

System Development Fees FY24 and FY25

Billings, MT

April 3, 2023

Executive Summary

The City of Billings (City) charges a System Development Fee (SDF) designed to recoup, in part, the costs of building and holding excess system capacity to serve future growth. This SDF is based on the value of existing infrastructure and reasonable expectations of costs for future infrastructure. These costs are then apportioned by anticipated demand placed on the system in conjunction with the benefits provided to new development.

Using information provided by the City, AE2S Nexus performed a multi-step analysis for each utility to:

1. Identify the area served by the utility on which to levy an SDF,
2. evaluate the existing system and determine available capacity based on level of service determinants,
3. forecast future demand for system growth,
4. allocate capital costs to either existing or future capacity,
5. calculate the value of the applicable system assets,
6. assign system values equitably based on capacity and standard system service profiles, and
7. ultimately, determine the final SDF charge.

In conjunction with this annual update, the overall SDF methodology was reviewed with the assistance of the SDF Advisory Committee to determine if any modifications to the fee itself would be warranted, with specific attention given to the Water SDF. Overall, the committee reviewed the existing use of zones within the City's SDF, the potential for breaking out fireline charges, how residential lot size was accounted for in the level of service, and whether the approach to residential units should be adjusted.

The results of this review included recommendations to the residential level of service standards for lot size as well as adjustments to charges for multiple residential units. The residential Water SDF recommendations are reflected in the Water SDF fees in Table ES-1 with a detailed fee schedule provided in Table ES-2. Remaining water SDF are provided in table ES-3 with multi family greater than 4 units being treated under the standard commercial schedule. The maximum supportable SDF charges for the Water and Wastewater systems for the FY24-FY25 period from the above analysis are presented in Tables ES-3 and ES-4, respectively, each service area identified.

**Table ES-1
Maximum Supportable Residential SDF Water Framework FY24 – FY25**

Current		Proposed	
All Meter Sizes	Tier by Lot Size (sq ft)	Outdoor Component	Indoor Per Unit (Up to 4 Units)
\$2,950	< 5,400	\$630	\$1,390
	5,400 to 8,600	\$1,270	
	8,601 to 11,800	\$1,865	
	> 11,800	\$4,895	
With 4% Administration Charge			

**Table ES-2
Detailed Residential Water SDF**

	1 Unit	2 Unit	3 Unit	4 Unit
Tier 1	\$2,020	\$3,410	\$4,800	\$6,190
Tier 2	\$2,660	\$4,050	\$5,440	\$6,830
Tier 3	\$3,255	\$4,645	\$6,035	\$7,425
Tier 4	\$6,285	\$7,675	\$9,065	\$10,455

**Table ES-3
Maximum Supportable SDF Water Charge FY24 – FY25**

Meter Size	Non-Residential (Including Multi-Family Above 4 Units)		Seasonal Irrigation	
	Current	Updated	Current	Updated
3/4" or less	\$8,925	\$8,925	\$11,030	\$11,075
1"	\$15,140	\$15,140	\$18,705	\$18,775
1 1/2"	\$30,270	\$30,270	\$37,415	\$37,550
2"	\$48,435	\$48,435	\$59,875	\$60,090
3"	\$96,875	\$96,875	\$119,720	\$120,175
4"	\$151,370	\$151,370	\$187,075	\$187,780
With 4% Administration Charge				

**Table ES-4
Maximum Supportable SDF Wastewater Charge FY24 – FY25**

Wastewater				
Meter Size	City Service Area		Lockwood Service Area	
	Current	Updated	Current	Updated
3/4" or less	\$3,120	\$2,800	\$1,430	\$1,270
1"	\$9,575	\$8,600	\$4,385	\$3,895
1 1/2"	\$27,795	\$24,970	\$12,740	\$11,315
2"	\$47,985	\$43,100	\$21,990	\$19,530
3"	\$124,485	\$111,830	\$57,050	\$50,670
4"	\$291,435	\$261,800	\$133,570	\$118,630
With 4% Administration Charge				

1.0 Introduction

The City of Billings, Montana (City) retained AE2S Nexus to conduct a water and wastewater system utility rate study to include an evaluation and update to the System Development Fees (SDF) charged by the City for new connections. This analysis evaluated and updated the SDF to ensure the revised SDF continues to be equitable and proportionate to benefits received based on the City's existing assets, planned infrastructure, and changes in usage.

The City provides water and wastewater service to over 35,000 retail and wholesale customers throughout the region. Access to water and wastewater service is a critical factor for ongoing development and growth within the community and the region. Cities generally build and hold excess capacity within their treatment systems so they have the ability to serve new residents and businesses as they look to build and grow within their community. The City of Billings is no exception and takes proactive steps to have capacity ready for new connections. Building and holding this excess capacity comes with a cost that is borne by existing customers of the system. To recoup a portion of these costs, the City has historically charged an SDF to new connections based on the additional service capacity required to serve that new connection with water or wastewater service.

An SDF is a charge directly tied to the cost of building excess capacity to serve new growth. This direct linkage is important to the legal basis for such fees and is called the rational nexus. The three major components to the rational nexus test are 1) the connection between the need for a facility and the development being charged, 2) a demonstrable benefit to the new growth, and 3) that the charge is proportionate to the benefit received. This analysis is designed to demonstrate compliance with the rational nexus as well as all other requirements under Montana law.

Impact Fees (or SDFs as in the case of Billings) are developed based on the requirements set forth in Title 7, Chapter 6, Part 16 of the Montana Code. Per subsection 7, an impact fee must meet the following requirements:

- “The amount of the impact fee must be reasonably related to and reasonably attributable to the development’s share of the cost of infrastructure improvements made necessary by the new development.
- The impact fees imposed may not exceed a proportionate share of the costs incurred or to be incurred by the governmental entity in accommodating the development. The following factors must be considered in determining a proportionate share of public facilities capital improvements costs:
 - the need for public facilities capital improvements required to serve new development; and
 - consideration of payments for system improvements reasonably anticipated to be made by or as a result of development in the form of user fees, debt service payments, taxes, and other available sources of funding the system improvements.

