Irrigation System Assessment and Rate Study

BUCKHORN VALLEY METROPOLITAN DISTRICT 1

August 2022

Prepared by

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BUCKHORN VALLEY METROPOLITAN DISTRICT 1

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1.0 Executive Summary

1.1 Introduction

The Buckhorn Valley Metropolitan District 1 (District) is a quasi-municipal corporation and political subdivision located in the Town of Gypsum, Colorado. The District was originally created to facilitate infrastructure development of the Buckhorn Valley and currently is primarily responsible for the delivery of nonpotable irrigation water to the Buckhorn Valley and its subdivisions within the District boundaries. This report provides a holistic assessment of District-owned irrigation infrastructure, estimated costs for identified capital improvement projects, and an irrigation water service rate study. The purpose of the rate study is to identify a rate structure that adequately funds the District while maintaining recommended reserve fund balances and implementing the needed capital projects.

1.2 Irrigation System Assessment Summary

Table 1-1 summarizes the capital improvement and engineering items and associated costs. Each project is described in additional detail in the report.

Table 1-1. Recommended Capital Improvements Summary

Irrigation System			
Component	**Project**	**Estimated Cost, 2022 Dollars**	**Project Phasing**
Engineering	Irrigation Supply and Distribution System Engineering	$36,000/year	2026+
	GIS of Irrigation System	$15,000	2023
	Hydraulic Model of Irrigation System	$10,000	2023
	Develop O&M Manual	$10,000	2023
	District Master Plan	$15,000	2024
	District Rules and Regulations	$10,000	2025
Capital Projects	Eagle River Pump Station Fire Mitigation	$52,000	2023-2025
	Eagle River Pump Station Electrical Services	$25,000	2023-2025
	Eagle River Pump Station Spare Pump	$35,000	2023-2025
	Midway Pump Station Spare Pump	$35,000	2025-2027
	Repack PRVs	$20,000	2026
	Re-line Buckhorn Reservoir	$250,000	2036

1.3 Rate Study Summary

The rate study in Section 3.0 incorporates all of the expenses, revenue sources, and recommended reserve fund balances for the District and calculates rate increases and rate structures that will allow the District to remain adequately funded. The rate study found that the existing budgeted irrigation service revenue combined with revenue from tap inspection fees and new customers is adequate to fund the District and the recommended engineering and capital projects. Table 1-2 summarizes the proposed rate structure detailed in Section 3.0 of this report.

Table 1-2. Proposed Rate Structure

Development	Existing Monthly Fee	SFE Per Lot	Proposed Base Fee	Proposed Service Fee	Proposed Monthly Fee
Buckhorn Valley Phases 1 through 6	$50.99	1	$27.24	$50.22	$77.46
Aspen Ridge	$24.77	0.24	$6.54	$12.05	$18.59
Hawks Nest	$21.25	0.15	$4.09	$7.53	$11.62
Mountain Gateway	$21.25	0.02	$0.54	$1.00	$1.55
Undeveloped Single Family	$38.28	1	$27.24	$0.00	$27.24
Undeveloped Multi-Family	$21.25	0.15	$4.09	$0.00	$4.09

2.0 Irrigation System Assessment

The District's irrigation system utilizes miles of transmission and distribution water pipelines, two pump stations, multiple pressure reducing valves (PRVs), and a large reservoir to deliver nonpotable irrigation water to Buckhorn Valley homes. This section assesses the existing infrastructure and identifies current and future capital projects that are needed to maintain a functioning and resilient system. A map of critical pumping, transmission, and storage infrastructure is included in Appendix A.

2.1 Water Intakes

The irrigation system utilizes three intakes to provide source water: a diversion off the Eagle River, a diversion off Hernage Creek, and a self-cleaning diversion structure along Abrams Creek.

2.1.1 Eagle River Intake

The Eagle River Intake utilizes a large boulder drop structure across the Eagle River to divert water intothe adjacent Eagle River Pump Station wet well. Figure 2-1 shows the boulder drop structure and slide gate as visible from the adjacent access road with the Eagle River flowing in the background.

Figure 2-1. Eagle River Intake

Condition Assessment
District staff have not indicated any critical issues at the Eagle River Intake. Diversions of this nature sometimes require periodic maintenance including re-structuring of the drop structure to maintain an adequate supply of water to the intake. This sort of maintenance is assumed to be handled under the general maintenance budget of District staff and does not require specific capital planning.

