



Public Works Department Administration

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Water and Water Reclamation Utility Rate Analysis 2022 Summary

1. Purpose

This is a summary of the completed water and water reclamation utility rate analysis and recommended rate adjustments for 2024 through 2028.

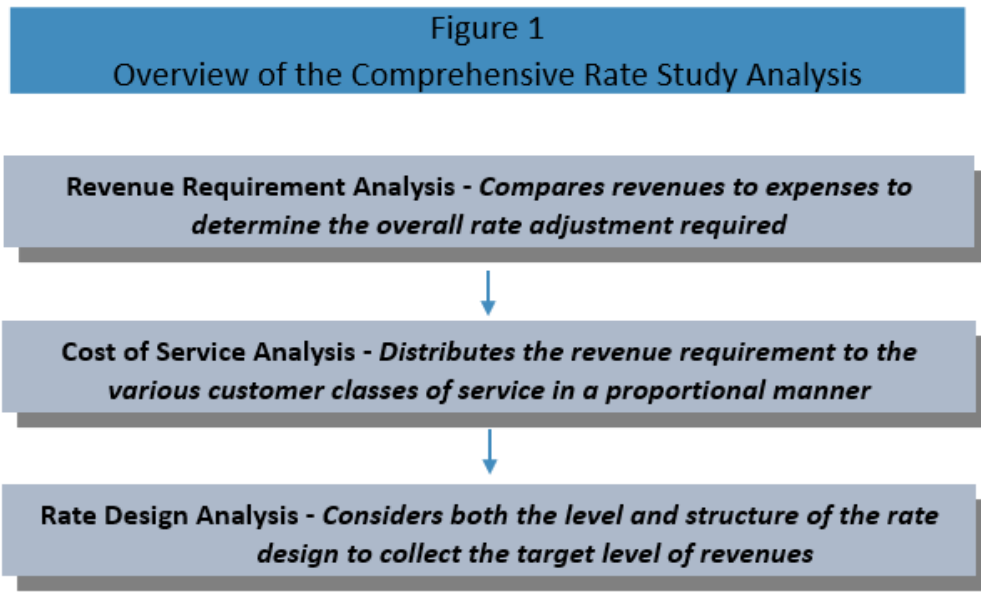
2. Overview

The City has completed a comprehensive water and water reclamation utility rate study. The results of this study provide the City with a set of rate recommendations that adequately fund the water and water reclamation annual operations and maintenance (O&M), debt issuance, and capital improvement needs. In addition to the recommended rate transition plan, the study reviewed the proportionality of the existing rates for the customer classes of service (e.g., residential, commercial). Finally, the rate study proposed a set of rates for each customer class of service to reflect the study results.

3. Discussion

3.1. Overview of the Rate Study Methodology. The development of the City's rate study is based on industry recognized "generally accepted" principles. These are outlined in the American Water Works Association M1 Manual (AWWA M1 Manual) and the Water Environment Federation Manual of Practice No. 27 (WEF MOP 27). These manuals outline the approach that was used to establish the City's recommended rates, which include a three-step approach. These three-steps include a Revenue Requirement Analysis, a Cost of Service Analysis, and a Rate Design Analysis and are illustrated below in Figure 1.

For the City's study each of the analyses was completed and outlined in attached exhibits. As a point of reference, the water and water reclamation studies were completed independently based on each utility's specific system and customer characteristics. The results were used as the foundation for establishing a cost-based and proportional water and water reclamation utility rate recommendation for the City's customers.



3.2. Key Rate Study Results. Based on the technical analysis undertaken by the City’s consultant, HDR with considerable support from City staff the following findings, conclusions, and recommendations were developed.