- Costs for correction of existing deficiencies in a public facility may not be included in the impact fee.
- New development may not be held to a higher level of service than existing users unless there is a mechanism in place for the existing users to make improvements to the existing system to match the higher level of service.
- Impact fees may not include expenses for operations and maintenance of the facility.”

In order to ensure the analysis does meet all of Montana’s legal requirements for impact fees, the following basic outline was used to calculate the water and wastewater system development charges:

1. Identify service area;
2. Evaluate existing facility conditions;
3. Forecast growth-related demands;
4. Determine capital improvements needed to serve both existing and future capacity;
5. Calculate value of existing assets and capital improvements;
6. Determine unit value for capacity;
7. Establish level of service standards for each user class; and
8. Assign the proportionate share of costs based on established level of service.

The specifics of how this outline was applied to each system is described in more detail within the individual system analyses described herein. The final SDF arrived at through this process is a combination of the value of existing system assets, credited for the component of debt and equity in the system, along with the value of planned improvements that benefit growth.

Additional Review of SDF Methodology

In conjunction with this annual update, the overall SDF methodology was reviewed with the assistance of the SDF Advisory Committee¹ to determine if any modifications to the fee itself would be warranted, with specific attention given to the Water SDF. This review started with a listening session for committee members to identify specific items about the SDF they wanted more information on or that they would like to explore changing. The items identified included the use of zones within the City’s SDF, the potential for breaking out fireline charges, how residential lot size was accounted for in the level of service, and whether the approach to residential units should be adjusted.

The detailed review of these items included a summary of the existing practice, potential issue identified, a potential solution, and then the impacts of that solution. With the solution and the potential impacts identified, the Committee provided input on whether they felt the issue warranted modifications to the SDF approach. For the first two items, how the City approached the Zone for the SDF and the Fireline charges, the Committee recommended that no

¹ Committee membership included Greg McCall, Landy Leep, Max Griffin, Roy Neese, Taylor Kasperick, Travis Jones, Debi Meling, and Jennfer Duray.

modifications be made. For the other two items, residential lot size and unit approach, the Committee recommended changes to those items. The detailed information evaluated is provided as part of this section.

Review of City's Service Area Zones for Water SDF

The existing practice at the City is a single zone for the entire community. This single Zone reflects how both the City manages pressure within the overall distribution system as well as the benefit from combined water treatment to the City as a whole. All of the City's water system is interconnected and functions as a single system. Even with the planned expansion of treatment capacity through a West End water treatment plant, the City's water system will function as an integrated entity.

The original concern was related to the potential impact of future large investments of capital within the City's distribution and trunk transmission system to serve areas such as the Inner Belt Loop (IBL). With additional research, this investment raised the potential that some areas would have larger infrastructure costs associated with serving that would not reflect the broader demands of the City.

The analysis looked at both the quantitative impacts of creating a specific zone for the IBL area on the SDF as well as potential qualitative reasons that it may or may not make sense. To identify the quantitative impacts, the costs associated with serving the area with specific infrastructure were pulled from the existing CIP. The Zone 6 reservoir and the Zone 4W storage were the primary projects that contributed to the SDF and benefitted the IBL area. These projects totaled approximately \$16 million in costs with approximately \$11 million attributable to growth during the last SDF update. Removal of these costs from the water SDF to attribute them directly to the IBL zone reduces the residential water SDF by approximately \$135, corresponding reductions would occur to commercial connections as well. To calculate the amount specific to the IBL service area we assumed a total service area of 2,300 acres with a residential density within that area of 3 units per acre. The resulting fee specific to the IBL service area would be \$1,600. However, new development within that IBL service area would also be subject to the general City water SDF for a total projected residential water SDF of \$4,500, an increase from the existing estimate of \$2,950.

The Committee reviewed this increase and had initial concerns with the unintended consequences this could have to development throughout the region with the overall idea that it could push development from the IBL into areas further outside of the City. The resulting concern from this sort of shift in development was that if they needed City services in the future there would be an increased cost and inefficiency to extend City services to them after an extended period of time between original development and connection to City services. In addition, while the infrastructure itself may be primarily to service the IBL, the interconnectedness of the City's distribution system and the holistic management approach means that the existing City residents throughout the entire service area will still receive a benefit. As a result, the Committee **recommended no change** to the existing Service Area approach.

Specific Fireline SDF Charge

The existing practice of the City is to not maintain a separate charge for firelines that are designed to service sprinkler systems within buildings throughout the community. These firelines provide on demand water in the event that a building's sprinkler system is triggered. The City's overall distribution system is designed to provide peak demand needs of firelines in addition to the standard firefighting needs provided through hydrants throughout the City. Currently, the cost of sizing the City's fire protection system is seen as a general benefit to the system as a whole and is spread throughout the existing SDF.

The Committee's initial concern was whether the existing approach was the most equitable way to incorporate the sizing of firelines throughout the community.

To help the Committee consider the impacts, the analysis looked at sizing firelines based on a peak hour demand factor for fireflow from the distribution and storage infrastructure. The initial review looked at the potential capital cost of providing 1,500 gallons per minute (gpm) of fireflow for residential needs as well as 2,500 gpm for commercial needs. Additional sizing factors were considered and the infrastructure used to evaluate these costs was limited to storage and distribution. The initial review identified an SDF of approximately \$2,900 for residential use and \$4,800 for commercial. The initial analysis did not identify any potential offset to the existing SDF if the fireline SDF were to be adopted.

After review of the costs and a discussion on the other benefits of having fire protection, the Committee recommended that the City not adopt an additional fireline SDF. The overall benefits of the use of firelines were considered to extend beyond just the connecting development with the idea that firelines generally helped suppress the spread of fires to other neighboring buildings. In addition, a portion of the peak demand sizing is also there to serve hydrants which cannot be specifically attributable to the individual homes. As a result, the costs are more appropriately absorbed into the general water SDF as is current practice.

Lot Sizing Considerations

The City's existing practice is to charge a single SDF for all residential connections within the City, regardless of meter size. This is determined through the City's definition of residential being 3 units or less. The SDF is applied on a per meter basis. As a result, the level of service is a consistent residential level of service based on aggregate demands for that user class.

The Committee's initial concern was that this approach may not respond to the current market demands of both smaller lots as well as larger lots and that additional factors should be taken into account to allow for more efficient use of water.

