



## ***Technical Memorandum***

**TO:** Coolin Sewer District – Jake Copeland, Board President  
**FROM:** Keller Associates, Inc. – Zack Wallin, PE  
**DATE:** October 25, 2024  
**SUBJECT:** Coolin Sewer District – Wastewater Connection Fee Study

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### **1. INTRODUCTION**

The purpose of this study is to establish the new allowable maximum connection fee (hookup fee) that Coolin Sewer District (District, or CSD) can charge. These recommendations will more equitably assess charges to future customers for capacity allocation in the wastewater utilities owned and operated by the District. Note that the scope of work for this effort did not include an evaluation of monthly user rates, which was completed in a separate study.

### **2. BACKGROUND**

#### **2.1. METHODOLOGY**

This study evaluates the connection fees for the wastewater utilities owned and operated by the District. The connection fee analysis included the following components for each system:

##### Wastewater system

- Lift stations
- Services (Grinder pump stations, Septic Tank Effluent Pump (STEP) systems)
- Pressure mains
- Wastewater treatment system components
  - Building
  - Lagoon System
  - Irrigation System

Operation, replacement, maintenance, and expansion of the wastewater systems are funded primarily by a combination of two major income sources: monthly user rates from existing customers (not evaluated in this report) and connection fees from new customers. Keller Associates recommends that monthly user rates be sufficient to cover the costs of operating, maintaining, and replacing existing system infrastructure, including administration and debt retirement costs. Connection fees should be sufficient to reflect the “equity buy-in” philosophy for new developments’ use of the various components of the infrastructure systems.

Typically, known construction costs are used to establish the value of the existing infrastructure when actual construction costs are available. These historical actual costs are then inflated using the Engineering News Record (ENR) index to the current year. A significant portion of the wastewater treatment and collection system appears to have been constructed in 2006. The District does not appear to have records of actual



construction costs from this project. Therefore, an alternate approach is required to estimate the current value of the wastewater treatment and collection system.

The system’s value was estimated using an AACE class 5 cost estimate approach to reflect current 2024 replacement construction costs. The line items to estimate value were based on an asset inventory that was prepared using data provided by the District, as well as the draft wastewater facility plan. A straight-line depreciated value for the asset based on the assumed remaining design life was then calculated. The assumed remaining design life is an estimate only. It is feasible that equipment/component failure may occur earlier or later. The assumptions are to be used in estimating the value of the infrastructure only.

Table 1 below summarizes the estimated existing replacement value of the wastewater treatment and collection systems. Additional supporting information can be found in Appendix A. In general, the collection system includes estimated replacement costs for pipes (and associated manholes, services, surface repair), and lift station replacement, Grinder/STEP systems. The treatment system includes estimated replacement costs for the building and interior components, influent and lagoon and irrigation piping, construction of the lagoons, sprinklers, treatment equipment, and electrical components.

TABLE 1: ESTIMATED VALUE OF THE EXISTING WASTEWATER TREATMENT AND COLLECTION SYSTEMS

System Component	System Value (millions of dollars)
Collection System	20.2
Treatment System	9.4

**2.2. OUTSTANDING DEBT**

The District does not have any outstanding debt payment obligations to a loan holder for their wastewater system. It is noted that there is a Local Improvement District (LID) that will make payments to the District for previously completed system improvements. The District then pays for the Idaho Department of Environmental Quality the received LID payments. By the time this study is completed, it is assumed that only the 2025 and 2026 LID payments will remain. Each payment is \$228,034.50, for a total outstanding remaining debt of \$456,069. However, the LID does not impact the connection fee calculation, as this debt is held by District customers.

**3. WASTEWATER SYSTEM**

Collection and treatment system capacities were used in conjunction with the values in Table 1 to calculate the maximum connection fee, which is described in more detail below. The collection and treatment systems were considered separately, as each component has different capacity and costs.

**3.1. COLLECTION SYSTEM**

The collection system’s capacity varies, depending on the section of collection system pipe. A 2-inch pipe at the far reaches of the collection system will have a different capacity than a downstream 6-inch pipe. Variability in the collection system in terms of number of connections in a given reach, size of pipe, size of grinder/ STEP pumps all play a factor in system capacity. Typical practice is to identify the expected capacity of collection system infrastructure immediately upstream of the wastewater treatment plant because it represents the entire collection system. Therefore, this study used the South Lift Station’s



capacity to estimate the collection system’s capacity, for the purpose of this study. The South Lift Station directly feeds the wastewater treatment plant.

