

T-O ENGINEERS

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City of Dover, Idaho

**Water and Sewer
Rate Analysis**

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T-O Project No. 140125

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Summary

T-O Engineers was retained by the City of Dover to conduct a comprehensive water and sewer rate study. The objective of the rate study is to develop cost-based rates necessary to meet the City's water and sewer revenue needs. This study evaluates the adequacy of the existing water and sewer rates and provides recommendations for adjustments.

Key Objectives of the Study

Key objectives in developing this comprehensive water and sewer rate study include the following:

- Develop the study in a manner that is consistent with the principles and methodologies established by the American Water Works Association (AWWA) M1 Manual, Principles of Water Rates, Fees and Charges, and the AWWA M54 Manual, Developing Rates for Small Systems.
- Review the City's current rate setting policies and practices. Utilize those policies in this study's financial planning and rate study process.
- Develop the City's revenue requirement analysis to provide prudent and adequate funding levels for operations and maintenance (O&M) and capital infrastructure. Develop a five-year financial planning model (revenue requirements) that provides prudent funding levels for O&M activities.
- Develop the proposed rates to meet the legal and statutory requirements of Water Ordinance Number 131 and Sewer Ordinance Number 144.
- Develop a rate model that is flexible and easy to use and update.

Rate Study Methodology

This rate study involved the following steps:

- Collection and review of data and supporting documents provided by the City.
- An analysis of the City's 2013 to 2019 Water and Sewer budget information.
- Revenue requirement projections for the years 2019-2023 with input from the City.
- Population (equivalent residences, "ER") projection.
- Base Rate Calculations for Water and Sewer.
- Usage Rate Calculations for Water.

Water System Description

The City of Dover was incorporated in 1988 to facilitate improvements to the water system that served the unincorporated community of Dover. The City of Dover's water system now serves approximately 309 equivalent residences (ERs). The water source for the City of Dover is the Pend Oreille River. The majority of the City's current water infrastructure was constructed in 1991, including a raw water intake, slow sand filtration system (two filter bays), and water storage reservoir. In 1998 the water system was expanded to serve the 25-lot Cedar Ridge development, which included two (2) water booster stations and a 43,000-gallon reservoir. In 2007 two (2) additional filter bays, doubling the treatment capacity, were added to the slow sand filtration system, and in 2009 the City's main reservoir was expanded to 354,000.

Present Water Rates

The rules governing water rates are outlined in Dover Ordinance No. 131. City of Dover Resolution No. 120, dated June 28, 2016, sets the current fee schedule for water and sewer. Current water usage fees (rates) are displayed in the following **Table 1**.

Table 1: Current Water Usage Fees

Base Rate	Monthly Base Rate	\$25.21/month/ER
Usage Rate	Usage Rate, per 1,000 gal	\$3.70

Sewer System Description

The City of Dover owns and operates an effluent sewer system, which uses individual on-lot septic tanks to provide liquid/solid separation at the sewer service connection. Ownership, operation and maintenance of the sewer service connection, which includes the service line, septic tank and building sewer, is the responsibility of the property owner. Clarified effluent then moves into the collection system using either a pump (STEP) or gravity (STEG) system. Effluent is then treated at a state-of-the-art membrane bioreactor (MBR) wastewater treatment system. The MBR system removes nutrients from the effluent by converting the biological nitrogen in the effluent to nitrogen gas using a two-step process: an aerobic treatment followed by an anoxic treatment. Following filtration through membranes, solids are removed from the system and dewatered using large de-watering bags. Treated effluent is discharged to the Pend Oreille River.

Present Sewer Rates

The rules governing sewer rates are outlined in Dover Ordinance No. 144. City of Dover Resolution No. 120, dated June 28, 2016, sets the current fee schedule for water and sewer. Current sewer usage fees (rates) are displayed in the following **Table 2**.

Table 2: Current Sewer Usage Fees

Active Rate	Monthly Active Rate	\$60.90/month/ER
Inactive Rate	Monthly Inactive Rate	\$41.24/month/ER

Rate Study Process

User rates should be set at a level at which a utility's operating and capital expenses are met with the revenues received from customers. This is an important point, as failure to achieve this objective may lead to insufficient funds to maintain system integrity. At the same time, rates must not be so high that money is collected in excess of that which is required to operate and maintain the system. To evaluate the adequacy of the existing rates, a comprehensive rate study is performed, typically every five years. A comprehensive rate study consists of three interrelated analyses. **Figure 1** provides an overview of these analyses.