The analysis for lot sizing considerations was a multi-step approach that included identifying how best to consider levels of service for the various lots. The first step was to determine how much of the overall water use could be attributable to outdoor water use. Through reviewing national statistics and then statistics more appropriately refined to the climate of the City, it was determined that approximately 53 percent of the level of service could be attributable to outdoor water use. This would be the equivalent of irrigating a 2,900 sq ft area to 1" deep over the course

of a 16-week irrigation period. This is a generalized assumption given that both weather patterns and personal preference can greatly impact how much water demand is needed for outdoor use in any given year. The proportion of the existing SDF would be proportionate to the share of outdoor water demand resulting in a baseline SDF of \$1,560 attributable to outdoor water use.²

The review then evaluated the recent building permit data to determine the size of lots that were being developed in the City since 2018. This included approximately 2,000 residential developments ranging in size from approximately 1,400 sq ft to over 1 million sq ft. For the purpose of this analysis the larger outliers were removed. An average lot size of 8,600 was identified with a standard deviation in lot sizes of approximately 4,700. A tier structure was developed around this information to create a four-tier approach to separating lot sizes. This resulted in the tiers of lot sizes of: less than 5,400 sq ft, between 5,400 and 8,600 sq ft, between 8,600 and 11,800 sq ft, and greater than 11,800 sq ft. Estimating that approximately 33 percent of the lot is irrigable, modifiers were created to adjust the base fee based on projected irrigable lot square footage. The midpoint of the tiers was used as the applicable lot sizing.

The result was the following distribution and modified cost associated with the \$1,560 base cost.

Table 1.1
Residential Lot Sizing Tiers and Estimated SDF

Tier 1	Tier 2	Tier 3	Tier 4
<5,400	5,400 to 8,600	8,600 to 11,800	>11,800
\$630	\$1,270	\$1,865	\$4,895

Because the jump from Tier 3 to Tier 4 was considerable, we evaluated water usage in the various tiers. Residential properties that are from 7,501 SF to 10,999 SF use an average of 89,000 gallons of water per year. Residential properties that are 11,000 SF use significantly more. The average use for these properties is 191,000 gallons of water per year, more than double the consumption of smaller properties. As a result, the approach was confirmed as being reasonable.

Based on information provided, the Committee recommended that the City adopt changes to the residential water SDF that reflect a 4-tier approach to outdoor water use based on lot sizing. This was considered to better reflect the changing development patterns within the City, address potential for both smaller irrigation use at smaller properties, but also more fairly attribute the cost of larger irrigation use to larger properties. The updated SDF calculations for FY24-FY25 have been structured around this committee recommendation.

Unit Multiplier

The City’s existing practice is to treat all multi-family properties with three units or less as regular residential. Properties with four or more units are treated as commercial properties. This subjects four-unit properties to the commercial SDF schedule if using a single meter. In some instances, the choice is made to individually meter the units within multi-unit properties to ensure they are treated as individual residential units.

² This baseline fee is calculated from the existing SDF

Due to how the lot sizing discussion resulted in an indoor water use component, the Committee was curious on whether that would be an appropriate multiplier to apply to multi-family residential and if there was an appropriate unit threshold.

The review did acknowledge that with a separate indoor and outdoor use component, it would be appropriate to use the indoor component and apply that for the number of residential units on a property when those units shared a physical structure. The indoor use component would then assume that the outdoor use would apply to the aggregate lot sizing. The analysis then reviewed the usage for a sample of 50 multi-family housing units ranging from 3 unit complexes to over 100 unit complexes. The usage for a three-year period was reviewed to identify the average water use. There was a clear distinction between how three- and four-unit buildings used water compared to those greater than four units. The overall average was approximately 89,000 gallons per unit per year, with three- and four-unit developments using an average of 115,000 gallons per unit per year, and developments greater than four units using an average of 71,000 gallons per unit per year. As a result, it was determined that three- and four-unit developments, on a per unit basis, were much closer to the existing residential demand of 120,000 gallons per year. Therefore, the per unit allotment of level of service could be used to derive per unit SDF charge.

The Committee recommended that the residential water SDF for multi-family housing of four units and less be charged on a per unit basis at the indoor demand SDF rate. For example, if the indoor demand portion of the SDF is calculated to be \$1,200 a residential connection serving a duplex with a single meter would pay \$2,400 plus the amount related to lot sizing to arrive at their final water SDF.

2.0 Water System Development Fee

1. Service Area

While the City of Billings' water system is designed with a number of zones within the system itself, the service area of the system as a whole is considered to be the entire City area (including areas to be annexed with planned provision for water service) and is not divided down to the pressure zones. All new customers to the City's system are included in this service area.

2. Existing Facility Conditions

Existing water assets are currently estimated at 86.2 percent capacity. The available capacity was calculated based on the peak day usage for the water treatment plant from 2009 through 2022. As the capacity used can fluctuate in any given year due to a number of factors, historic peak day usage was used to represent the maximum amount of capacity needed to serve the user base. The resultant peak capacity utilization is 51.7 million gallon per day output from fiscal year 2012. All other facility conditions are outlined in the most recent facility plan on file with the City.

3. Growth-Related Demands

Growth-related demands are forecast based on the 2017 Integrated Water Plan adjusted for growth realized since the adoption of the facility plan. Additional capacity will be brought on when the West End Treatment Plant is online with anticipated overall system capacity of 23 percent available by the end of the 10-year timeframe.

4. Capital Improvements

The City maintains an extensive capital improvements plan (CIP) to identify the investments needed to both expand the water system as well as increase the capacity to serve growth over a 10-year period. The analysis evaluated this CIP in conjunction with City staff to determine which projects contribute to expanding system capacity and to what level those projects contribute to system expansion. Projects designed to increase the overall treatment capacity, the trunk transmission system, and improve operations at the plant in a way that still benefits excess capacity were included and assigned a value applicable to growth to weight the overall cost of the project. The overall SDF charge is calculated to coincide with this same 10-year CIP planning period. The CIP used in the analysis is included in Appendix A.