- 3.2.1. The starting point for defining the revenue requirement analysis was the City’s adopted 2023 annual utility budget.
- 3.2.2. City staff also provided the Capital Improvement Plans for each utility for a projected time frame as well as expected long-term debt issuance.
- 3.2.3. With the revenues and expenditures sufficiently outlined, a plan was developed with the intent to adequately fund the operating costs and capital needs. This defined the Revenue Requirement Analysis.
- 3.2.4. A Cost of Service Analysis was developed to determine the proportional level of revenue needed from each customer class of service (i.e., residential and commercial).
- 3.2.5. In general, the results were reasonable and expedited given current industry and economic climates.
- 3.2.6. A Rate Design Analysis was developed for a 5-year period (2024-2028), that provides a set of charges that meet O&M costs, Debt Coverage, and Capital Improvement needs, while maintaining minimum reserve requirement levels. This was done while holding to a fair and equitable standard as outlined in the *City of Rapid City Financial and Rate Setting Policies for the Water and Water Reclamation Utilities*, Oct 2017.

3.3 Revenue Requirement Analysis. The Revenue Requirement Analysis sums the annual total expenditures and compares them to the total revenues in order to determine if a

balance or deficiency exists. This results in a revenue (rate) adjustment to adequately fund each utility’s annual expenses.

The starting point of the Revenue Requirement Analysis was as stated, the 2023 budget and the current 10-year capital improvement plan for each utility. A projection of revenues and expenses was developed for these future years based on estimated inflationary factors. This method of analysis projected the annual O&M costs of each utility over the 10-year period (2024 through 2033) in order to review potential long-term future rate needs that may impact near-term expenditure requirements. An example of this is large debt funding.

Based on the Revenue Requirement Analysis, HDR recommends the City increase the water and water reclamation rates to levels adequate to fund the projected annual operating and capital needs over the next 5-year period. Provided in Table 2 below is a summary of the proposed system revenue adjustments for each utility.

Table 2 Summary of the Proposed Water and Water Reclamation System Revenue Adjustments					
	2024	2025	2026	2027	2028
Water	10.0%	10.0%	10.0%	10.0%	10.0%
Water Reclamation	12.0%	12.0%	12.0%	12.0%	12.0%

The rate revenue adjustments are necessary to fund annual capital improvements to maintenance and improve the City’s water and water reclamation infrastructure over the next five to ten years. In addition, the rate adjustments reflect current and forecasted inflationary increases.

3.4 Cost of Service Analysis. The Cost of Service Analysis determines the proportional distribution of the revenue requirements to the City’s utility customer classes of service (single-family, multi-family, commercial/industrial, and irrigation). Just as with the revenue requirement component, water and water reclamation were kept separate and a Cost of Service Analysis was performed for each as a stand-alone process. The Cost of Service Analysis developed as a part of this study utilized generally accepted principles and industry standard methodologies as defined by the American Water Works Association’s M1 Manual (water) and the Water Environment Federation’s Manual of Practice Number 27 (water reclamation). While the basis for the cost of service is industry standard approaches, the analysis itself is tailored to reflect the City’s specific and unique system, practices, and customer characteristics. In this way, the distribution of costs more accurately reflects the manner in which service is provided to the City’s customers.

The Cost of Service Analysis began by incorporating the City's revenue requirement. This requirement was then allocated to the appropriate cost components. Typically for a water utility that includes commodity, capacity, customer class, and fire protection obligations. For a water reclamation utility, the allocation components generally consist of volume, strength, and customer related needs. The allocation totals were then proportionally distributed amongst the customer classes of service (i.e., rate schedules). The distributed expenses for each customer class were then combined to determine customer class revenue responsibility as compared to the existing revenue contribution of each class. Additionally, the cost of service calculates the unit costs which then becomes the basis for the Rate Design Analysis.