2.1.2 Hernage Creek Diversion, JPO Diversion #1

The District owns and maintains a diversion off of Hernage Creek called JPO Diversion #1 that utilizes site grading and a slide gate to divert water from the headwaters of Hernage Creek to a ditch that conveys water to JPO Diversion #2 on Abrams Creek.

Condition Assessment
District staff have not indicated any critical issues at JPO Diversion #1. Typical yearly maintenance for this diversion includes clearing deadfall and other debris from the intake area. This sort of maintenance is assumed to be handled under the general maintenance budget of District staff and does not require specific capital planning.

2.1.3 Abrams Diversion, JPO Diversion #2

The District owns and maintains a diversion off of Abrams Creek called JPO Diversion #1 that utilizes a self-cleaning fish screen recently constructed as part of a grant funded project that included: the JPO Diversion #2 intake structure, piping of approximately 17,000 linear feet (LF) of the ditch flowing from the diversion point to the Buckhorn Reservoir, and various site improvements in order to maintain a suitable habitat for trout in Abrams Creek. Abrams Creek/JPO Diversion #2 is the preferred source for irrigation water given the water quality and available hydraulic head. The District utilizes this water source and water right as often as it can.

Condition Assessment
District staff have not indicated any critical issues at JPO Diversion #1. Typical yearly maintenance for this diversion includes clearing deadfall and other debris from the intake area. This sort of maintenance is assumed to be handled under the general maintenance budget of District staff and does not require specific capital planning.

2.2 Water Transmission and Storage: Pump Stations, Transmission Pipelines, Reservoir

The irrigation system utilizes a combination of pump stations, transmission pipelines, and ditches to convey water to the Buckhorn Reservoir that feeds to irrigation distribution system. This infrastructure is shown on the map in Appendix A.

2.2.1 Eagle River Pump Station

The Eagle River Pump Station, shown in Figure 2-2, was constructed in 2006 through an agreement with multiple developers including the original Buckhorn Valley developer. The pump station includes 3 pumps that are owned by the District but used and maintained by three separate entities: the District, the Saddle Ridge Metro District (or successor), and the Airport Gateway Property Owner's Association.

Figure 2-2. Interior of the Eagle River Pump Station

The pump used and maintained by the District is a 75hp vertical turbine pump and has the capability of pumping water all the way up to the Buckhorn Reservoir. When higher flows are needed to fill the Buckhorn Reservoir in Eagle River Pump Station is used in series with the Midway Pump Station described in the following section.

Condition Assessment

Overall, the Eagle River Pump Station is in good condition and does not have any issues that require immediate attention. District staff noted that there is currently only one electric meter feeding the pump station. Therefore, all power use to pump water to the three separate entities is charged to one bill. This creates administrative issues at times; splitting the electrical feed through three separate meters is desired. Installing sub-meters may be an option as well.

The Eagle River Pump Station is a critical piece of infrastructure for the District. Therefore, SGM recommends that fire mitigation work be performed on and around the pump station including clearing of brush and recladding the pump station exterior with fire resistant materials. In addition, the District should consider purchasing a spare pump that can replace the existing pump should an issue arise.

The pump station wet well requires cleaning every 2 to 3 years. This maintenance is assumed to be handled under the general maintenance budget of District staff and does not require specific capital planning.

Recommended Capital Improvement Summary

1.	Eagle River Pump Station Fire Mitigation:	
	- Clear brush near pump station	$2,000
	- Fire resistant building exterior	$50,000
	Cost estimate:	**$52,000**
2.	Eagle River Pump Station Modifications:	
	- Split electrical services	$25,000
	- Purchase spare 75 hp pump	$35,000
	Cost estimate:	**$60,000**

2.2.2 Midway Pump Station

The Midway Pump Station, shown in Figure 2-3, is solely owned and maintained by the District and is used to boost water pumped from the Eagle River Pump Station to the Buckhorn Reservoir. The Midway Pump Station is only used when higher flows to the Buckhorn Reservoir are needed, typically July through September. The pump station is equipped with a single 75hp pump.

Figure 2-3. Interior of the Midway Pump Station

Condition Assessment

Overall, the Midway Pump Station is in good condition and does not have any issues that require immediate attention. There is no fire danger adjacent to the pump station as it sits in a clear, undeveloped area. Due to the lack of redundant pumps, the District should consider purchasing a spare pump that can replace the existing pump should an issue arise.