5. Facility Valuations

Future Facilities

The CIP identifies nearly \$297 million in capital improvements from FY23 – FY33, including \$28.6 million in construction work in progress in FY23. The facility determination and growth percentages identified during the CIP process were used to adjust the overall CIP valuation and ensure that it accounts solely for projects that benefit future connections. This adjustment for

growth results in approximately \$156,321,648 million in growth-related capital projects over the time horizon.

Existing Facilities

The existing system value is based on the Replacement Cost New less Depreciation (RCNLD) for all applicable assets. The starting point for this calculation is the City’s existing listing of all current assets for the system. The process then reviews the existing asset information listing and excludes all assets that were classified as contributed capital, i.e. not paid for with ratepayer funds. Once the asset list was defined, the original cost was adjusted to 2023 dollars using the *Engineering News Record Construction Cost Index (CCI)* for Denver to determine the replacement cost new of the assets. Accumulated depreciation percentage was then netted off the replacement cost new to identify the final RCNLD. For the existing water system value, this calculation resulted in an applicable existing water system value of \$178,529,136.

Cash Equity

The third piece of identifying the overall facility valuation is accounting for the value of cash that ratepayers have contributed to the system over the years, the outstanding debt on existing assets, and the SDF’s currently available to buy-down future assets. Cash values are estimated based on current utility budgeting data and cash-flow trends through the end of FY23. Projected cash on hand is equal to \$26,004,994. Both the value of existing debt and the outstanding SDF fund balance are then netted off the value of cash on hand to arrive at the cash equity value. Outstanding debt is calculated to be \$19,917,000 based on current debt issuances and FY23 principal payments. SDF values are set at \$0 based on budgeted expenditures. Total cash equity portion is \$6,087,994.

6. Determine unit value for capacity

To arrive at a single unit value for capacity, the analysis looks at existing facilities (less cash equity) and future facilities separately and then combines them into a single unit value. The total treatment capacity was used as the capacity basis for existing system and is set at 60 MGD. The value for planned capital improvements is divided by the currently available capacity of 8.3 MGD plus the new capacity additions in the CIP of 20 MGD to determine that unit value. Facility valuations are divided by these unit values to calculate the unit capacity values on a gallon per day basis. Table 2-1 provides the resulting unit capacity values.

**Table 2-1
Water Unit Capacity Values**

Component	Facility Value	Capacity	Value*
Existing Capital	\$172,441,142	60 MGD	\$2.87 / gpd
Cash Equity	\$6,087,994	60 MGD	\$0.10 / gpd
Planned Capital	\$157,027,172	28.3 MGD	\$5.55/ gpd
		Total	\$8.52 / gpd
<i>*Values rounded to the nearest whole cent</i>			

7. Level of Service Standards

Level of service standards are identified for three separate user classes: residential, non-residential, and seasonal irrigation. The overall level of service is determined by the demands placed on the system from each user class. These various user classes have dramatically different usage profiles and as such are separated accordingly. To determine the overall demand from each user class, recent historical usage from 2010 through 2022 was evaluated. Since many factors contribute to the variation in usage of system capacity from year to year, the peak annual average usage from this data set (FY 2013) was selected for inclusion to the analysis to represent peak capacity utilization, consistent with prior years. Table 2-2 outlines identified level of service standards for the user classes. Residential indoor and outdoor demand was based on estimated lawn watering values and should be reviewed during each subsequent update.

**Table 2-2
Water Level of Service Standards**

User Class	Usage (gpd)	Standard Meter Size
Residential - Outdoor	178	¾"
Residential - Indoor	157	¾"
Non-Residential	1,715	1"
Seasonal Irrigation	6,782	2"

8. Proportionate Share of Costs

To fairly assign a proportionate share of costs to the various user classes, the level of service standard set by those classes was multiplied by the unit cost per gpd capacity to arrive at a standard SDF per user class. The resulting residential indoor SDF is a per unit basis for service at four unit and lower developments. The residential outdoor standard SDF is then scaled based on the tier factors developed. Those factors are provided in table 2-3. For commercial and seasonal user classes, industry standard equivalent meter factors are applied to the standard SDF to adjust these costs into charges across the variety of meter sizes that those user classes could have.

By breaking down the system values into the unit cost and assigning it proportionately based water service standards, it provides a total cost associated with the proportionate share of growth and growth-related costs by new users. This calculated total cost was rounded down to the nearest \$5 equivalent to ensure that the recommended maximum supportable impact fee to ensure the final adopted impact fee does not exceed the maximum supportable. After the proportionate share of costs were calculated, a 4.0 percent administrative charge was added to reflect the ongoing costs associated with managing an SDF program. The resulting final SDF charges are outlined in Table 2-3.

**Table 2-3
Maximum Supportable SDF Residential Water Charge FY24 – FY25**

Current		Proposed		
All Meter Sizes	Tier by Lot Size (sq ft)	Tier Modifier	Outdoor Component	Per Unit (Up to 4 Units)
\$2,950	< 5,400	0.40	\$630	\$1,390
	5,400 to 8,600	0.81	\$1,270	
	8,601 to 11,800	1.19	\$1,865	
	> 11,800	3.12	\$4,895	
With 4% Administration Charge				

**Table 2-5
Maximum Supportable SDF Water Charge FY24– FY25**

Water System SDF				
Meter Size	Non-Residential		Seasonal Irrigation	
	Current	Updated	Current	Updated
3/4" or less	\$8,925	\$8,925	\$11,030	\$11,075
1"	\$15,140	\$15,140	\$18,705	\$18,775
1 1/2"	\$30,270	\$30,270	\$37,415	\$37,550
2"	\$48,435	\$48,435	\$59,875	\$60,090
3"	\$96,875	\$96,875	\$119,720	\$120,175
4"	\$151,370	\$151,370	\$187,075	\$187,780

In instances where the meter size needed to service a new connection is greater than 4” or when the unique characteristics of a larger water user may require, the SDF should be calculated by multiplying the anticipated average daily demand of the user by the unit rate of \$8.52 per gallon. An additional 4.0 percent administrative fee should then be added to the resulting SDF. In instances where the characteristics of the user may result in a change in capital use patterns, a special study may be required to calculate the charge.

3.0 Wastewater System Development Fee

While the water system SDF was reviewed for methodological changes, the wastewater system SDF was determined to not need any updates. The approach used herein is consistent with the most recently used update to the wastewater SDF.