The ideal goal of the Cost of Service Analysis is to distribute a proportional share of the revenue requirement to each customer class of service based on their respective characteristics or use of service as defined above. The results of the analysis indicate that some cost differences exist between the customer classes of service. The primary customer class that was outside the generally accepted range was irrigation. In this case, it was recommended that adjustments be made to the irrigation customer rate schedule to reflect these differences and produce a fair and equitable rate. For the water reclamation utility, the Cost of Service Analysis reflected a reasonable cost of service across all customer classes, and no cost of service adjustments were recommended. It is important to understand that all analysis is based on a review at a specific point in time. Costs of service and customer usage changes over time, thus impacting the results. Therefore, it is important to regularly preform a utility rate study in order to define trends and identify risks.

3.5 Rate Design Analysis. The final step of the comprehensive rate study process for the City's water and water reclamation utilities was the design of the City's proposed rate structure. This required the collection of revenue data, based on the results of the Revenue Requirement and Cost of Service Analyses. The Revenue Requirement Analyses provided recommendations necessary to provide sufficient funding. The Cost of Service Analyses then provided the basis for how those costs should be proportionally collected across all customer classes.

For the water utility, the City currently has a unique rate schedule for each class of service. Single-Family Residential customers are charged a fixed meter charge based on their installed service meter size across a 4-tiered increasing block consumption charge (0-10, 11-25, 25-50, and 50+ CCF) (1 CCF equals 748 gallons). Multi-Family customers are charged the same schedule of meter charge as Single-Family Residential but the consumption charge is a uniform rate. Commercial and Industrial customers are also charged a fixed meter charge by size of meter installed, but the rate schedule is unique to the customer class, along with a uniform consumption charge. Irrigation customers are charged under the same structure as Commercial and Industrial but with different charges for both the fixed and consumption charges. Finally, Raw Water is not charged a fixed charge and is charged a separate uniform consumption charge.

Based on the results of the Cost of Service Analysis, a number of small changes to the rate structure were recommended. It is proposed that the Single-Family Residential, Multi-Family, Commercial, Industrial, and Irrigation fixed charge schedule be the same for all customers while maintaining the increasing charge based on service meter size. As a note, the meter size charges were updated to reflect industry standard equivalency ratios which reflect the larger capacity provided through a larger meter and the meter size charges start at 3/4-inch or less. For the consumption charges, there is no proposed change in structure the customer classes and the current consumption charge will be adjusted to recover the overall costs of providing service.

Shown below is the average Single-Family Residential bill impact based on the current rates and the proposed water rates for 2024 at different usage levels.

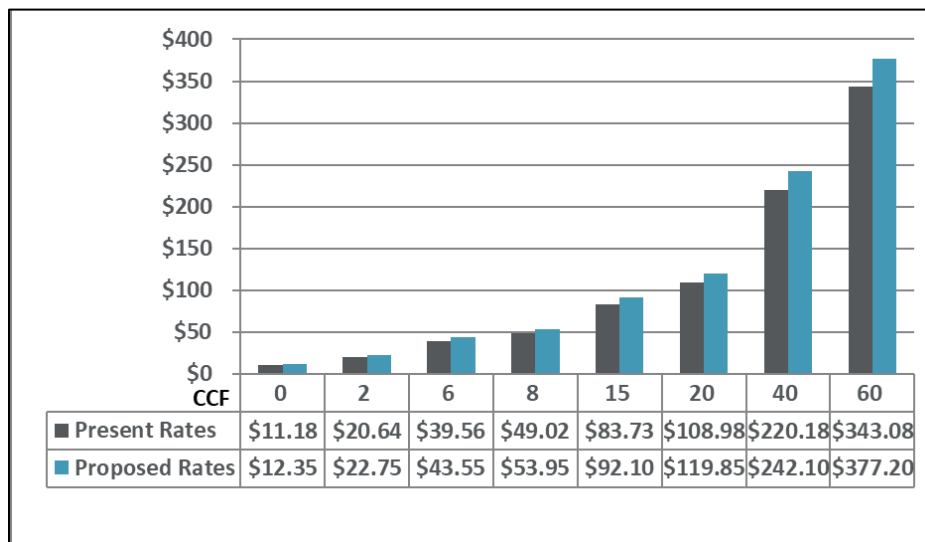


Table 1. Water Single-Family Residential Bill Impacts (2022 Current vs. Recommended 2024 Rate)