Recommended Capital Improvement Summary

1. Midway Pump Station:
   - Purchase spare 75 hp pump $35,000

   Cost estimate: **$35,000**

2.2.3 HDPE Transmission Mains

There are three main transmission mains conveying water to the Buckhorn Reservoir:

- ~7,500 LF of 12” HDPE from the Eagle River Pump Station to the Midway Pump Station
- ~7,500 LF of 12” HDPE from the Midway Pump Station to the Buckhorn Reservoir
- ~17,000 of 18” HDPE from JPO Diversion #2 to the Buckhorn Reservoir

There have been some periodic leaking issues in the 12” HDPE transmission mains. These have been managed and are not an ongoing issue. All of the HDPE transmission mains are early in their life cycles with many remaining years of useful life. However, SGM recommends that the District begin building capital for future transmission main replacement projects.

2.2.4 Buckhorn Reservoir

The Buckhorn Reservoir, shown in Figure 2-4, is a lined 60 acre-foot (AF) reservoir that provides storage of irrigation water for the District. There have been minimal issues with the reservoir in its 10+ years of use. In 2018 repairs were made to part of the liner that was found to be leaking. In 2020-2021, cattle incursion into the reservoir necessitated construction of a cattle fence around the reservoir and some additional liner repairs.

Figure 2-4. Buckhorn Reservoir

Condition Assessment

The Buckhorn Reservoir is currently in fair condition. Minor liner repairs are expected, and a full liner replacement will be necessary. PVC liners typically have a life span of 20-30 years. District staff have noted that significant silting on the bottom of the reservoir has decreased the usable volume. Silt depth was estimated at 2-feet in a 2020 system assessment, it can be assumed that the silt depth is now deeper.

Recommended Capital Improvement Summary

1. Buckhorn Reservoir:
   - Silt removal $30,000
   - PVC liner replacement $220,000

Cost estimate: $250,000

2.3 Irrigation Water Distribution System

The irrigation system utilizes a distribution system comprised of approximately 8,000 LF of 4" to 12" HDPE pipe and ten flow sensing/pressure reducing valve (PRV) vaults to deliver water from the Buckhorn Reservoir to customers. Prior to construction of the flow sensing/PRV vaults in 2013 the distribution system was vulnerable to leaks and blow-outs due to high pressures. The valve vaults effectively reduce system pressure to more suitable levels for the downstream irrigation equipment.

Condition Assessment

The HDPE pipe that comprises the distribution system is still in the first half of an expected ~50-75-year life span. Previous leaking issues due to expansion and contraction of the HDPE caused by fluctuating water temperatures and poorly executed HDPE weld joints have been mostly mitigated by District staff. Periodic leaks occur and are managed as needed. The flow sensing capabilities of the valve vaults aid District staff in recognizing when a large leak is occurring and allocating resources accordingly. The District may consider replacing the HDPE pipe with C900 PVC pipe that is less susceptible to fluctuating water temperatures in the future.

The PRVs installed in 2013 remain in good working order. PRVs require periodic repacking of valve components to remain functional. The District's PRVs are nearing ten years of service and will likely require repacking in the next few years.

Recommended Capital Improvement Summary

1. Distribution System:
   - Repack PRVs (10) $20,000

Cost estimate: $20,000

3.0 Rate Study

SGM recommends revenue and irrigation system reserve fund targets to maintain operations, fund necessary engineering and capital improvement projects, and maintain an adequate emergency reserve balance. The following section includes a summary of current and future expenditures (including the capital improvements discussed in Section 2.0) and sources of revenue associated with the irrigation system operations.

A cash flow model (CFM) was developed using this information to estimate future reserve balances when considering the expected operating and capital costs facing the system in the coming years. SGM assessed the current irrigation service rates and presents a recommended rate structure to meet the current and future needs of the system.