Per the wastewater facility plan, the South Lift Station has an approximate capacity of 330 gpm. If each ERU is expected to produce 200 gallons per day average day flow with a 4x average day to peak hour factor (per the facility plan), the estimated capacity is 594 ERUs.

Alternatively, the existing 8-inch pressure pipe’s capacity could be used to estimate capacity. The capacity of a pressure pipe varies depending on the maximum acceptable velocity and the sizing of the existing pumps. The facility plan establishes a maximum velocity of 6-feet per second, for planning purposes. Therefore, an 8-inch pressure pipe under this scenario would serve up to 1,656 ERUs (estimated) under the flow circumstances assumed above.

The existing pumps are not large enough to generate a 6 ft/s velocity, and pass the expected flow generated from all these connections. Significant pump station upgrades would be needed. Therefore, the total estimated capacity is 594 ERUs for the collection system.

**3.2. TREATMENT SYSTEM**

Per the wastewater facility plan, the treatment system is beyond capacity. If all connected ERUs were active, the treatment system would not be able to meet the conditions of the reuse permit. It is expected that the treatment facility can treat/store about 292 ERUs, if the ERUs are generating wastewater full time. However, 633 ERUs are currently connected to the system, and the treatment system provides value to these ERUs, even if these ERUs are not always active. Therefore, a capacity of 633 was used for the purpose of estimating a maximum connection fee.

Capacities estimated in this section are for the sole purpose of estimating the maximum connection fee and should not constitute justification for the addition of new developments (ERUs) to the system without conducting an analysis on if the system can accept additional sewage.

**3.3. WASTEWATER CONNECTION FEE**

The District’s current wastewater connection fee per ERU is \$5,000. As previously stated, the connection fee should be sufficient to cover the cost of a new connection’s percentage of existing infrastructure capacity replacement.

Table 2 presents the maximum recommended connection fee for the wastewater system based on the number of ERUs that can be served by the system at capacity. The District may choose to adopt a lower connection fee. The District is in the process of collecting addition

TABLE 2: MAX RECOMMENDED WASTEWATER CONNECTION FEE PER ERU

Wastewater System	(\$/ERU)
Existing Connection Fee	\$5,000
Recommended Maximum Connection Fee	\$48,800

**3.4. WASTEWATER CONNECTION FEE COMPARISON**

A comparison of wastewater connection fees for other rural communities in the Panhandle area is included below in Figure 1. The District’s collection system is sprawling, even compared with other collection systems in the area. The small number of connections per unit length of pipe is the primary reason for the cost per ERU being higher than other municipalities/utility districts. It is unknown how the other communities elected to develop their connection fees, as the other communities may have elected to pursue a lower connection