For the City’s water reclamation, the Residential, Commercial, and Industrial customers are charged a fixed charge based on the water service meter size. All customers are charged a uniform volumetric charge where the Residential customers are based on the winter water usage and all other customers are charged for all usage regardless of season. Additionally, the Industrial customers have a strength charge for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) on a dollar per pound basis. BOD and TSS are pollution in wastewater that requires removal prior to discharge into the area’s water systems. No changes to the rate structure were recommended with the exception of updating the meter size charges to reflect industry standard meter equivalency ratios starting with a 3/4-inch or less meter.

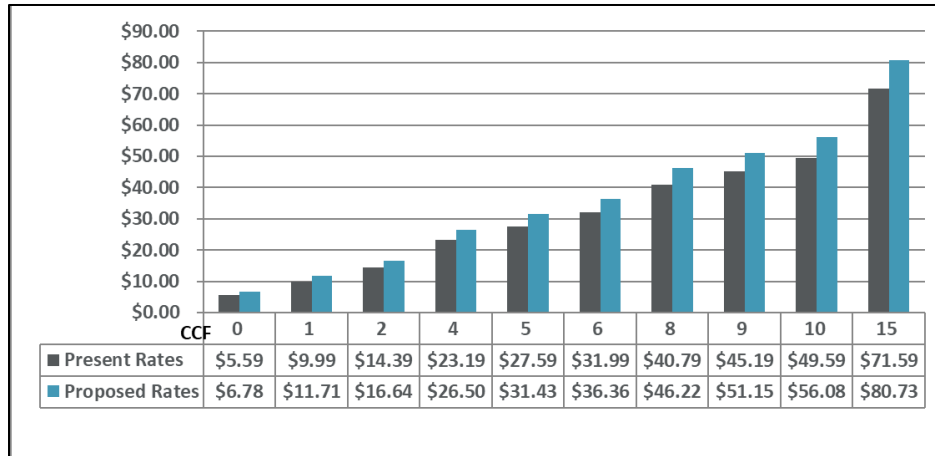


Table2. Water Reclamation Single-Family Residential Bill Impacts (2022 Current vs. Recommended 2024 Rate)

4.0 Conclusion. Through this process a recommended rate structure was developed across all customer classes for both the water and water reclamation utilities. This goal of this structure was to be as fair and equitable as possible while allowing for the upkeep and expansion of the city’s utility assets. Below are the recommended rate structures.

Consumption (Units)	2024	2025	2026	2027	2028
0 - 10	\$5.20	\$5.72	\$6.29	\$6.92	\$7.61
11 - 25	\$5.55	\$6.11	\$6.72	\$7.39	\$8.12
25 - 50	\$6.30	\$6.93	\$7.62	\$8.38	\$9.22
50+	\$7.21	\$7.93	\$8.72	\$9.60	\$10.55

Table 3. Water Utility, Single Family Residential.

Consumption (Units)	2024	2025	2026	2027	2028
All Use	\$5.61	\$6.17	\$6.79	\$7.47	\$8.22

Table 4. Water Utility, Multi-Family Residential.

Consumption (Units)	2024	2025	2026	2027	2028
All Use	\$5.40	\$5.94	\$6.53	\$7.18	\$7.90

Table 5. Water Utility, Commercial and Industrial.

Consumption (Units)	2024	2025	2026	2027	2028
All Use	\$0.57	\$0.63	\$0.69	\$0.76	\$0.84

Table 6. Water Utility, Raw Water.

Consumption (Units)	2024	2025	2026	2027	2028
All Use	\$6.60	\$7.26	\$7.99	\$8.79	\$9.67

Table 7. Water Utility, Dedicated Irrigation Meters.