3.1 Revenues

3.1.1 Budgeted 2022 Revenues

The District has budgeted for $375,000 in revenue from collection of irrigation service fees for 2022. This revenue generation is based on the following existing rate structure:

- Buckhorn Valley Developed Lots: $50.99/month
- Buckhorn Valley Undeveloped Lots: $38.28/month
- Aspen Ridge: $24.77/month
- Mountain Gateway: $21.25/month
- Hawks Nest: $21.25/month

3.1.2 Tap Inspection Fee

The District does not currently charge an inspection fee to developers as they physically tap into the irrigation system, often resulting in inadequate funds for system operators to inspect the irrigation service taps. This has caused many issues for the District in the past when an improperly made tap fails, resulting in system shut-downs and emergency maintenance to repair the tap. A tap inspection fee of $500 per tap is proposed to cover the cost for an engineer or other District representative to inspect each irrigation tap as they are made.

3.2 Expenditures

3.2.1 Budgeted 2022 Expenditures

The expenditures modeled into the rate study include operations and maintenance (O&M) costs, outlay for capital projects, and debt service from existing loans; budgeted expenditures for 2022 are summarized in Table 3-1.

Table 3-1. NSA Expenditures

Expense Category	Budgeted Expense 2022
Operations and Maintenance (O&M)	$156,150
Administrative	$121,550
Capital Outlay	$25,000
Water Rights	$10,000
Transfers to General Fund	$45,000
Total Expenses 2022	**$357,700**

3.2.2 Engineering

The District has several engineering needs in order to properly run and maintain the irrigation system. Preliminary scope of several engineering projects has been developed with SGM and will performed over the coming years. A summary of these projects and their expected timeframe is shown in Table 3-2. Projects identified with phasing over multiple years are expected to either be completed over the course of multiple years or funding reserves will be built over multiple years before being executed. In addition to the identified projects, an additional $10,000 in engineering fees is modeled into the CFM for general engineering support.

Table 3-2. District Engineering Projects

Project	Estimated Cost	Project Phasing
GIS Mapping of System Infrastructure	$15,000	2023
Hydraulic Model of Irrigation System	$10,000	2023
Develop O&M Manual	$10,000	2023-2025
District Master Plan	$15,000	2023-2025
Develop District Rules & Regs	$10,000	2023-2025

3.2.3 Capital Improvement Projects

The capital improvement projects identified in Section 2.0 were built into the CFM and are summarized in Table 3-3. Additional capital outlay for miscellaneous system improvements and pipeline replacements is included in the CFM at a cost of $25,000 per year beginning in 2025. Annual inflation of construction costs is modeled into the CFM at a rate of 3%. The identified capital improvement projects are essential for overall operations of the system and are included in the Base Fee discussed in Section 3.4.2.

Table 3-3. Capital Improvement Projects Summary

Project	Estimated Cost, 2022 Dollars	Project Phasing
Eagle River Pump Station Fire Mitigation	$52,000	2023-2025
Eagle River Pump Station Modifications	$75,000	2023-2025
Midway Pump Station: Spare Pump	$30,000	2025-2027
Buckhorn Reservoir Rehabilitation	$250,000	2026-2036
Repack PRVs (10)	$20,000	2026
Miscellaneous Capital Outlay	$25,000	2025+

3.3 Cash Flow Model (CFM)

The CFM is a critical component of this irrigation service rate study, incorporating the historic and expected expenses, revenues, and irrigation service rates described above to determine how future projects and changes in the rates will impact the reserve fund balance for the District. The CFM is built as a tool that can be easily modified and updated year-by-year to provide real-time budgeting feedback, determining how modifications to the water rate structure, capital projects, increased operating costs, etc. will impact the reserve fund.

3.3.1 Recommended Reserve Fund Balance

An adequate reserve fund balance is necessary to maintain operations, fund necessary capital improvement projects, fund debt payments with a secure source of revenue, and maintain an adequate emergency reserve balance. SGM recommends the District maintains a reserve fund balance equal to 9 months of O&M costs plus the cost of the most expensive piece of equipment. For the year 2022, the recommended balance is as follows:

$$\$117{,}113\ (9\ mos.\ O\&M) + \$30{,}000\ (assumed\ equipment\ cost) = \$147{,}113$$

This recommended balance increases year-to-year to reflect increasing O&M and equipment replacement costs.

3.3.2 System Development

The District service area is currently under development, over half of the available lots have yet to be built out. The current developer has indicated a rate of development of approximately 50 single family homes or more for years 2023 through 2029. To build some conservativity into the CFM a rate of development of 25 single family homes per year was modeled. The model assumes that 25 single family equivalent (SFE) homes are transferred from the undeveloped lot rate structure to the developed lot rate structure, as described later in this report, for years 2023 through 2036. This increases the collected revenue yearly due to the increase in developed lots.