1. Service Area

The wastewater system has two separate service areas resulting in two distinct SDF calculations. These service areas are: the City of Billings and Lockwood Water & Sewer District. Lockwood Water & Sewer District connects at the plant and does not use any of the City's collection system, necessitating modifications to the baseline SDF for this benefit of use of a smaller overall asset base.

2. Existing Facility Conditions

The capacity of the wastewater system is currently set at 34 MGD based on average day treatment capacity. The available capacity was calculated based on the average day usage for the wastewater treatment plant from 2009 through 2022. As the capacity used can fluctuate in any given year due to a number of factors, historic plant influent average day recordings were used to represent the maximum amount of capacity needed to serve the in-place user base. For these reasons, a maximum average day usage of 24.4 million gallon per day of plant influent from FY12 was incorporated into the analysis. This existing system capacity is applicable to both service areas. All other facility conditions are outlined in the most recent facility plan on file with the City.

3. Growth-Related Demands

The City evaluates the existing plant capacity and the demands placed on it by new connections on an ongoing basis. The most recent comprehensive engineering study on current treatment facilities, including an evaluation of in-place capacity and the demands of growth, was the 2016 study (updated January 2017) done in conjunction with the ongoing nutrient upgrade, expansion, and plant improvement work. The overall capacity and the demands growth continues to place on available capacity is derived from this report.

4. Capital Improvements

The City maintains an extensive capital improvements plan (CIP) to identify the investments needed to both expand the system treatment and collection system as well as increase the capacity to serve growth over a 10-year period. The analysis evaluated the currently adopted CIP in conjunction with City staff to determine which projects contribute to expanding system capacity and to what level those projects contribute to system expansion. Particular care is taken to adjust out projects that do not affect overall system capacity such as the local collection system. The SDF charge is calculated to coincide with this same 10-year CIP planning period.

5. Facility Valuations

Future Facilities

The CIP identifies over \$144 million in capital improvements from FY23 – FY33, including \$41.8 million in construction work in progress in FY23. As part of the process to identify which projects expand system capacity, all small line collection system projects are removed from the system growth value calculation due to assessment policy. The remaining project costs are weighted based on the proportion of the project benefiting growth-related capacity as estimated at the time of improvement (based on growth-related demand calculations). This results in \$18,980,124 million in growth-related capital projects identified for the City service area. Further reductions are necessary for the Lockwood service area since it does not share in any of the large, trunk collection infrastructure. While there is a reduction, the majority of the City’s investment for growth throughout the system is targeting capacity at the plant. As a result, these reductions reflect the limited use of the overall system by Lockwood and are equal to growth related capital of \$13,523,442 million for Lockwood.

Existing Facilities

The existing system value is based on the Replacement Cost New less Depreciation (RCNLD) for all applicable assets. The starting point for this calculation is the City’s existing listing of all current assets for the system. The process then reviews the existing asset information listing and excludes all assets that were classified as contributed capital, i.e. not paid for with ratepayer funds. Once the asset list was defined, the original cost was adjusted to 2023 dollars using the *Engineering News Record Construction Cost Index (CCI)* for Denver to determine the replacement cost new of the assets. Accumulated depreciation percentage was then netted off the replacement cost new to identify the final RCNLD. For the existing water system value, this calculation resulted in an applicable existing system value of \$165,006,135. Further reductions are necessary to reflect the limited use of the system by the second service area, Lockwood. These reductions result in an existing system value of \$61,789,549 for Lockwood.

Cash Equity

The third piece of identifying the overall facility valuation is accounting for the value of cash that ratepayers have contributed to the system over the years, the outstanding debt on existing assets, and the SDF’s currently available to buy-down future assets. Cash values are estimated based on current utility budgeting data and cash-flow trends through the end of FY23. Projected cash on hand is equal to \$16,875,656. Both the value of existing debt and the outstanding SDF fund balance are then netted off the value of cash on hand to arrive at the cash equity value. Outstanding debt is calculated to be \$59,282,000 based on current debt issuances and FY23 principal payments. SDF values are set at \$0 based on FY23 collections to date as they exceed budgeted amounts. Total cash equity portion is \$(42,406,344). Lockwood’s adjustment nets off items not applicable to the SDF and results in a total cash equity of \$(37,263,818).

6. Determine unit value for capacity

To arrive at a single unit value for capacity, the analysis looks at existing facilities (less cash equity) and future facilities separately and then combines them into a single unit value. In this instance, the total treatment capacity was used as our capacity factor for existing system and is set at 34 MGD. Average day flows are set to recent historical maximums of 24 MGD, resulting in the capacity value for existing system components of 9.6 MGD. The capacity value for planned capital is based on the currently available capacity for growth plus direct new treatment capacity added by capital improvements of 0 MGD. The resulting available capacity value is 9.6 MGD for planned capital improvements. Tables 3-1 and 3-2 provide the resulting unit capacity values. Both service areas share in the capacity equally without any adjustments.

**Table 3-1
Wastewater Unit Capacity Values (City Service Area)**

Component	Facility Value	Capacity	Value for City Service Area*
Existing Capital	\$165,006,135	34 MGD	\$6.10 / gpd
Cash Equity	\$(42,406,344)	34 MGD	\$(1.25) / gpd
Planned Capital	\$21,875,853	12.5 MGD	\$1.98 / gpd
		Total	\$6.83 / gpd
<i>*Values rounded to the nearest whole cent</i>			

**Table 3-2
Wastewater Unit Capacity Values (Lockwood Service Area)**

Component	Facility Value	Capacity	Value for Lockwood Service Area*
Existing Capital	\$61,789,595	34 MGD	\$2.91 / gpd
Cash Equity	\$(37,263,818)	34 MGD	\$(1.10) / gpd
Planned Capital	\$16,039,549	12.5 MGD	\$1.41 / gpd
		Total	\$3.22 / gpd
<i>*Values rounded to the nearest whole cent</i>			

7. Level of Service Standards

One level of service standard has been identified for the wastewater system. The overall level of service is determined by the demands placed on the system by the contributing users. To determine the overall demand, total equivalent dwelling units (EDUs) contributing to the system were analyzed. Total capacity and EDUs were used to identify an average gallon capacity use per EDU per day. This established a level of service of 406 gallons per day per EDU.

