					
50					
51					
52					
53				**TOTAL PROBABLE COST (2016 DOLLARS)**	**$ 11,431,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Oxidation Ditch**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
Two basins at 450,000 gal each					
1	Excavation and earthwork	1	LS	$ 28,914	$ 28,914
2	Dewatering	1	LS	$ 28,914	$ 28,914
3	Basin			$ -	
4	Concrete slab	1,153	CY	$ 347	$ 400,093
5	Concrete walls	489	CY	$ 694	$ 339,591
6	Concrete top slab	253	CY	$ 694	$ 175,651
7	Effluent weir and baffle	2	LS	$ 23,131	$ 46,262
8	Staircase	4	EA	$ 8,674	$ 34,696
9	Handrailing and misc. metal fabrications	1	LS	$ 57,827	$ 57,827
10	Aerator	4	EA	$ 57,827	$ 231,310
11	Installation and contractor mark-up			25%	$ 57,827
12	Painting	4	EA	$ 11,565	$ 46,262
13	Electrical (probable percentage of mechanism)			25%	$ 57,827
14	Influent pipe - 16-in ductile iron	2	LS	$ 17,348	$ 34,696
15	Effluent pipe - 16-in ductile iron	2	LS	$ 17,348	$ 34,696
16	Splitter Box	1	LS	$ 10,000	$ 10,000
17	**SUBTOTAL**				**$ 1,585,000**
18					
19					
20					
21					
22					
23	**TOTAL**				**$ 1,585,000**
24	Additional Elements (estimated % of above)				
25	Contractor mobilization and administration			7.5%	$119,000
26	Site civil			10.0%	$159,000
27	Yard piping			20.0%	$317,000
28	Electrical & instrumentation			30.0%	$476,000
29	Bonding			2.5%	$40,000
30	Contractor overhead and profit			7.5%	$119,000
31					
32				**SUBTOTAL**	**$ 2,815,000**
33				*Construction Contingency: 30%:*	$ 845,000
34				*Geotechnical/Site Stabilization: 0.5%:*	$ 14,000
35				*Prevailing Wages: 7.5%:*	$ 211,000
36				*State Sales Tax: 0%:*	$ -
37				*AIS: 2.5%:*	$ 70,000
38					
39				**SUBTOTAL**	**$ 3,955,000**
40				*Engineering/Design: 15%:*	$ 593,000
41				*CMS: 7.5%:*	$ 297,000
42				*Legal and Administrative: 1%:*	$ 40,000
43	Other Outright Purchases				
44					
45					
46					
47					
48	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 4,885,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Secondary Clarification**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
Two 60-ft Clarifiers					
1	Excavation and earthwork	1	LS	$ 28,914	$ 28,914
2	Dewatering	1	LS	$ 28,914	$ 28,914
3	Distribution Box				
4	Concrete	35	CY	$ 694	$ 24,288
5	Slide Gates	4	EA	$ 1,735	$ 6,939
6	Grating	1	LS	$ 4,048	$ 4,048
7	Handrailing	1	LS	$ 5,783	$ 5,783
8	Jib crane	1	LS	$ 5,783	$ 5,783
9	Center feed clarifier			$ -	
10	Mechanism, 60-ft dia	2	EA	$ 138,786	$ 277,572
11	Concrete	900	CY	$ 694	$ 624,536
12	Installation and contractor mark-up			20%	$ 55,514
13	Painting	2	EA	$ 17,348	$ 34,696
14	Miscellaneous metal fabrications	2	EA	$ 17,348	$ 34,696
15	Influent pipe - 12-in ductile iron	1	LS	$ 17,348	$ 17,348
16	Scum pipe - 8-in ductile iron	1	LS	$ 5,783	$ 5,783
17	Underflow pipe - 8-in ductile iron	1	LS	$ 23,131	$ 23,131
18	Effluent pipe - 12-in ductile iron	1	LS	$ 17,348	$ 17,348
19	Electrical (probable percentage of mechanism)			20%	$ 55,500
20					
21	**SUBTOTAL**				**$ 1,251,000**
22					
23					
24					
25					
26					
27	**TOTAL**				**$ 1,251,000**
28	Additional Elements (estimated % of above)				