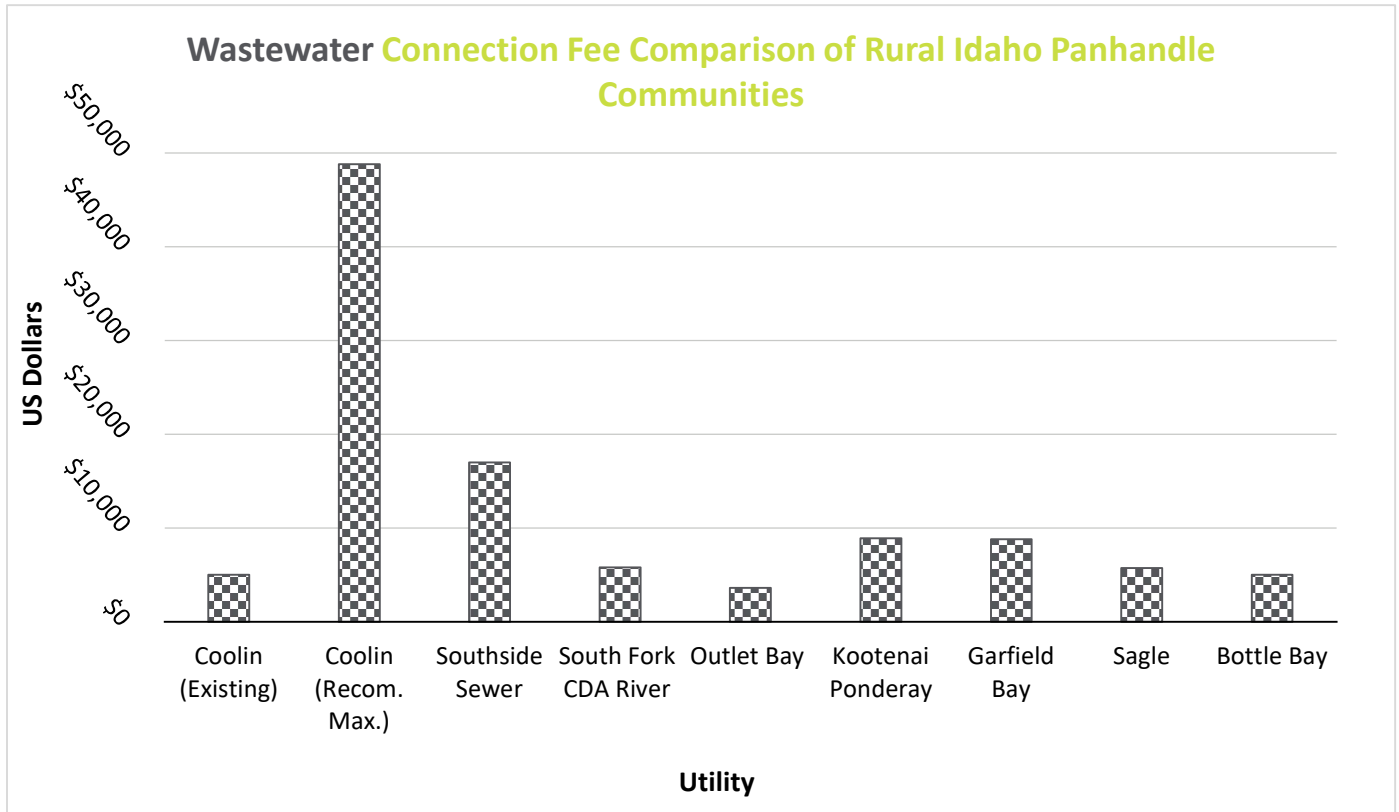
fee than the maximum. These other systems may have never completed a connection fee study. Additionally, these systems are generally less sprawling than Coolin Sewer District, and generally do not have STEP/grinder pump stations. It appears reasonable that Coolin Sewer District’s revised connection fee would be higher than other sewer systems in the region. Southside’s sewer system may be the closest comparison, as the Southside is similar in size to Coolin, features a similar treatment and disposal system, and has many pump stations.

The below provides a high-level description of the treatment and disposal systems listed in Figure 1. When called and websites viewed, not all of the systems had the requested information available.

- Southside Water and Sewer District
  - Southside Water District serves a similar number of connections as CSD, with a similar treatment and disposal system (lagoons/winter storage and land application). The collection system is gravity fed, but includes 25+ lift stations with associated pressure pipe.
- South Fork Coeur d’Alene River Sewer District (SFSD)
  - SFSD is larger than CSD, serving approximately 4,500 connections. The treatment system is more complex than Coolin Sewer District’s and features a surface water discharge instead of a land application system. South Fork Coeur d’Alene Sewer District is in the process of increasing their connection fee, which is anticipated to be around \$12,000 as recommended by their consultant engineers.
- Outlet Bay Sewer District (OBSD)
  - Outlet Bay Sewer District serves a similar number of connections as CSD and has a lagoon treatment/storage system with land application of treated wastewater similar in size to CSD. OBSD’s collection system consists of gravity pipe and pressure pipe and has over 20 lift stations. OBSD’s physical service area appears to be much smaller than CSD’s service area. OBSD may charge up to \$20k for a new parcel within the service area.
- Kootenai-Ponderay
  - This system includes about 14 lift stations and features a lagoon treatment system with land application disposal. The connection fee was reportedly supported by an engineering study.
- Garfield Bay
  - Garfield Bay serves 174 ERUs and features a lagoon treatment and land application disposal system. No representatives from this entity were available to respond to questions.
- Sagle
  - No representatives from this entity were available to respond to questions. The connection fee itself may range up to \$8,600 in certain circumstances.
- Bottle Bay
  - No representatives from this entity were available to respond to questions, besides noting that the system consists of land application disposal with STEP pumps.