8. Proportionate Share of Costs

Proportionate share of costs were determined by taking the calculated unit value by the level of service standard. As the standard units associated with the level of service standard are provided in an EDU meter size of 3/4", industry standard equivalent meter factors are applied to translate these costs into charges for the appropriate meter size. This provides a total cost associated with the proportionate share of growth and growth-related costs by new users. The total cost is rounded down to the nearest \$5 to ensure the actual charge is at or just less than the maximum supportable. After the proportionate share of costs were determined, a 4.0 percent administrative charge was added, under the state maximum allowance of 5 percent. The resulting final SDF charges are outlined in the Table 3-3.

**Table 3-3
Maximum Supportable SDF Wastewater Charge FY24– FY25**

Meter Size	Wastewater			
	City Service Area		Lockwood Service Area	
	Current	Updated	Current	Updated
3/4" or less	\$3,120	\$2,800	\$1,430	\$1,270
1"	\$9,575	\$8,600	\$4,385	\$3,895
1 1/2"	\$27,795	\$24,970	\$12,740	\$11,315
2"	\$47,985	\$43,100	\$21,990	\$19,530
3"	\$124,485	\$111,830	\$57,050	\$50,670
4"	\$291,435	\$261,800	\$133,570	\$118,630

In instances where the meter size needed to service a new connection within the City service area is greater than 4" or when the unique characteristics of a larger wastewater user may require a more in-depth review, the SDF should be calculated by identifying the key usage characteristics of flow, Biochemical Oxygen Demand (BOD) loading, Total Suspended Solids (TSS), and Total Kjeldahl Nitrogen (TKN) loading and using the formula below.

$$(\$6.83 * \text{Flow} * (0.596 + (\text{BOD} * 0.1538/200) + (\text{TSS} * 0.153/200) + (\text{TKN} * 0.972/55))) * 1.04$$

Where \$6.83 is the total unit cost identified through the analysis, 0.596 is the weighted capital allocation (across all assets) from the cost of service model applicable to flow, 0.1538 is the weighted capital allocation applicable to BOD, 0.153 is the weighted capital allocation to TSS, 0.972 is the weighted capital allocation applicable to TKN, and 1.04 represents the administrative charge. These weighted capital allocations are available from the 2024 capital allocations in the retail rate model.

In instances where the user requesting connection to the system presents a demand that may result in different allocation factors used above, a special study may be required to calculate the charge.

4.0 Summary

The SDFs calculated in this analysis are based on the value of the in-place assets and the reasonably expected costs of future capital to expand and improve the City’s water and wastewater systems. The fees calculated are based on the proportionate share of the capital costs tied to the demand placed by new development. Tables 4-1, 4-2, 4-3, and 4-4 present the SDF fee schedule in its entirety for the water system and the wastewater service areas, respectively.

**Table 4-1
Maximum Supportable SDF Residential Water Charge FY24 – FY25**

Current		Proposed	
All Meter Sizes	Tier by Lot Size (sq ft)	Outdoor Component	Per Unit (Up to 4 Units)
\$2,950	< 5,400	\$630	\$1,390
	5,400 to 8,600	\$1,270	
	8,601 to 11,800	\$1,865	
	> 11,800	\$4,895	
With 4% Administration Charge			

**Table 4-2
Detailed Residential Water SDF**

	1 Unit	2 Unit	3 Unit	4 Unit
Tier 1	\$2,020	\$3,410	\$4,800	\$6,190
Tier 2	\$2,660	\$4,050	\$5,440	\$6,830
Tier 3	\$3,255	\$4,645	\$6,035	\$7,425
Tier 4	\$6,285	\$7,675	\$9,065	\$10,455

**Table 4-3
Maximum Supportable SDF Water Charge FY24– FY25**

Meter Size	Non-Residential (Including Multi-Family Above 4 Units)		Seasonal Irrigation	
	Current	Updated	Current	Updated
3/4" or less	\$8,925	\$8,925	\$11,030	\$11,075
1"	\$15,140	\$15,140	\$18,705	\$18,775
1 1/2"	\$30,270	\$30,270	\$37,415	\$37,550
2"	\$48,435	\$48,435	\$59,875	\$60,090
3"	\$96,875	\$96,875	\$119,720	\$120,175
4"	\$151,370	\$151,370	\$187,075	\$187,780
With 4% Administration Charge				

**Table 4-3
Maximum Supportable SDF Wastewater Charge FY24– FY25**

Meter Size	Wastewater			
	City Service Area		Lockwood Service Area	
	Current	Updated	Current	Updated
3/4" or less	\$3,120	\$2,800	\$1,430	\$1,270
1"	\$9,575	\$8,600	\$4,385	\$3,895
1 1/2"	\$27,795	\$24,970	\$12,740	\$11,315
2"	\$47,985	\$43,100	\$21,990	\$19,530
3"	\$124,485	\$111,830	\$57,050	\$50,670
4"	\$291,435	\$261,800	\$133,570	\$118,630