29	Contractor mobilization and administration			7.5%	$94,000
30	Site civil			10.0%	$125,000
31	Yard piping			20.0%	$250,000
32	Electrical & instrumentation			30.0%	$375,000
33	Bonding			2.5%	$31,000
34	Contractor overhead and profit			7.5%	$94,000
35					
36				**SUBTOTAL**	**$ 2,220,000**
37				*Construction Contingency: 30%:*	$ 666,000
38				*Geotechnical/Site Stabilization: 0.5%:*	$ 11,000
39				*Prevailing Wages: 7.5%:*	$ 167,000
40				*State Sales Tax: 0%:*	$ -
41				*AIS: 2.5%:*	$ 56,000
42					
43				**SUBTOTAL**	**$ 3,120,000**
44				*Engineering/Design: 15%:*	$ 468,000
45				*CMS: 7.5%:*	$ 234,000
46				*Legal and Administrative: 1%:*	$ 31,000
47	Other Outright Purchases				
48					
49					
50					
51					
52				**TOTAL PROBABLE COST (2016 DOLLARS)**	**$ 3,853,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Chlorine Disinfection**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Earthwork	1	LS	$ 28,914	$ 28,914
2	Dewatering	1	LS	$ 28,914	$ 28,914
3	Concrete, chlorine contact	300	CY	$ 694	$ 208,179
4	Concrete, de-chlorination	35	CY	$ 694	$ 24,288
5	Access Road	1	LS	$ 17,348	$ 17,348
6	Transfer Structure	2	EA	$ 11,565	$ 23,131
7	10 inch pipe	150	FT	$ 58	$ 8,674
8	Mechanical Mixers	2	EA	$ 5,783	$ 11,565
9	Grating	1	LS	$ 11,565	$ 11,565
10	Handrail	150	LF	$ 116	$ 17,348
11	Chemical feed equipment	1	LS	$ 34,696	$ 34,696
12	installation and contractor mark-up			25%	$ 8,674
13	Chemical feed room - 10x20	200	SF	$ 250	$ 50,000
14	Slide gates	4	EA	$ 1,735	$ 6,939
15	Effluent flow measurement - Parshall flume	1	LS	$ 4,048	$ 4,048
16	Effluent flow proportioned sampling	1	LS	$ 5,783	$ 5,783
17	Electrical	1	LS	$ 28,914	$ 28,914
18					
19	**SUBTOTAL**				**$ 519,000**
20					
21					
22					
23					
24					
25	**TOTAL**				**$ 519,000**
26	Additional Elements (estimated % of above)				
27	Contractor mobilization and administration			7.5%	$39,000
28	Site civil			10.0%	$52,000
29	Yard piping			20.0%	$104,000
30	Electrical & instrumentation			30.0%	$156,000
31	Bonding			2.5%	$13,000
32	Contractor overhead and profit			7.5%	$39,000
33					
34				**SUBTOTAL**	**$ 922,000**
35				*Construction Contingency: 30%:*	$ 277,000
36				*Geotechnical/Site Stabilization: 0.5%:*	$ 5,000
37				*Prevailing Wages: 7.5%:*	$ 69,000
38				*State Sales Tax: 0%:*	$ -
39				*AIS: 2.5%:*	$ 23,000
40					
41				**SUBTOTAL**	**$ 1,296,000**
42				*Engineering/Design: 15%:*	$ 194,000
43				*CMS: 7.5%:*	$ 97,000
44				*Legal and Administrative: 1%:*	$ 13,000
45	Other Outright Purchases				
46					
47					
48					
49					
50	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 1,600,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **RAS and WAS Pumping**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Excavation	1	LS	$ 23,131	$ 23,131
2	Dewatering	1	LS	$ 23,131	$ 23,131
3	30' x 30' pump vault (concrete)	188	CY	$ 694	$ 130,459
4	Storage structure above grade	900	SF	$ 58	$ 52,045
5	Surface improvements	1	LS	$ 11,565	$ 11,565
6	Staircase	1	LS	$ 8,674	$ 8,674
7	Pump vault access hatches	3	EA	$ 3,470	$ 10,409
8	Hoist system	1	LS	$ 8,674	$ 8,674
9	Pumps and Mechanical			$ -	