FIGURE 1: WASTEWATER CONNECTION FEES OF LOCAL COMMUNITIES PER ERU



#### 4. SUMMARY

If the District desires to increase the connection fees for wastewater, it is recommended that those fees do not exceed the value presented in Table 3 below.

TABLE 3: MAX RECOMMENDED CONNECTION FEES PER ERU SUMMARY

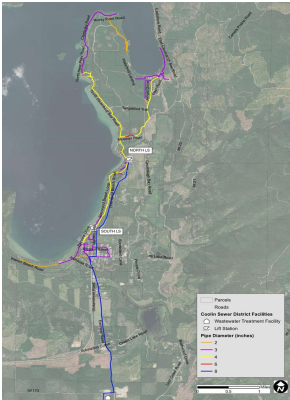
System	(\$/ERU)
Wastewater	48,800

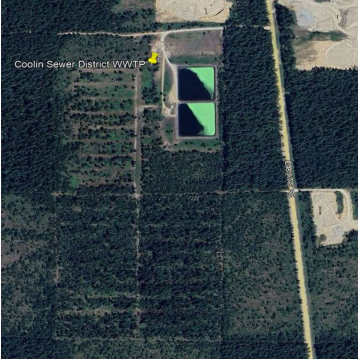
Given their sensitivity to the real estate market, interest rates, inflation, cost of materials, and many other factors, connection fees and monthly user rates (not evaluated in this study) should be reviewed each year with a more comprehensive re-evaluation at least every five years, or after the implementation of major improvements. The District is also in the process of collecting additional flow data, which may support a lower connection fee. If the actual flow generated per ERU is less than 200 gallons per day, the maximum allowable connection fee would be reduced. If the actual flow per ERU is 100 gallons per day, the maximum allowable connection fee would be half what is listed in Table 3.

# APPENDIX A

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Opinion of Probable Cost-Sewer System Estimated Value

<b>Project Title:</b>		<b>Location:</b>					
Coolin Collection System		Collection System					
<b>Planning level estimate for existing collection system replacement</b>  Component age and condition vary, and expected design life and remaining useful life are estimates only							
General Line Item	Estimated Quantity	Unit	Unit Price	Expected design life (yrs)	Estimated Remaining Life	Item Cost (Rounded)	Total Cost (2023 Dollars)
<b>Pipe Length</b>							
Pipe (Dia.4" and smaller includes: valving, fitting, surface repair)	69,390	LF	\$ 105	70	35	\$ 3,643,000	
Pipe (Dia.6" and larger, includes: valving, fitting, surface repair)	27,350	LF	\$ 125	70	35	\$ 1,710,000	
Air/Vacuum Valves	21	EA	\$ 9,000	50	30	\$ 114,000	
<b>Lift Station</b>							
Lift Station Replacement	2	EA	\$ 1,250,000	50	32	\$ 1,600,000	
Lift Station Pumps	4	EA	\$ 50,000	20	10	\$ 100,000	
<b>Personal Collection</b>							
Grinder Pumps (RC Worst, 2023)	221	EA	\$ 3,500	20	5	\$ 194,000	
Grinder Tanks (RC Worst, 2023)	221	EA	\$ 3,000	30	10	\$ 221,000	
Septic Tanks (RC Worst, 2023)	312	EA	\$ 7,500	30	10	\$ 780,000	
Sewer Pressure Lateral (150 LF of pipe estimated per connection)	79,950	LF	\$ 50	70	35	\$ 1,999,000	
<b>Electrical</b>							
Control Panels	543	EA	\$ 3,500	20	5	\$ 476,000	
<b>Construction Subtotal</b>							<b>\$ 10,837,000</b>
<b>Additional Elements (estimated % of above)</b>							
Mobilization and Administration			10%			\$ 1,090,000	
Bonding			2.5%			\$ 280,000	
Contractor Overhead and Profit			10%			\$ 1,090,000	
Contingency			30%			\$ 3,260,000	
<b>Total Construction Subtotal</b>							<b>\$ 16,557,000</b>
<b>Plans and Contract Documents</b>							
Engineering Design and Bid Phase Services			17%			\$ 2,820,000	
Engineering - Construction Contract Administration			3.5%			\$ 580,000	
Engineering - Construction Observation			Calculated			\$ 195,000	
<b>Total Project Costs (rounded)</b>							<b>\$ 20,152,000</b>
The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as additional information becomes available. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.							