Appendix A

Water Capital Improvement Plan

D? Project	Percent Growth	Percent											Total Cost	Adj. Percent Growth	Growth Total		
		Current FY 23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33					
Christensen PS VFD	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
High Service PS HVAC Improvements	25%	1,288,380	-	-	-	-	-	-	-	-	-	-	-	-	1,288,380	25%	322,095
South Frontage Road Water Line Extension	50%	422,000	-	-	-	-	-	-	-	-	-	-	-	422,000	0%	0	
West End Reservoir*	100%	-	-	53,711,000	-	-	-	-	-	-	-	-	-	53,711,000	100%	53,711,000	
West End Treatment Plant*	100%	-	-	43,289,000	-	-	-	-	-	-	-	-	-	43,289,000	100%	43,289,000	
West End Treatment Plant*	100%	-	-	32,139,000	-	-	-	-	-	-	-	-	-	32,139,000	100%	32,139,000	
West End Treatment Plant*	0%	-	-	2,000,000	-	-	-	-	-	-	-	-	-	2,000,000	0%	0	
West End Intake and PS*	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
West End Intake and PS*	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alkali Creel Water Extension	0%	1,263,000	-	-	-	-	-	-	-	-	-	-	-	1,263,000	0%	0	
West End Distribution	100%	-	2,000,000	-	-	-	-	-	-	-	-	-	-	2,000,000	0%	0	
West End Distribution	50%	-	2,000,000	-	-	-	-	-	-	-	-	-	-	2,000,000	0%	0	
Water Main Replacements	100%	770,046	1,127,855	5,800,000	6,400,000	7,040,000	7,740,000	8,514,000	8,770,000	9,033,000	9,304,000	9,583,000	74,081,901	0%	0		
Water Main Replacements	0%	8,146,454	4,447,145	-	-	-	-	-	-	-	-	-	-	12,593,599	0%	0	
Water Compensation Agreements	0%	643,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,643,000	22%	817,598		
Equipment Replacement	0%	1,146,615	505,913	700,000	735,000	770,000	810,000	850,000	890,000	935,000	980,000	1,030,000	9,352,528	23%	2,194,110		
New Equipment	0%	28,375	56,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	804,375	24%	195,244		
Water Treatment Plant Electrical Improvements	0%	-	900,000	150,000	200,000	500,000	315,000	425,000	430,000	440,000	450,000	465,000	4,275,000	23%	999,242		
Zone 4 PS Improvements	0%	-	2,900,000	-	-	-	-	-	-	-	-	-	2,900,000	12%	361,050		
Zone 4 PS Improvements	0%	-	3,300,000	-	-	-	-	-	-	-	-	-	3,300,000	12%	410,850		
Willett Reservoir and PS Improvements	0%	-	1,026,300	-	-	-	-	-	-	-	-	-	1,026,300	12%	127,774		
Briarwood Line Replacement	100%	-	300,000	-	-	-	-	-	-	-	-	-	300,000	0%	0		
Voelker Pump Station PRV	0%	-	300,000	-	-	-	-	-	-	0	-	-	300,000	12%	37,350		
D&C Heated Shop and Breakroom Addition	0%	-	-	-	-	-	-	810,000	-	-	-	-	810,000	28%	227,711		
Water - Storage Improvements (Zone 1)	100%	-	-	6,700,000	-	-	-	-	-	-	-	-	6,700,000	100%	6,700,000		
Central Water Extension	0%	-	-	800,000	-	-	-	-	-	-	-	-	800,000	0%	0		
Grand Water Lines	0%	-	-	-	320,000	-	-	-	-	-	-	-	320,000	0%	0		
Water Treatment Plant Facility Plan	0%	-	-	-	300,000	-	-	-	-	-	-	-	300,000	32%	96,788		
Land and Easements for Zone 6 Storage	0%	-	-	-	200,000	-	-	-	-	-	-	-	200,000	32%	64,525		
Zone 6 Reservoir and redundant line	100%	-	-	-	-	5,000,000	-	-	-	-	-	-	5,000,000	100%	5,000,000		
South 32nd St W/I-90/S Frontage Loop	0%	-	-	-	-	1,000,000	-	-	-	-	-	-	1,000,000	0%	0		
Skyway Drive Water Line Loop	100%	-	-	-	-	-	2,800,000	-	-	-	-	-	2,800,000	0%	0		
Intake 2 Screening Improvements	100%	-	-	-	-	-	1,750,000	-	-	-	-	-	1,750,000	100%	1,750,000		
Water - Fox Reservoir #1 Replacement	50%	-	-	-	-	-	-	-	-	4,040,000	-	-	4,040,000	-	-		
Staples	100%	-	-	-	-	-	-	-	-	-	-	7,210,000	7,210,000	100%	7,210,000		
Zone 4W Additional Storage	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N 19th St from Montana Ave to 4th Ave N	100%	106,237	-	-	-	-	-	-	-	-	-	-	106,237	0%	0		
Water Master Plan Update	50%	427,131	-	-	-	-	-	-	-	-	-	-	427,131	50%	213,566		
West End Reservoir	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
WTP Drought & Flood Control Plan	0%	146,168	-	-	-	-	-	-	-	-	-	-	146,168	14%	20,220		
WO 19-42 West End Water Treatment Plant Proj	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
S 32nd St W (King Ave W to Gabel)	0%	166,097	-	-	-	-	-	-	-	-	-	-	166,097	0%	0		
Hallowell Lane Improvement	0%	1,615,004	-	-	-	-	-	-	-	-	-	-	1,615,004	0%	0		
Water/Sewer Replacement Project Pioneer Park	50%	4,521,613	-	-	-	-	-	-	-	-	-	-	4,521,613	0%	0		
Highwood Drive Pavement	0%	345,908	-	-	-	-	-	-	-	-	-	-	345,908	0%	0		
Harrow Dr. Reconstruction	0%	286,929	-	-	-	-	-	-	-	-	-	-	286,929	0%	0		
Schedules 1 & 2 Water & Sewer Main Replacement	0%	2,981,119	-	-	-	-	-	-	-	-	-	-	2,981,119	0%	0		
Alkali Creek Water Extension	0%	1,362,569	-	-	-	-	-	-	-	-	-	-	1,362,569	0%	0		
Staples Reservoir Evaluation/Design	50%	336,495	-	-	-	-	-	-	-	-	-	-	336,495	50%	168,247		
West End Water Intake & Pump Station	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
WTP High Service Pump Station: Cooling Units	25%	151,712	-	-	-	-	-	-	-	-	-	-	151,712	25%	37,928		
Water Main Extension - Arlington Ave to Grey Eagle	100%	758,596	-	-	-	-	-	-	-	-	-	-	758,596	0%	0		
Zone 1 Water Storage Improvements	100%	848,727	-	-	-	-	-	-	-	-	-	-	848,727	100%	848,727		
Willett & Christensen Pump Station Improvements	25%	329,564	-	-	-	-	-	-	-	-	-	-	329,564	25%	82,391		
Water/Sewer Main Replacement	100%	193,490	-	-	-	-	-	-	-	-	-	-	193,490	0%	0		
P776 Development 55 water/Sewer Main Extension	0%	326,030	-	-	-	-	-	-	-	-	-	-	326,030	0%	0		
High Service Pump Station Piping Modifications	25%	11,022	-	-	-	-	-	-	-	-	-	-	11,022	25%	2,755		
	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total		28,622,280	19,163,213	145,669,000	8,535,000	14,690,000	13,795,000	10,979,000	10,470,000	14,828,000	11,114,000	18,668,000	296,533,493		157,027,172		