10	Recirculation pumps	2	EA	$ 17,348	$ 34,696
11	installation and contractor markup			40%	$ 13,879
12	Mechanical piping	1	LS	$ 34,696	$ 34,696
13	8-inch DIP RAS line to the biological reactor	400	LF	$ 58	$ 23,131
14	8-inch DIP WAS line to biosolids dewatering	400	LF	$ 58	$ 23,131
15	Sump pump and return piping to plant drain	1	LS	$ 11,565	$ 11,565
16	Electrical (probable percentage of above)			15%	$ 54,000
17					
18	**SUBTOTAL**				**$ 463,000**
19					
20					
21					
22					
23					
24	**TOTAL**				**$ 463,000**
25	Additional Elements (estimated % of above)				
26	Contractor mobilization and administration			7.5%	$35,000
27	Site civil			10.0%	$46,000
28	Yard piping			20.0%	$93,000
29	Electrical & instrumentation			30.0%	$139,000
30	Bonding			2.5%	$12,000
31	Contractor overhead and profit			7.5%	$35,000
32					
33				**SUBTOTAL**	**$ 823,000**
34				*Construction Contingency: 30%:*	$ 247,000
35				*Geotechnical/Site Stabilization: 0.5%:*	$ 4,000
36				*Prevailing Wages: 7.5%:*	$ 62,000
37				*State Sales Tax: 0%:*	$ -
38				*AIS: 2.5%:*	$ 21,000
39					
40				**SUBTOTAL**	**$ 1,157,000**
41				*Engineering/Design: 15%:*	$ 174,000
42				*CMS: 7.5%:*	$ 87,000
43				*Legal and Administrative: 1%:*	$ 12,000
44	Other Outright Purchases				
45					
46	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 1,430,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Biosolids Management / Solids Dewatering**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Belt filter press equipment				
2	screw press	1	LS	$ 338,869	$ 338,869
3	conveyor system	1	LS	$ 168,856	$ 168,856
4	walkway and stairs	1	LS	$ 11,565	$ 11,565
5	Polymer System	1	EA	$ 11,565	$ 11,565
6	1-1/2" poly piping	100	LF	$ 12	$ 1,157
7	installation and mark-up			15%	$ 79,802
8	Mechanical piping	1	LS	$ 86,741	$ 86,741
9	Building	3,000	SF	$ 250	$ 750,000
10	Covered biosolids storage pad	1	LS	$ 40,479	$ 40,479
11	HVAC	1	LS	$ 57,827	$ 57,827
12	Odor Control	1	LS	$ 57,827	$ 57,827
13	Electrical	1	LS	$ 144,569	$ 144,569
14					
15	**SUBTOTAL**				**$ 1,749,000**
16					
17					
18					
19					
20					
21	**TOTAL**				**$ 1,749,000**
22	Additional Elements (estimated % of above)				
23	Contractor mobilization and administration			7.5%	$131,000
24	Site civil			10.0%	$175,000
25	Yard piping			20.0%	$350,000
26	Electrical & instrumentation			30.0%	$525,000
27	Bonding			2.5%	$44,000
28	Contractor overhead and profit			7.5%	$131,000
29					
30				**SUBTOTAL**	**$ 3,105,000**
31				*Construction Contingency: 30%:*	$ 932,000
32				*Geotechnical/Site Stabilization: 0.5%:*	$ 16,000
33				*Prevailing Wages: 7.5%:*	$ 233,000
34				*State Sales Tax: 0%:*	$ -
35				*AIS: 2.5%:*	$ 78,000
36					
37				**SUBTOTAL**	**$ 4,364,000**
38				*Engineering/Design: 15%:*	$ 655,000
39				*CMS: 7.5%:*	$ 327,000
40				*Legal and Administrative: 1%:*	$ 44,000
41	Other Outright Purchases				
42					
43					
44					
45					
46	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 5,390,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Control Building**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Building, 50x50 - including	2,500	SF	$ 250	$ 625,000