Meter Size	2024	2025	2026	2027	2028
3/4" and Smaller	\$48.40	\$52.80	\$58.30	\$63.80	\$70.40
Larger than 3/4"	\$193.60	\$213.40	\$234.30	\$257.40	\$282.70

Table 8. Water Utility, Meter Deposit.

Meter Size	2024	2025	2026	2027	2028
3/4" & Less	\$12.35	\$13.60	\$14.96	\$16.45	\$18.10
1"	\$20.62	\$22.71	\$24.98	\$27.47	\$30.23
1 1/2"	\$41.13	\$45.29	\$49.82	\$54.78	\$60.27
2"	\$65.83	\$72.49	\$79.74	\$87.68	\$96.47
3"	\$123.50	\$136.00	\$149.60	\$164.50	\$181.00
4"	\$205.87	\$226.71	\$249.38	\$274.22	\$301.73
6"	\$411.63	\$453.29	\$498.62	\$548.28	\$603.27
8"	\$658.63	\$725.29	\$797.82	\$877.28	\$965.27

Table 9. Water Utility, Single-Family Residential Meter Charge.

Meter Size	2024	2025	2026	2027	2028
3/4" & Less	\$12.35	\$13.60	\$14.96	\$16.45	\$18.10
1"	\$20.62	\$22.71	\$24.98	\$27.47	\$30.23
1 1/2"	\$41.13	\$45.29	\$49.82	\$54.78	\$60.27
2"	\$65.83	\$72.49	\$79.74	\$87.68	\$96.47
3"	\$123.50	\$136.00	\$149.60	\$164.50	\$181.00
4"	\$205.87	\$226.71	\$249.38	\$274.22	\$301.73
6"	\$411.63	\$453.29	\$498.62	\$548.28	\$603.27
8"	\$658.63	\$725.29	\$797.82	\$877.28	\$965.27

Table 10. Water Utility, Multi-Family Residential Meter Charge.

Meter Size	2024	2025	2026	2027	2028
3/4"& Less	\$12.35	\$13.60	\$14.96	\$16.45	\$18.10
1"	\$20.62	\$22.71	\$24.98	\$27.47	\$30.23
1-1/2"	\$41.13	\$45.29	\$49.82	\$54.78	\$60.27
2"	\$65.83	\$72.49	\$79.74	\$87.68	\$96.47
3"	\$123.50	\$136.00	\$149.60	\$164.50	\$181.00
4"	\$205.87	\$226.71	\$249.38	\$274.22	\$301.73
6"	\$411.63	\$453.29	\$498.62	\$548.28	\$603.27
8"	\$658.63	\$725.29	\$797.82	\$877.28	\$965.27

Table 11. Water Utility, Commercial and Industrial User Meter Charge.

Meter Size	2024	2025	2026	2027	2028
3/4" & Less	\$97.10	\$106.77	\$117.40	\$129.20	\$142.10
1"	\$162.16	\$178.31	\$196.06	\$215.76	\$237.31
1 1/2"	\$323.34	\$355.54	\$390.94	\$430.24	\$473.19
2"	\$517.54	\$569.08	\$625.74	\$688.64	\$757.39
3"	\$971.00	\$1,067.70	\$1,174.00	\$1,292.00	\$1,421.00
4"	\$1,618.66	\$1,779.86	\$1,957.06	\$2,153.76	\$2,368.81
6"	\$3,236.34	\$3,558.64	\$3,912.94	\$4,306.24	\$4,736.19
8"	\$5,178.34	\$5,694.04	\$6,260.94	\$6,890.24	\$7,578.19

Table 12. Water Utility, Dedicated Irrigation Meter Charge.

	2024	2025	2026	2027	2028
All Usage	\$4.93	\$5.52	\$6.18	\$6.92	\$7.75

Table 13. Water Reclamation, Sewer Use Charge.