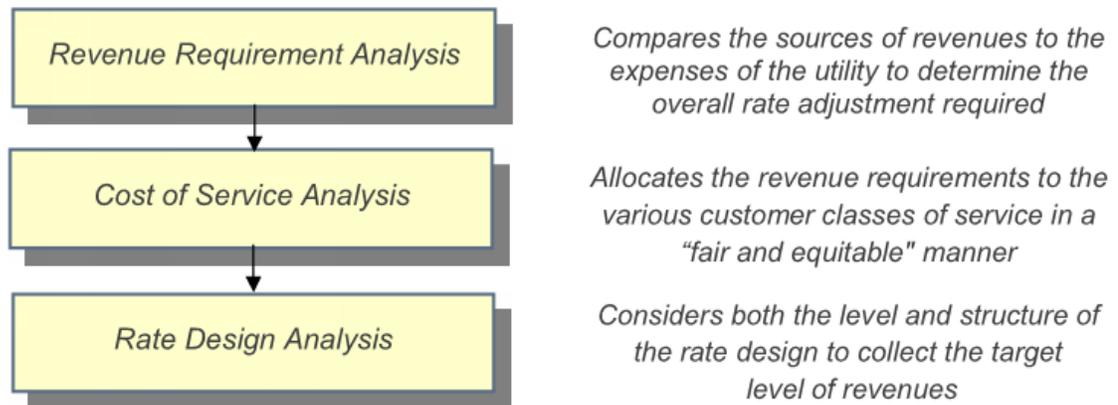


Figure 1: Overview of the Comprehensive Sewer Rate Analysis

The above framework was utilized in the development of this study.

Development of the Revenue Requirement Analysis

A revenue requirement analysis is the first step in the study and determines the adequacy of the overall level of water and sewer rates. From this analysis, a determination can be made as to the level of rate adjustment needed to provide adequate and prudent funding for both operating and capital needs.

Public utilities are financed by issuing debt and soliciting funds from customers through direct capital contributions or user rates. Most public utilities use the “cash basis” approach for establishing their revenue requirements and setting rates. In this approach, the utility:

- Totals its cash expenditures for a period of time to determine required revenues.
- Adds operation and maintenance (O&M) expenses to any applicable taxes or transfer payments to determine total operating expenses. Operation and maintenance expenses include the materials, electricity, labor, supplies, etc. needed to keep the utility functioning.
- Adds reserve funds. Reserve funds serve as a cushion or protection to the financial security for the utility under potentially adverse conditions or planned improvements.
- Subtracts non-operating revenue. Non-operating revenue includes grants, connection fees, interest income, and property taxes.

This process is summarized by the following equation:

$$\begin{array}{r}
 \text{Total Operating Expenses} \\
 + \text{Cash Reserve Requirements} \\
 - \text{Non-Operating Revenue} \\
 \hline
 = \text{User Fee Requirement}
 \end{array}$$

Reserve Funds

The final component of the revenue requirements is the determination of reserve funds. Maintaining cash reserves is a common way that utilities mitigate financial risk, plan for future system needs, and satisfy bond covenant requirements.

In general, a utility can choose one of two financing options to pay for capital replacements and unexpected expenditures. The first option is to include reserve fund expenses in a utility's annual budget that are funded by user fees. The money generated from charges that fund cash reserves is then accrued and available to spend on capital replacement projects and unexpected expenditures as needed.

The second option involves a more reactive approach in which a utility maintains very low financial reserves to cover unknown future costs and capital replacements. User fees will only cover normal operating expenses, and when unexpected repairs or capital replacement is needed, the utility borrows money and then increases user rates to pay back those loans plus interest.

The City has elected to fund two reserves through user rates:

- **Capital Replacement Reserve Fund** - A capital replacement reserve fund is "intended to be used to fund capital projects that expand system capacity, comply with regulatory requirements, or replace system assets that have become worn or obsolete" (AWWA 2016). A capital reserve can provide a cushion to absorb capital cost overruns that might otherwise require debt issuance and/or rate increases. "A minimum balance for this reserve is often defined based on a percentage of the cost of system assets or a rolling-average of planned capital expenditures" (AWWA 2016). Funding a percentage of the annual depreciation amount from the City's annual audit reports has been used to determine an appropriate capital replacement reserve fund for both water and sewer.
- **Operating Reserve Fund** – "Operating reserves are typically established to provide the utility with the ability to withstand cash-flow fluctuations" (AWWA 2016). The City has chosen a commonly-used method of saving approximately 25% of an average year's operating expenses. Like the contingency reserve fund, The City plans to save for their water and sewer operating reserve funds gradually over a five-year period.

Thus, the City's annual budget balance to determine the user fee requirement resembles the following equation:

$$\begin{aligned} & \text{Total Operating Expenses} \\ & + \text{Capital Replacement} \\ & + \text{Operating Reserve} \\ & - \text{Non-Operating Revenue} \\ \hline & = \text{User Fee Requirement} \end{aligned}$$

Cost of Service Analysis

For this study, the objective of a cost of service analysis is to provide for the fair and equitable allocation of the City's revenue requirements between active and inactive customers. Annual expense reports were analyzed for the years 2013 through 2018, with each expense placed into one of two categories:

1. Fixed costs
2. Variable costs

Fixed costs are those that would occur independent of the quantity of water supplied or wastewater treated, such as property taxes, equipment replacement, etc. Variable costs are those that are directly proportional to the amount of water supplied or wastewater treated, such as electricity used to run pumps and chlorine used for disinfection. This distinction is important to determine base rate charges for active and inactive customers to cover fixed costs, plus charges to cover variable costs borne only by the active customers.