2	laboratory				
3	office space				
4	electrical room for MCC				
5	restroom facilities				
6	laundry and janitorial area				
7	storage area				
8	Lab equipment	1	LS	$ 57,827	$ 57,827
9					
10	**SUBTOTAL**				**$ 683,000**
11					
12					
13					
14					
15					
16	**TOTAL**				**$ 683,000**
17	Additional Elements (estimated % of above)				
18	Contractor mobilization and administration			7.5%	$51,000
19	Site civil			10.0%	$68,000
20	Yard piping			20.0%	$137,000
21	Electrical & instrumentation			30.0%	$205,000
22	Bonding			2.5%	$17,000
23	Contractor overhead and profit			7.5%	$51,000
24					
25				**SUBTOTAL**	**$ 1,212,000**
26				*Construction Contingency: 30%:*	$ 364,000
27				*Geotechnical/Site Stabilization: 0.5%:*	$ 6,000
28				*Prevailing Wages: 7.5%:*	$ 91,000
29				*State Sales Tax: 0%:*	$ -
30				*AIS: 2.5%:*	$ 30,000
31					
32				**SUBTOTAL**	**$ 1,703,000**
33				*Engineering/Design: 15%:*	$ 255,000
34				*CMS: 7.5%:*	$ 128,000
35				*Legal and Administrative: 1%:*	$ 17,000
36	Other Outright Purchases				
37					
38					
39					
40					
41	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 2,103,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Rebuild Treatment Lagoons**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Earthwork	500	CY	$ 14	$ 6,939
2	Liner for existing lagoon and surface preparation	44,000	SF	$ 2	$ 101,776
3	Clearing and Grubbing	1.00	AC	$ 1,318	$ 1,318
4	Access Road repair	1	LS	$ 4,048	$ 4,048
5	Transfer Structure repair	3	EA	$ 2,891	$ 8,674
6	10 inch pipe	50	FT	$ 87	$ 4,337
7					
8					
9					
10					
11	**SUBTOTAL**				**$ 127,000**
12					
13					
14					
15					
16					
17	**TOTAL**				**$ 127,000**
18	Additional Elements (estimated % of above)				
19	Contractor mobilization and administration			7.5%	$10,000
20	Site civil			0.0%	$0
21	Yard piping			0.0%	$0
22	Electrical & instrumentation			1.0%	$1,000
23	Bonding			2.5%	$3,000
24	Contractor overhead and profit			7.5%	$10,000
25					
26				**SUBTOTAL**	**$ 151,000**
27				*Construction Contingency: 30%:*	$ 45,000
28				*Geotechnical/Site Stabilization: 0.5%:*	$ 1,000
29				*Prevailing Wages: 7.5%:*	$ 11,000
30				*State Sales Tax: 0%:*	$ -
31				*AIS: 2.5%:*	$ 4,000
32					
33				**SUBTOTAL**	**$ 212,000**
34				*Engineering/Design: 15%:*	$ 32,000
35				*CMS: 7.5%:*	$ 16,000
36				*Legal and Administrative: 1%:*	$ 2,000
37	Other Outright Purchases				
38					
39					
40					
41					
42	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 262,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Rebuild Lagoon 4**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
1	Earthwork	1,319	CY	$ 14	$ 18,304
2	Liner for existing lagoon and surface preparation	117,500	SF	$ 2	$ 271,789
3	Clearing and Grubbing	4	AC	$ 1,318	$ 5,274
4	Access Road repair	1	LS	$ 4,048	$ 4,048
5	Transfer Structure repair	1	EA	$ 2,891	$ 2,891
6	10 inch pipe	400	FT	$ 87	$ 34,696
7					
8					
9					
10					
11	**SUBTOTAL**				
12					
13					
14					
15					
16					
17	**TOTAL**				**$ 337,000**
18	Additional Elements (estimated % of above)				