Meter Size	2024	2025	2026	2027	2028
3/4" & Less	\$6.78	\$7.59	\$8.50	\$9.52	\$10.66
1"	\$11.30	\$12.65	\$14.17	\$15.87	\$17.77
1½"	\$22.60	\$25.30	\$28.33	\$31.73	\$35.53
2"	\$36.16	\$40.48	\$45.33	\$50.77	\$56.85
3"	\$67.80	\$75.90	\$85.00	\$95.20	\$106.60
4"	\$113.00	\$126.50	\$141.67	\$158.67	\$177.67
6"	\$226.00	\$253.00	\$283.33	\$317.33	\$355.33
8"	\$361.60	\$404.80	\$453.33	\$507.73	\$568.53

Table 14. Water Reclamation, Residential Meter Demand Charge.

Meter Size	2024	2025	2026	2027	2028
3/4" & Less	\$6.78	\$7.59	\$8.50	\$9.52	\$10.66
1"	\$11.30	\$12.65	\$14.17	\$15.87	\$17.77
1½"	\$22.60	\$25.30	\$28.33	\$31.73	\$35.53
2"	\$36.16	\$40.48	\$45.33	\$50.77	\$56.85
3"	\$67.80	\$75.90	\$85.00	\$95.20	\$106.60
4"	\$113.00	\$126.50	\$141.67	\$158.67	\$177.67
6"	\$226.00	\$253.00	\$283.33	\$317.33	\$355.33
8"	\$361.60	\$404.80	\$453.33	\$507.73	\$568.53

Table 15. Water Reclamation, Commercial Meter Demand Charge.

Meter Size	2024	2025	2026	2027	2028
3/4" & Less	\$28.70	\$32.15	\$36.10	\$40.30	\$45.20
1"	\$47.83	\$53.58	\$60.17	\$67.17	\$75.33
1½"	\$95.67	\$107.17	\$120.33	\$134.33	\$150.67
2"	\$153.07	\$171.47	\$192.53	\$214.93	\$241.07
3"	\$287.00	\$321.50	\$361.00	\$403.00	\$452.00
4"	\$478.33	\$535.83	\$601.67	\$671.67	\$753.33
6"	\$956.67	\$1,071.67	\$1,203.33	\$1,343.33	\$1,506.67
8"	\$1,530.67	\$1,714.67	\$1,925.33	\$2,149.33	\$2,410.67

Table 16. Water Reclamation, Industrial Meter Demand Charge.

Strength Charge	2024	2025	2026	2027	2028
BOD	\$0.38	\$0.43	\$0.48	\$0.54	\$0.60
TSS	\$0.29	\$0.33	\$0.37	\$0.41	\$0.46

Table 17. Water Reclamation, Strength Charge.

5.0 Summary. The 2022 Utility Rate Study followed the City’s Financial and Rate Setting Policies for the Water and Water Reclamation Utilities that were adopted as part of the 2017 Utility Rate Study. The procedures focused on the categories of reserve funds, debt issuance and debt management, balanced operating budgets, and capital asset policies. As a result, they established fair and equitable rates of the city’s services. The goal of the recommended rate adjustment is to ensure that both utilities are able to efficiently and safely maintain the city’s facilities and assets and that new infrastructure can be supported over the next five years while doing so with a stable and consistent rate structure.

This rate study was developed over that last year. It has taken many man-hours but provides a detailed assessment of each utility’s annual expenditures and revenue needs. Given today’s economic climate, regulatory requirements, aging infrastructure and City expansion, the need for an adjusted rate structure is critical. Without this additional revenue, Capital Improvement projects will to be reviewed for criticality. With that, and as the age of the systems increase the O&M costs will continue to increase as well. This study has provided a pathway to allow for much needed improvements of the City’s assets while continuing to follow policy and guidelines previously established.

6.0 Attachments.

Exhibit 1. Water Rate Study Revenue Requirement Summary

Exhibit 2. Water Reclamation Rate Study Revenue Requirement Summary