Water Rate Design Analysis

The recommended water rate structure developed in this rate study is summarized in **Table 3**. Detailed water rate analysis calculations can be seen **Appendix A**.

Table 3: Recommended Water Rates Summary

Base Rate	Monthly Base Rate	\$31.07/month/ER
Usage Rate	Usage Rate, per 1,000 gal	\$2.88

Based on input from the City, the following assumptions and methodologies have been used for this water rate design analysis:

- FY18 and FY19 large capital expenditures to be funded by the Dover Urban Renewal Agency (DURA) were not included in the rate calculations.
- Capital replacement reserves equal to 75% of each year's projected depreciation were included.
- Operating reserves are funded over the five-year period to build a reserve of 25% of an average year's operating expenses.
- Large capital expenditures for the upgrades outlined in the 2018 Water Facilities Plan are assumed to be funded by DURA and are not included in the analysis.

These water rates are designed to cover all operating expenses plus additional revenue set-aside for capital replacement and operating reserve funds for the five-year period from 2019-2023. After that time a re-evaluation is recommended to determine if additional water rate adjustments are appropriate.

Sewer Rate Design Analysis

The recommended sewer rate structure developed in this rate study is summarized in **Table 4**. Detailed sewer rate analysis calculations can be seen in **Appendix B**.

Table 4: Recommended Sewer Rates Summary

2019	Monthly Active Base Rate	\$63.95/month/ER
	Monthly Inactive Base Rate	\$43.30/month/ER
2020	Monthly Active Base Rate	\$67.14/month/ER
	Monthly Inactive Base Rate	\$45.47/month/ER
2021	Monthly Active Base Rate	\$70.50/month/ER
	Monthly Inactive Base Rate	\$47.74/month/ER
2022	Monthly Active Base Rate	\$74.02/month/ER
	Monthly Inactive Base Rate	\$50.13/month/ER
2023	Monthly Active Base Rate	\$77.73/month/ER
	Monthly Inactive Base Rate	\$52.63/month/ER

Based on input from the City, the following assumptions and methodologies have been used for this sewer rate design analysis:

- A sewer rate increase of 5% per year is utilized.
- The 5% per year rate increase provides for capital replacement reserves equal to 17.4% of each year's projected depreciation plus operating expenses and other reserves as described below.
- Operating reserves are funded over the five-year period to build a reserve of 25% of an average year's operating expenses.
- A membrane replacement reserve is established to cover the projected cost of membrane replacement at the wastewater treatment facility in 5 years.
- DURA funded capital expenditures related to the GeoTube installation project were not included in the rate calculations.
- Capital funds carryover were omitted from the analysis as these were not revenue, but were funds transferred by the City to balance the budget.
- Non-budgeted capital expenses were omitted from the analysis as those costs are recovered through funding a portion of the annual depreciation expense.

These sewer rates are designed to cover all operating expenses plus additional revenue set-aside for capital replacement and operating reserve funds for the five-year period from 2019-2023. After that time a re-evaluation is recommended to determine if additional sewer rate adjustments are appropriate.

Works Cited

American Water Works Association, Daniel T. Bradley, et al. *M54 Developing Rates for Small Systems*. Second ed., PDF ed., Denver, Library of Congress, 2017.

American Water Works Association, *Manual of Water Supply Practices, M1 Principals of Water Rates, Fees, and Charges*. Fifth ed., 2000.

United States Environmental Protection Agency, Office of Water, Haig Farmer, et al. *Determining Wastewater User Service Charge Rates*. PDF ed., 1992.