<b>Project Title:</b>	<b>Location:</b>
<b>Coolin WWTP</b>	<b>WWTP site</b>
<b>Planning level estimate for existing WWTP replacement</b>  <b>Assume WWTP constructed:</b> 2006  <small>Component age and condition vary, and expected design life and remaining useful life are estimates only</small>	

General Line Item	Estimated Quantity	Unit	Unit Price (new)	Expected design life (yrs)	Estimated Remaining Life	Item Cost (Rounded), depreciated	Total Cost (2024 Dollars)
<b>WWTP building</b>							
Chlorine (liquid) Disinfection injection and contact chamber	1	LS	\$ 75,000	40	22	\$ 42,000	
Control Building	1	LS	\$ 1,000,000	75	57	\$ 760,000	
Sludge Dump Vault	1	LS	\$ 80,000	50	32	\$ 52,000	
Inlet Manhole	1	LS	\$ 20,000	40	22	\$ 11,000	
Fitting & Valves	35	EA	\$ 3,500	30	12	\$ 49,000	
Irrigation Pump station including two pumps, vault, and piping	1	LS	\$ 725,000	40	22	\$ 399,000	
Mechanical Piping	275	LF	\$ 200	70	52	\$ 41,000	
Effluent Flow Meters, Valve Vault	1	LS	\$ 150,000	40	22	\$ 83,000	

<b>Lagoon System</b>							
Clearing and grubbing	40,000	SY	\$ 1.5	50	32	\$ 39,000	
Dike Construction	28,000	CY	\$ 13	80	62	\$ 272,000	
Excavation	63,000	CY	\$ 13	80	62	\$ 635,000	
Misc items-Moisture conditioning, membrane anchor, gas release, geotextile	1	LS	\$ 1,064,976	30	12	\$ 426,000	
Lagoons Liner	215,000	SF	\$ 3	30	12	\$ 258,000	
Lagoon Fence	2,700	LF	\$ 50	50	32	\$ 87,000	
Fence Gates	2	EA	\$ 3,000	50	32	\$ 4,000	
Aeration system (diffusers, blowers, air piping) for lagoon	1	LS	\$ 300,000	20	2	\$ 30,000	
Lagoon inlet/ outlet piping	730	LF	\$ 200	70	52	\$ 109,000	

<b>Irrigation System</b>							
Brush Removal	70	Ac	\$ 4,000	50	32	\$ 180,000	
Sprinklers	108	EA	\$ 1,000	40	22	\$ 60,000	
Irrigation Fittings	5	EA	\$ 120	50	32	\$ 1,000	
Irrigation Valves	2	EA	\$ 3,000	40	22	\$ 4,000	
6" X 6" X 4" MJ Tee	9	EA	\$ 100	50	32	\$ 1,000	
6" X 4" MJ Cross	9	EA	\$ 100	50	32	\$ 1,000	
8" PVC Irrigation Pipe	960	LF	\$ 100	70	52	\$ 72,000	
6" PVC Irrigation Pipe	2,150	LF	\$ 100	70	52	\$ 160,000	
4" PVC Irrigation Pipe	12,901	LF	\$ 100	70	52	\$ 959,000	

<b>Electrical Improvements (1.1D)</b>							
Electrical/Controls	1	LS	\$ 152,000	40	22	\$ 152,000	
Transformer	1	LS	\$ 100,000	40	22	\$ 55,000	

**Construction Subtotal** \$ **4,942,000**

<b>Additional Elements (estimated % of above)</b>								
Mobilization and Administration			10%			\$ 500,000		
Bonding			2.5%			\$ 130,000		
Contractor Overhead and Profit			10%			\$ 500,000		
BABA/AIS (amount subject to change pending funding package)			10%					
Prevailing Wages			2.5%					
Taxes			6%					
Contingency			30%			\$ 1,490,000		
<b>Total Construction Subtotal</b>							<b>\$ 7,562,000</b>	

<b>Plans and Contract Documents</b>								
Engineering Design and Bid Phase Services			17%			\$ 1,290,000		
Engineering - Construction Contract Administration			4%			\$ 270,000		
Engineering -- Construction Observation			Calculated			\$ 195,000		
Permitting-Land Application			LS			\$ 100,000		
<b>Total Project Costs (rounded)</b>							<b>\$ 9,417,000</b>	

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as additional information becomes available. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.