19	Contractor mobilization and administration			7.5%	$25,000
20	Site civil			0.0%	$0
21	Yard piping			0.0%	$0
22	Electrical & instrumentation			1.0%	$3,000
23	Bonding			2.5%	$8,000
24	Contractor overhead and profit			7.5%	$25,000
25					
26				**SUBTOTAL**	**$ 398,000**
27				*Construction Contingency: 30%:*	$ 119,000
28				*Geotechnical/Site Stabilization: 0.5%:*	$ 2,000
29				*Prevailing Wages: 7.5%:*	$ 30,000
30				*State Sales Tax: 0%:*	$ -
31				*AIS: 2.5%:*	$ 10,000
32					
33				**SUBTOTAL**	**$ 559,000**
34				*Engineering/Design: 15%:*	$ 84,000
35				*CMS: 7.5%:*	$ 42,000
36				*Legal and Administrative: 1%:*	$ 6,000
37	Other Outright Purchases				
38					
39					
40					
41					
42	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 691,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Land Application - No Discharge to Stream, Complete Land Application**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
No Discharge Year Round, Complete Land Application					
1					
6					
7	Property, Land Application Property and Storage	345	ACRE	$ 11,565	$ 3,990,091
8	*(assuming 80 acres already owned by District)*				
9	Site Preparation, grading	1	LS	$ 115,655	$ 115,655
10	First Year Planting	300	ACRE	$ 1,157	$ 346,964
11	Second Year Re-planting			25%	$ 86,741
12	Irrigation System	380	ACRE	$ 7,518	$ 2,856,674
13	*8" Header, 3" aluminum hand lines*				
14	*Site is contiguous and 90% irrigated*				
15					
16	Installation and Markup				
17	Monitoring Wells	5	EA	$ 5,783	$ 28,914
18	Storage Lagoon	3	EA	$ 3,561,000	$ 10,683,000
19	Property Acquisition	Included			
20	Clearing and Grubbing	Included			
21	Access Roads	Included			
22	Earthwork (balanced cut/fills)	Included			
23	HDPE Liner 60 mil and appurtenances	Included			
24	Influent and Effluent Structures	Included			
25	Gates and Fence	Included			
26	Landscaping	Included			
27	Land Application Pump Station			$ -	
28	Earthwork	1	LS	$ 34,696	$ 34,696
29	Packaged Pump Station	1	LS	$ 150,351	$ 150,351
30	Installation and Markup			50%	$ 75,176
31	6" - PVC Force main	500	LF	$ 69	$ 34,696
32	Electrical and Controls	1	LS	$ 115,655	$ 115,655
32					
32	**SUBTOTAL**				**$ 18,519,000**
32					
32	**TOTAL**				**$ 18,519,000**
33	Additional Elements (estimated % of above)				
34	Contractor mobilization and administration			7.5%	$1,389,000
35	Site civil			10.0%	$1,852,000
36	Yard piping			20.0%	$3,704,000
37	Electrical & instrumentation			5.0%	$926,000
38	Bonding			2.5%	$463,000
39	Contractor overhead and profit			7.5%	$1,389,000
40					
41				**SUBTOTAL**	**$ 28,242,000**
42				*Construction Contingency: 30%:*	$ 8,473,000
43				*Geotechnical/Site Stabilization: 0.5%:*	$ 141,000
44				*Prevailing Wages: 7.5%:*	$ 2,118,000
45				*State Sales Tax: 0%:*	$ -
46				*AIS: 2.5%:*	$ 706,000
47					
48				**SUBTOTAL**	**$ 39,680,000**
49				*Engineering/Design: 15%:*	$ 5,952,000
50				*CMS: 7.5%:*	$ 2,976,000
51				*Legal and Administrative: 1%:*	$ 397,000
52	Other Outright Purchases				
53					
54					
55					
56					
57	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 49,005,000**