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APPENDIX A

Water Rate Analysis Calculations

City of Dover, Idaho - Water Rate Analysis

	2013	2014	2015	2016	2017	FY18 Projected	FY2019 Budget
WATER							
Ordinary Income/Expense							
Income							
Connections, Water Fees, Grants, and Other							
Capital Funds Carryover	\$0	\$0	\$0	\$0	\$0	\$22,618	\$5,356
Grant Income	\$7,000	\$0	\$0	\$0	\$0	\$100,000	\$150,000
Other Income	\$437	\$123	\$1,609	\$408	\$32	\$100	\$50,000
Interest Income	\$0	\$12	\$0	\$2,226	\$3,750	\$0	\$0
Water Connection Fee	\$32,591	\$0	\$18,807	\$16,576	\$64,804	\$42,000	\$50,000
Water Inspection Fee	\$200	\$100	\$100	\$0	\$2,950	\$1,600	\$1,000
Water User Fees	\$128,964	\$134,273	\$118,720	\$122,297	\$130,657	\$136,000	\$142,000
Total Income	\$169,192	\$134,509	\$139,236	\$141,507	\$202,193	\$302,318	\$398,356
Expenses							
Capital Expenditures							
Water Facility Improvements	\$1,692	\$15,230	\$781	\$0	\$5,360	\$100,000	\$100,000
Chlorine and Essex Tanks	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
Equipment Purchase	\$231	\$38	\$46	\$0	\$10,486	\$0	\$0
Accounting							
Accounting	\$3,173	\$2,615	\$4,217	\$4,457	\$5,414	\$1,500	\$1,500
Auditor / Advertising & Promotion	\$331	\$104	\$102	\$0	\$0	\$2,000	\$2,000
Contingency / Dues & Subscriptions	\$1,543	\$960	\$0	\$0	\$0	\$6,686	\$0
Engineering Services							
CAD Mapping	\$0	\$0	\$0	\$0	\$0	\$1,500	\$3,000
Engineering Services	\$4,473	\$4,072	\$12,929	\$12,695	\$9,158	\$25,000	\$10,000
General							
Insurance	\$1,162	\$434	\$968	\$1,536	\$1,933	\$2,030	\$2,053
Interest Expense	\$5,584	\$5,035	\$4,376	\$3,738	\$2,843	\$4,500	\$4,500
Legal Services	\$34	\$510	\$0	\$30	\$660	\$2,000	\$2,000
Miscellaneous Expense	\$1,304	\$691	\$914	\$1,079	\$990	\$1,500	\$2,000
Operations & Maintenance							
Buildings & Grounds	\$0	\$2,232	\$328	\$1,296	\$1,282	\$2,700	\$2,500
Software Licensing & Support	\$1,646	\$1,461	\$546	\$1,376	\$1,845	\$1,500	\$1,500
Contract Services	\$0	\$12,082	\$38,108	\$42,724	\$43,011	\$55,000	\$65,000
Postage and Delivery	\$904	\$414	\$605	\$725	\$857	\$500	\$500
Repairs, Maintenance & Supplies	\$16,640	\$16,669	\$12,579	\$8,804	\$13,915	\$36,758	\$40,000
Testing	\$1,265	\$1,420	\$1,240	\$1,415	\$1,815	\$3,200	\$4,000
Utilities	\$9,333	\$9,105	\$9,597	\$10,393	\$11,808	\$15,680	\$16,000
Gross Wages							
Administration Wages	\$42,621	\$29,256	\$4,098	\$4,181	\$4,563	\$3,210	\$4,420
Treasurer					\$0	\$2,522	\$2,371
Other Expenses							
Payroll Taxes	\$16,928	\$10,158	\$5,112	\$193	\$346	\$478	\$500
Depreciation Expense	\$30,008	\$0	\$37,668	\$34,500	\$34,632	\$34,512	\$34,512
Cap Expenditures-Not Budgeted	\$0	\$0	\$0	\$0	\$22,814	\$25,281	\$0
Principal Paid on Debt	\$0	\$11,862	\$0	\$13,104	\$13,772	\$0	\$0
Total Expenses	\$138,874	\$124,347	\$134,213	\$142,245	\$187,506	\$328,057	\$398,356

Scott McNeel:
Not included in revenue projections, since this is DURA funding.

Scott McNeel:
Not included in calculations. Assumed funding by DURA

US Gov Inflation Data*			
Year	Half 1	Half 2	Annual Avg.
2013	1.80%	1.70%	1.75%
2014	1.80%	1.70%	1.75%
2015	1.7%	1.9%	1.80%
2016	2.2%	2.2%	2.20%
2017	2.0%	1.7%	1.85%
2018**	2.10%	1.84%	1.97%
2019**	1.93%	1.84%	1.89%

*US Bureau of Labor Statistics monthly inflation data can be found at : <https://data.bls.gov/>
**2018 half 2 and 2019 data projected using averages for 2013-2017

Percent of Total Expenses Due To Specified Parameters*		
Year	Portion of Total Due to Variable Costs	Portion of Total Due to Fixed Costs
2013	18.70%	81.30%
2014	20.73%	79.27%
2015	16.52%	83.48%
2016	13.50%	86.50%
2017	13.72%	86.28%
2018**	22.99%	77.01%
2019**	28.23%	71.77%
Average	19.20%	80.80%

*Based on expense reports provided by the City. Does not include grant revenue or grant-funded expenses.
**Projected from budgets

Present Worth Analysis*				
Year	Total Expenses		Non-Fee Revenue	
	Nominal Value	Present Worth	Nominal Value	Present Worth
2013	\$138,874	\$152,352	\$33,228	\$36,452
2014	\$124,347	\$134,069	\$236	\$254
2015	\$134,213	\$142,218	\$20,516	\$21,739
2016	\$142,245	\$148,064	\$19,210	\$19,996
2017	\$187,506	\$190,975	\$71,536	\$72,860
2018	\$228,057	\$228,057	\$66,318	\$66,318
2019	\$198,356	\$194,614	\$56,356	\$55,293
2013-2019 Avg. 2018 P.W.		\$170,050		\$38,987

*Does not include grant revenue and grant-funded expenses

Annual Expense & Revenue Escalation From Previous Year				
Year	Total Expenses	Escalation	Non-Operating Revenue	Escalation
2013	\$138,874		\$33,228	
2014*	\$124,347	-10.46%	\$236	-99.29%
2015	\$134,213	7.93%	\$20,516	8607.77%
2016	\$142,245	5.98%	\$19,210	-6.36%
2017	\$187,506	31.82%	\$71,536	272.39%
2018	\$228,057	21.63%	\$66,318	-7.29%
2019	\$198,356	-13.02%	\$56,356	-15.02%
Average Escalation		7.31%		28.88%

*Non-operating revenue for 2014 was determined to be an outlier and was not included in the analysis.