Wastewater Capital Improvement Plan

C?/I/E	Project	Percent Growth	Percent										Adj.		Lockwood Total				
			Current FY 23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	10-Yr Total		Percent Growth	Growth Total		
1	Wastewater Treatment Plant Intercom	0%	-								370,000					370,000	8%	31,341	31,341
1	Service Center Reconstruction	20%	-	800,000												800,000	20%	160,000	160,000
1	Influent Lift Station	20%	1,282,000													1,282,000	20%	256,400	256,400
1	WWTP Nutrient Improvement Project	50%	4,425,000													4,425,000	50%	2,212,500	2,212,500
C	0 Wastewater Compensation Agreements	0%	412,000	488,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,600,000	0%	0	0
C	0 Wastewater Main Replacements	0%	7,054,652	5,300,000	5,800,000	4,000,000	5,800,000	6,200,000	6,800,000	8,770,000	9,033,000	9,304,000	9,583,000	9,583,000	9,583,000	77,644,652	0%	0	0
1	Wastewater Treatment Plant Electrical	0%		300,000	300,000	300,000	300,000	300,000	350,000	350,000	350,000	350,000	350,000	350,000	350,000	3,250,000	15%	478,588	478,588
1	Equipment Replacements	0%	606,540	845,208	649,000	685,000	682,000	699,000	717,000	735,000	756,000	773,000	793,000	793,000	7,940,748	16%	1,273,222	1,273,222	
1	New Equipment	0%	42,950	56,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	818,950	16%	128,005	128,005	
0	Sewer Interceptor	0%	654,000													654,000	28%	184,659	0
1	Wastewater - Replace Heat Exchangers #1, 2, and 3	0%	507,671													507,671	28%	143,342	143,342
0	Wastewater - Sahara Sands Lift Station Rehabilitation	0%	150,000													150,000	28%	42,353	0
1	Wastewater Treatment Plant Campus Electrical	0%	500,000													500,000	28%	141,176	141,176
1	Alkali Creek Road Sewer Extension	0%	2,290,654													2,290,654	28%	646,773	646,773
1	Hesper Sewer Extension (Gabel to Shiloh)	0%	750,000													750,000	28%	211,765	211,765
1	Hydrogen Sulfide Mitigation (Phase 2 and 3)	0%	500,000	500,000												1,000,000	27%	268,235	268,235
1	Monad Sewer	0%		4,606,000												4,606,000	25%	1,170,466	1,170,466
1	Digester Gas Interior Piping Display	0%		1,200,000												1,200,000	25%	304,941	304,941
1	Laboratory Remodel	0%							120,000							120,000	14%	16,941	16,941
0	Hesper Sewer Extension (Sholoh to 48th)	100%				4,200,000										4,200,000	100%	4,200,000	0
1	Central Avenue Sewer Extension (Shiloh to 44th)	0%			1,060,000											1,060,000	25%	269,365	269,365
0	D&C Heated Shop and Breakroom Addition	0%							540,000							540,000	14%	76,235	0
1	Digester Gas and Sludge Pump Replacement	0%			515,000											515,000	25%	130,871	130,871
1	Grand Avenue Sewer Extension (60th to 62nd)	0%					400,000									400,000	20%	79,059	79,059
1	Rehberg Ranch Lift Station	0%						1,640,000								1,640,000	17%	277,835	277,835
1	Highway 3 Sanitary Sewer Extension	0%							1,600,000							1,600,000	14%	225,882	225,882
1	Lower Mountain View Sewer	0%	16,310													16,310	28%	4,605	4,605
1	Alley b/t N23rd St & N24th St b/t 1st & 2nd Ave N	0%	11,510													11,510	28%	3,250	3,250
1	WRF Nutrient Recovery & Biosolids Facilities Plan	0%	203,306													203,306	28%	57,404	57,404
1	WRF Influent Lift Station	20%	6,173,992													6,173,992	20%	1,234,798	1,234,798
1	WRF Headworks Grit Unit	0%	87,354													87,354	28%	24,665	24,665
1	Water/Sewer Replacement Project	0%	7,860,681													7,860,681	28%	2,219,487	2,219,487
0	Lloyd Mangrum & Lake Hills Lift Station Rehab	0%	959,840													959,840	28%	271,014	0
1	S 32nd St W (King Ave W to Gabel)	0%	112,163													112,163	28%	31,669	31,669
1	Wastewater Master Plan	100%	233,551													233,551	100%	233,551	233,551
1	WRF Solids Handling Modifications	0%	6,205													6,205	28%	1,752	1,752
1	WRF Nutrient Recover Improvements Project	0%	280,720													280,720	28%	79,262	79,262
1	Sewer Replacement Project Pioneer Park	0%	-													-	0%	0	0
1	Highwood Drive Pavement	0%	29,462													29,462	28%	8,319	8,319
1	Harrow Dr. Reconstruction	0%	52,484													52,484	28%	14,819	14,819
1	WRF Electrical Improvements	50%	37,920													37,920	50%	18,960	18,960
1	Schedules 1 & 2: Water & Sewer Main Replace	0%	3,192,019													3,192,019	28%	901,276	901,276
0	Alkali Creek Water & Sewer Extension	0%	2,416,906													2,416,906	28%	682,420	0
1	Heights Trunk Sewer Repair	0%	379,103													379,103	28%	107,041	107,041
1	WRF Bioreactor Flowmeter	0%	109,614													109,614	28%	30,950	30,950
1	Water/Sewer Replacement Project	0%	183,838													183,838	28%	51,907	51,907
1	Monad Road Sewer Extension	0%	61,894													61,894	28%	17,476	17,476
1	Orchard Lane Sewer Extension	0%	34,981													34,981	28%	9,877	9,877
1	P766 Development 55 Water/Sewer Main Extension	0%	161,737													161,737	28%	45,667	45,667
	Total		41,781,058	14,095,208	8,704,000	9,565,000	7,562,000	9,219,000	10,507,000	10,235,000	10,889,000	10,807,000	11,106,000	144,470,266		144,470,266		18,980,124	13,523,442