J-U-B ENGINEERS, Inc. Suite A, 7825 Meadowlark Way, Coeur d'Alene, ID 83815 (208) 762-8787

ENGINEERS OPINION OF PROBABLE COST

DATE: 7/10/2020

PROJECT: **Kootenai-Ponderay Sewer District Sewer Master Plan**

PROJECT DESCRIPTION: **Land Application - Winter Discharge to Stream, with Summer Land Application**

TO:

OWNER PROJ. NO.:

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QUANTITY	UNIT	UNIT PRICE	TOTAL EST. COST
Winter Discharge to Stream with Summer Land Application					
1					
2					
3					
4					
5					
6					
7	Land Application Site Property Acquisition				
8	*(assuming acres already owned by District)*				
9	Site Preparation, grading	1	LS	$ 115,655	$ 115,655
10	First Year Planting	65	ACRE	$ 1,157	$ 75,176
11	Second Year Re-planting			25%	$ 18,794
12	Irrigation System	65	ACRE	$ 7,518	$ 488,642
13	*8" Header, 3" aluminum hand lines*				
14	*Site is contiguous and 90% irrigated*				
15					
16					
17	Monitoring Wells	5	EA	$ 5,783	$ 28,914
18					
19					
20					
21					
22					
23					
24					
24					
24	**SUBTOTAL**				**$ 727,000**
24					
24					
24					
24					
24					
24	**TOTAL**				**$ 727,000**
25	Additional Elements (estimated % of above)				
26	Contractor mobilization and administration			7.5%	$55,000
27	Site civil			0.0%	$0
28	Yard piping			0.0%	$0
29	Electrical & instrumentation			1.0%	$7,000
30	Bonding			2.5%	$18,000
31	Contractor overhead and profit			7.5%	$55,000
32					
33				**SUBTOTAL**	**$ 862,000**
34				*Construction Contingency: 30%:*	$ 259,000
35				*Geotechnical/Site Stabilization: 0.5%:*	$ 4,000
36				*Prevailing Wages: 7.5%:*	$ 65,000
37				*State Sales Tax: 0%:*	$ -
38				*AIS: 2.5%:*	$ 22,000
39					
40				**SUBTOTAL**	**$ 1,212,000**
41				*Engineering/Design: 15%:*	$ 182,000
42				*CMS: 7.5%:*	$ 91,000
43				*Legal and Administrative: 1%:*	$ 12,000
44	Other Outright Purchases				
45					
46					
47					
48					
49	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$ 1,497,000**

PRELIMINARY ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Kootenai-Ponderay Sewer District Sewer Master Plan **DATE:** 7/10/2020