Annual Water Production (Historical and Projections)		
Year	Total	
Historical Data	2014	10,940,210
	2015	8,872,403
	2016	9,516,829
	2017	9,575,588
	2018	12,256,878
Projections*	2019	11,233,338
	2020	11,566,990
	2021	11,900,642
	2022	12,234,294
	2023	12,567,946
2019-2023 Average	11,900,642	

*Projections using the linear relationship resulting from historic data trends.

2019-2023 Annual Cost Projections	
2019	
Operating Expenses*	\$163,844
Capital Replacement Fund	\$25,884
Operating Reserve	\$8,192
Contingency Reserve	\$0
Non-Operating Revenue*	\$56,356
Fee Requirement	\$141,564
2020	
Operating Expenses*	\$153,756
Capital Replacement Fund	\$29,696
Operating Reserve	\$7,688
Contingency Reserve	\$0
Non-Operating Revenue*	\$42,250
Fee Requirement	\$148,889
2021	
Operating Expenses*	\$165,001
Capital Replacement Fund	\$30,913
Operating Reserve	\$8,250
Contingency Reserve	\$0
Non-Operating Revenue*	\$43,982
Fee Requirement	\$160,182
2022	
Operating Expenses*	\$177,068
Capital Replacement Fund	\$32,181
Operating Reserve	\$8,853
Contingency Reserve	\$0
Non-Operating Revenue*	\$45,785
Fee Requirement	\$172,316
2023	
Operating Expenses*	\$190,017
Capital Replacement Fund	\$33,500
Operating Reserve	\$9,501
Contingency Reserve	\$0
Non-Operating Revenue*	\$47,663
Fee Requirement	\$185,356

*Based on the 2013-2019 average present worth, which was then escalated using the actual operating expenses escalation factor of 7.31% for operating expenses and the national average water rate escalation factor of 4.1% for non-operating expenses. This factor was reported in a 2017 US Department of Energy report titled Water and Wastewater Annual Escalation Rates. Non-operating revenue could not be escalated using the 2013-2019 average escalation rates as historic expense and non-operating revenue data was too erratic to provide reliable escalation projections.

2019-2023 Rates Based on Projection Data Presented Above	
Total 5-year Expenses	\$1,044,344
Total 5-year Non-Operating Revenue	\$236,036
Estimated Average ERs Served 2019-2023*	341.8
Avg. Volume Treated Per Month, gal	991,720
Portion of Total Expenses Associated with Fixed Costs**	80.80%
Portion of Total Expenses Associated with Variable Costs**	19.20%
5-Year Net Fixed Expenses	\$637,020.07
5-Year Variable Expenses	\$171,287.22
Monthly Base Rate Per ER	\$31.07
Usage Rate, per 1,000 gal Per ER	\$2.88

*Average # of ERs projected for 2019-2023 period using historic ERU trend data.
**Based on actual percentage of total expenses averaged for 2013-2017 and projected total expenses for 2018 and 2019.

Total No. of ERUs Projection			
Year	Total ERUs	Active	Inactive
2012*	259.0	254.9	4.1
2013	271.8	267.4	4.3
2014*	286.5	281.9	4.6
2015	289.3	284.6	4.6
2016	298.0	293.2	4.8
2017	306.8	301.9	4.9
2018*	313.5	308.5	5.0
2019	324.3	319.1	5.2
2020	333.0	327.7	5.3
2021	341.8	336.3	5.5
2022	350.5	344.9	5.6
2023	359.3	353.5	5.7
2019-2023 Average	341.75	336.30	5.45

*Designates years for which we have data, which was used to make a linear projection of roughly 8.5 ERUs per year.

Budget Breakdown	2013	2014	2015	2016	2017	FY18 Projected	FY2019 Budget
Fixed Costs	\$112,900	\$98,573	\$112,037	\$123,049	\$161,783	\$175,619	\$142,356
Variable Costs	\$25,973	\$25,774	\$22,176	\$19,197	\$25,723	\$52,438	\$56,000
DURA-funded Capital Costs	\$0	\$0	\$0	\$0	\$0	\$100,000	\$200,000
Connection Revenue	\$32,791	\$100	\$18,907	\$16,576	\$67,754	\$43,600	\$51,000
Water Fee Revenue	\$128,964	\$134,273	\$118,720	\$122,297	\$130,657	\$136,000	\$142,000
Grants and Other Revenue	\$7,437	\$136	\$1,609	\$2,634	\$3,782	\$122,718	\$205,356

Budget Analysis	2013	2014	2015	2016	2017	FY18 Projected	FY2019 Budget
TOTAL EXPENSES	\$138,874	\$124,347	\$134,213	\$142,245	\$187,506	\$328,057	\$398,356
TOTAL REVENUE	\$169,192	\$134,509	\$139,236	\$141,507	\$202,193	\$302,318	\$398,356
Fee Requirement	\$98,646	\$124,112	\$113,698	\$123,035	\$115,969	\$161,739	\$142,000
% of Total Variable	18.70%	20.73%	16.52%	13.50%	13.72%	22.99%	28.23%
% of Total Fixed	81.30%	79.27%	83.48%	86.50%	86.28%	77.01%	71.77%
% of Total Due to Depreciation	21.61%	25.47%	28.07%	24.25%	18.47%	15.13%	17.40%

Audit Data	2013	2014	2015	2016	2017	FY18 Projected	FY2019 Budget
Audit Fee Revenue	\$128,964	\$134,273	\$118,720	\$122,514	\$130,657	\$0	\$0
Audit Grant Revenue	\$7,000	\$0	\$0	\$0	\$0	\$0	\$0
Audit Hookups Revenue	\$33,228	\$223	\$20,516	\$17,684	\$67,786	\$0	\$0
Audit Other Non-Operating Revenue	-\$5,416	-\$4,331	-\$2,973	-\$1,244	\$52,846	\$0	\$0
Audit Operating Expenses	\$103,611	\$79,405	\$92,170	\$86,969	\$94,866	\$0	\$0
Depreciation	\$30,008	\$31,941	\$33,748	\$34,558	\$34,906	\$0	\$0
Actual Fee Requirement	\$68,799	\$83,513	\$74,627	\$70,529	-\$25,766	\$0	\$0
Change In Net Assets	\$30,157	\$18,819	\$10,345	\$17,427	\$121,517	\$0	\$0

Funded Depreciation
75%

Reserves:
Capital Replacement \$152,174
Operating \$42,484
Total \$194,658

Current Rates:
\$25.21
\$3.70

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APPENDIX B

Sewer Rate Analysis Calculations

City of Dover, Idaho - Sewer Rate Analysis

Annual Rate Escalation = 5.00%

2019	
Monthly Active Base Rate	\$63.95
Monthly Inactive Base Rate	\$43.30
Projected Rate Revenue	\$318,727.51
Net Difference from Flat Rate	-\$34,678.23

2020	
Monthly Active Base Rate	\$67.14
Monthly Inactive Base Rate	\$45.47
Projected Rate Revenue	\$346,567.42
Net Difference from Flat Rate	-\$19,391.70

2021	
Monthly Active Base Rate	\$70.50
Monthly Inactive Base Rate	\$47.74
Projected Rate Revenue	\$376,394.50
Net Difference from Flat Rate	-\$2,118.00

2022	
Monthly Active Base Rate	\$74.02
Monthly Inactive Base Rate	\$50.13
Projected Rate Revenue	\$408,337.87
Net Difference from Flat Rate	\$17,271.99

2023	
Monthly Active Base Rate	\$77.73
Monthly Inactive Base Rate	\$52.63
Projected Rate Revenue	\$442,534.59
Net Difference from Flat Rate	\$38,915.33

Total Rate Revenue	\$1,892,561.89
Total 5-year Op. Expenses	\$1,606,110.00
Total 5-year Non-Op Revenue	\$286,329.25
Total Reserves	\$572,781.14
Funded Depreciation	17.414%

Comparable Flat Rate 2019-2023	
Monthly Active Base Rate	\$70.76
Monthly Inactive Base Rate	\$48.97

City of Dover, Idaho - Sewer Rate Analysis

	2014	2015	2016	2017	2018 Projected	FY2019 Budget
Ordinary Income/Expense						
Income						
Fee Revenue						
Sewer Connection Fee	\$25,923	\$22,736	\$23,545	\$92,870	\$50,000	\$50,000
Sewer Inspection Fee	\$1,030	\$500	\$250	\$6,050	\$3,500	\$2,500
Sewer User Fees	\$247,071	\$240,637	\$244,062	\$280,603	\$297,096	\$304,000
Other Revenue						
Grant Income	\$0	\$7,909				
Capital Funds Carryover			\$0	\$0	\$0	\$0
Other Income	\$183	\$577	\$1,029	\$317	\$100	\$100
Interest Income	\$615	\$986	\$2,954	\$4,113	\$100	\$100
Total Income	\$274,822	\$265,435	\$271,839	\$383,953	\$350,796	\$356,700
Expenses						
Capital Expenses						
General Capital Expenses	\$102	\$0	\$0	\$1,769	\$14,456	\$10,000
Membranes						
Capital Expenditures-Not Budgeted	\$0	\$0	\$0	\$0	\$0	\$0
Engineering Services						
CAD Mapping					\$1,000	\$3,000
Engineering Services	\$3,602	\$8,034	\$20,614	\$1,125	\$25,000	\$10,000
Accounting and Legal						
Accounting	\$2,615	\$5,159	\$4,457	\$5,414	\$1,500	\$1,500
Auditor					\$2,000	\$2,000
General Liability Insurance	\$434	\$968	\$1,536	\$1,933	\$2,030	\$2,053
Interest Expense	\$13,136	\$11,623	\$9,929	\$6,860	\$13,000	\$13,000
Legal Services	\$435	\$0	\$2,940	\$0	\$1,000	\$2,500
Payroll Taxes	\$7,559	\$5,112	\$196	\$358	\$478	\$500
Miscellaneous Expense	\$2,817	\$1,670	\$3,444	\$0	\$500	\$500
Principal Paid on Debt	\$34,839	\$35,496	\$34,809	\$36,583	\$38,000	\$38,000
Operations & Maintenance						
Buildings & Grounds	\$385	\$0	\$540	\$255	\$3,500	\$6,500
Software Licensing & Support	\$930	\$1,034	\$1,317	\$2,370	\$2,500	\$2,500
Contract Services	\$51,326	\$81,054	\$70,146	\$66,613	\$65,000	\$76,000
Postage and Delivery	\$414	\$599	\$1,004	\$567	\$500	\$500
RR Encroachment Annual Fees			\$3,885	\$3,982	\$7,200	\$7,200
Other	\$693	\$102				
Repairs, Maintenance & Supplies	\$22,802	\$21,934	\$40,000	\$62,783	\$40,000	\$50,000
Testing	\$10,282	\$10,265	\$9,500	\$9,866	\$10,000	\$13,000
Utilities	\$21,304	\$19,347	\$25,082	\$26,389	\$31,000	\$32,000
Gross Wages						
Administration Wages	\$973	\$4,098	\$4,219	\$4,722	\$3,210	\$4,420
Treasurer					\$2,522	\$2,371
Capital Replacement Fund						
Depreciation	\$267,313	\$268,816	\$270,000	\$271,981	\$271,980	\$272,000
Total Expenses Minus Depreciation	174,647	206,495	233,618	231,589	264,396	277,544