PROJECT DESCRIPTION: Lake Outfall

CLIENT: Kootenai Ponderay Sewer District

P/N: 20-05-076

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QNTY	UNIT	UNIT PRICE	TOTAL COST
1	Manhole, Intercept Lagoon 4 Effluent Line	1	EA	$6,050	$6,050
2	12" Gravity Line, Gravel and Grass Cover	750	FT	$138	$103,125
3	12" Gravity Line, Pavement Cover	965	FT	$220	$212,300
4	12" Gravity Line, Steep Install, Grass Cover, Landscaping	310	FT	$275	$85,250
5	12" Pressure Line, Under Lake Bed	350	FT	$2,100	$735,000
6	12" Pressure Line, On Lake Bed, Weighted Down	2,700	FT	$880	$2,376,000
7	Diffuser	1	LS	$66,000	$66,000
8					
9	Traffic Control	1	LS	$27,500	$27,500
10					
11					
12					
13					
14				**SUBTOTAL**	**$3,611,000**
15	Additional Elements (estimated % of above)				
16	Contractor mobilization and administration			0.0%	$0
17	Site civil			10.0%	$361,000
18	Yard piping			20.0%	$722,000
19	Electrical & instrumentation			30.0%	$1,083,000
20	Bonding			2.5%	$90,000
21	Contractor overhead and profit			7.5%	$271,000
22					
23				**SUBTOTAL**	**$ 6,138,000**
24				*Construction Contingency: 30%:*	$ 1,841,000
25				*Geotechnical/Site Stabilization: 1.5%:*	$ 92,000
26				*Prevailing Wages: 7.5%:*	$ 460,000
27				*State Sales Tax: 0%:*	$ -
28				*AIS: 2.5%:*	$ 153,000
29					
30				**SUBTOTAL**	**$ 8,684,000**
31				*404 Permitting / Environmental Mitigation*	$ 100,000
32				*Enviornmental Information Document*	$ 50,000
33				*Engineering/Design: 25%:*	$ 2,171,000
34				*CMS: 10%:*	$ 868,000
35				*Legal and Administrative: 2%:*	$ 174,000
36	Other Outright Purchases				
37	Property and/or Easements, Contingency Included				$ 1,200,000
38					
39					
40					
41				**TOTAL PROBABLE COST (2016 DOLLARS)**	**$ 13,247,000**

PRELIMINARY ENGINEER'S OPINION OF PROBABLE COST

PROJECT: Kootenai-Ponderay Sewer District Sewer Master Plan **DATE:** 7/10/2020

PROJECT DESCRIPTION: Regional Connection To Sandpoint

CLIENT: Kootenai Ponderay Sewer District

P/N: 20-05-076

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES QNTY	UNIT	UNIT PRICE		TOTAL COST
1	Pump Station, upgrades	1	LS	$825,000		$825,000
2	12" Force Main, Gravel and Grass Cover	14,000	FT	$138		$1,925,000
3	12" Force Main, Pavement Cover	3,000	FT	$220		$660,000
4						
5						
6	Sand Bore	1	FT	$80,000		$80,000
7	RR Bore	80	FT	$2,000		$160,000
8	Highway 95 Bore	200	FT	$2,000		$400,000
9	Sand Creek Bore	80	FT	$2,000		$160,000
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22				**SUBTOTAL**		**$4,210,000**
23	Additional Elements (estimated % of above)					
24	Contractor mobilization and administration			7.5%		$316,000
25	Site civil			10.0%		$421,000
26	Yard piping			20.0%		$842,000
27	Electrical & instrumentation			30.0%		$1,263,000
28	Bonding			2.5%		$105,000
29	Contractor overhead and profit			7.5%		$316,000
30						
31				**SUBTOTAL**	**$**	**7,473,000**
32				*Construction Contingency: 30%:*	$	2,242,000
33				*Geotechnical/Site Stabilization: 0.5%:*	$	37,000
34				*Prevailing Wages: 7.5%:*	$	560,000
35				*State Sales Tax: 0%:*	$	-
36				*AIS: 2.5%:*	$	187,000
37						
38				**SUBTOTAL**	**$**	**10,499,000**
39				*Engineering/Design: 15%:*	$	1,575,000
40				*CMS: 7.5%:*	$	787,000
41				*Legal and Administrative: 1%:*	$	105,000
42	Other Outright Purchases					
43	Property and/or Easements, Contingency Included				$	1,200,000
44						
45						
46						
47	**TOTAL PROBABLE COST (2016 DOLLARS)**				**$**	**14,166,000**