	2014	2015	2016	2017	2018 Projected	FY2019 Budget
Budget Breakdown						
Fixed Costs	\$130,541	\$165,214	\$168,537	\$142,417	\$193,396	\$195,544
Variable Costs	\$44,106	\$41,281	\$65,082	\$89,172	\$71,000	\$82,000
Depreciation	\$267,313	\$268,816	\$270,000	\$271,981	\$271,980	\$272,000
Connection Fees	\$26,953	\$23,236	\$23,795	\$98,920	\$53,500	\$52,500
Sewer Fee Revenue	\$247,071	\$240,637	\$244,062	\$280,603	\$297,096	\$304,000
Other Revenue	\$798	\$9,472	\$3,983	\$4,430	\$200	\$200

	2014	2015	2016	2017	2018 Projected	FY2019 Budget
Budget Analysis						
TOTAL OPERATING EXPENSES	\$174,647	\$206,495	\$233,618	\$231,589	\$264,396	\$277,544
TOTAL REVENUE	\$274,822	\$273,344	\$271,839	\$383,953	\$350,796	\$356,700
Fee Requirement	\$146,896	\$173,787	\$205,840	\$128,239	\$210,696	\$224,844
% of Operating Expenses Variable	25.25%	19.99%	27.86%	38.50%	26.85%	29.54%
% of Operating Expenses Fixed	74.75%	80.01%	72.14%	61.50%	73.15%	70.46%
Depreciation Present Worth	\$288,213	\$284,849	\$281,045	\$277,013	\$271,980	\$266,963
Actual Fee Requirement	\$414,209	\$442,603	\$475,840	\$400,220	\$482,676	\$496,844
Budgeted Expenses	\$480,725	\$448,276	\$506,430	\$486,626		

US Gov Inflation Data*			
Year	Half 1	Half 2	Annual Avg.
2013	1.80%	1.70%	1.75%
2014	1.80%	1.70%	1.75%
2015	1.7%	1.9%	1.80%
2016	2.2%	2.2%	2.20%
2017	2.0%	1.7%	1.85%
2018**	2.10%	1.84%	1.97%
2019**	1.93%	1.84%	1.89%

*US Bureau of Labor Statistics monthly inflation data can be found at : <https://data.bls.gov/>
 **2018 half 2 and 2019 data projected using averages for 2013-2017

Percent of Total Expenses Due To Specified Parameters*		
Year	Portion of Total Due to Variable Costs	Portion of Total Due to Fixed Costs
2014	25.25%	74.75%
2015	19.99%	80.01%
2016	27.86%	72.14%
2017	38.50%	61.50%
2018**	26.85%	73.15%
2019**	29.54%	70.46%
Average	28.00%	72.00%

*Based on expense reports provided by the City. Does not include grant revenue or grant-funded expenses.
 **Projected from budgets

Present Worth Analysis*				
Year	Total Operating Expenses		Non-Fee Revenue	
	Nominal Value	Present Worth	Nominal Value	Present Worth
2014	\$174,647	\$188,302	\$27,751	\$29,921
2015	\$206,495	\$218,811	\$32,707	\$34,658
2016	\$233,618	\$243,175	\$27,778	\$28,914
2017	\$231,589	\$235,873	\$103,350	\$105,262
2018	\$264,396	\$264,396	\$53,700	\$53,700
2019	\$277,544	\$272,308	\$52,700	\$51,706
2013-2019 Avg. 2018 P.W.		\$237,144		\$50,693

*Does not include grant revenue and grant-funded expenses

Annual Expense & Revenue Escalation From Previous Year				
Year	Total Op. Expenses	Escalation	Non-Operating Revenue	Escalation
2014	\$174,647		\$27,751	
2015	\$206,495	18.24%	\$32,707	17.86%
2016	\$233,618	13.14%	\$27,778	-15.07%
2017	\$231,589	-0.87%	\$103,350	272.06%
2018	\$264,396	14.17%	\$53,700	-48.04%
2019	\$277,544	4.97%	\$52,700	-1.86%
Average Escalation		9.93%		44.99%

City of Dover, Idaho - Sewer Rate Analysis

2019-2023 Annual Cost Projections *	
2019	
Operating Expenses	\$277,544
Capital Replacement Fund	\$47,366
Membrane Replacement	\$43,867
Operating Reserve	\$13,877
Non-Operating Revenue	\$52,700
Fee Requirement	\$329,954
2020	
Operating Expenses	\$286,570
Capital Replacement Fund	\$50,317
Membrane Replacement	\$45,666
Operating Reserve	\$14,328
Non-Operating Revenue	\$54,935
Fee Requirement	\$341,946
2021	
Operating Expenses	\$315,021
Capital Replacement Fund	\$51,266
Membrane Replacement	\$47,538
Operating Reserve	\$15,751
Non-Operating Revenue	\$57,188
Fee Requirement	\$372,389
2022	
Operating Expenses	\$346,297
Capital Replacement Fund	\$52,234
Membrane Replacement	\$49,487
Operating Reserve	\$17,315
Non-Operating Revenue	\$59,533
Fee Requirement	\$405,800
2023	
Operating Expenses	\$380,678
Capital Replacement Fund	\$53,219
Membrane Replacement	\$51,516
Operating Reserve	\$19,034
Non-Operating Revenue	\$61,973
Fee Requirement	\$442,474

*Based on the 2013-2019 average present worth, which was then escalated using the national water rate escalation factor of 4.1% as reported in a 2017 US Department of Energy report titled Water and Wastewater Annual Escalation Rates. It could not be escalated using the 2013-2019 average escalation rates as historic expense and non-operating revenue data was too erratic to provide reliable escalation projections.

2019-2023 Rates Based on Projection Data Presented Above	
Total 5-year Expenses	\$2,178,892
Total 5-year Non-Operating Revenue	\$286,329
Estimated Average Active ERs Served 2019-2023*	405.3
Estimated Average Inactive ERs Served 2019-2023*	58.5
Portion of Total Expenses Associated with Fixed Costs**	72.00%
Portion of Total Expenses Associated with Variable Costs**	28.00%
5-Year Net Fixed Expenses	\$1,362,624.43
5-Year Variable Expenses	\$529,938.06
Monthly Active Base Rate Per ER	\$70.76
Monthly Inactive Base Rate Per ER	\$48.97

*Average # of ERs projected for 2019-2023 period using historic ERU trend data.

**Based on actual percentage of total expenses averaged for 2013-2017 and projected total expenses for 2018 and 2019.

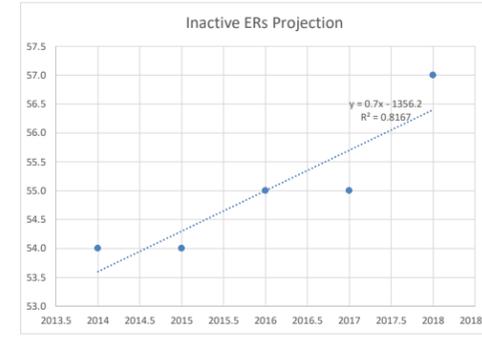
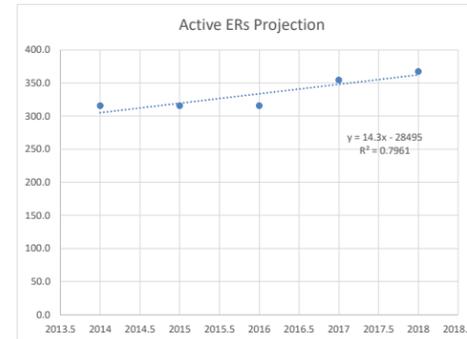
Total No. of ERUs Projection			
Year	Total ERUs	Active	Inactive
2014	369.5	315.5	54.0
2015	369.5	315.5	54.0
2016	370.5	315.5	55.0
2017	409.5	354.5	55.0
2018	424.5	367.5	57.0
2019	433.8	376.7	57.1
2020	448.8	391.0	57.8
2021	463.8	405.3	58.5
2022	478.8	419.6	59.2
2023	493.8	433.9	59.9
2019-2023 Average	463.8	405.3	58.5

*Designates years for which we have data, which was used to make a linear projection of roughly 8.5 ERUs per year.

Funded Depreciation
17.41%

Reserves:	
Membranes	\$238,074
Capital Replacement	\$254,402
Operating	\$80,306
Total	\$572,782

Current Rates:	
\$60.90	
\$41.24	



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