3.3.3 CFM Results

The CFM shows that the budgeted irrigation service revenue for 2022 is adequate to maintain an acceptable reserve fund balance in the next few years. Additional rate increases are expected to be needed in approximately 2030 to keep up with increases in operation costs and expected capital outlays. In general, the development within the District's service area increases revenues which allows the District to maintain an adequate reserve fund while paying for the necessary engineering and capital improvement projects. Figure 3-1 Shows projections of the revenues, expenses, and reserve fund balance for the next five years incorporating new customers at the expected rate of development.

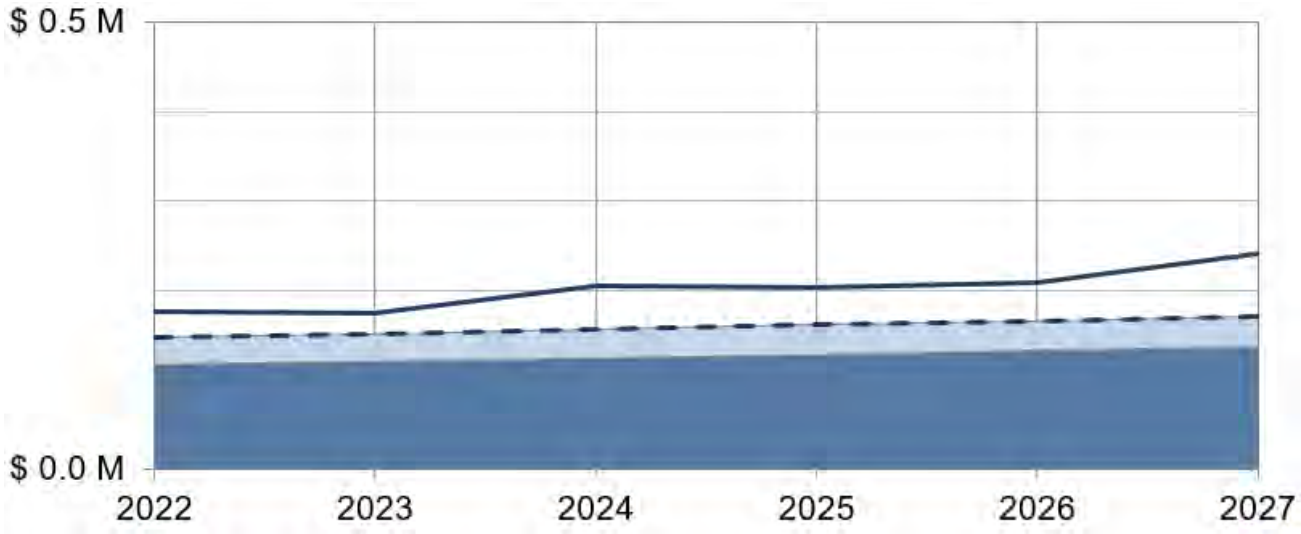

Figure 3-1. Irrigation System Reserve Fund Balance Projections

Irrigation tap inspection fees and additional revenues from the estimated 25 SFEs of newly developed lots yields revenue generation for 2023 of $404,545, an increase from the current budgeted revenue of $375,000. This revenue target is used in the next section to develop the proposed rate structure.

3.4 Proposed Rate Structure

A new proposed rate structure was developed by SGM to generate the $404,545 in revenue needed from irrigation water service fees. The proposed rate structure utilizes a base fee for all lots within the District (both developed and undeveloped) and an additional service fee based on the single family equivalent (SFE) of the allocated irrigated area for each developed lot.

3.4.1 Single Family Equivalents (SFEs)

The proposed rate structure utilizes estimated SFEs throughout the District to establish the base fee and service fee. It is assumed that a single SFE irrigates 5,000 to 7,500 square feet of property at a rate of 2.45 feet of water per year. Table 3-4 summarizes the calculated SFEs within the District.

Table 3-4. Single Family Equivalents of Developed and Undeveloped Lots Within the District

Developed Lots				
Development	**Number of Lots**	**Allocated Square Feet of Irrigated Land per Lot**	**SFE Per Lot**	**Total SFE**
Phase 1	52	7,500	1	52
Phase 2	52	7,500	1	52
Phase 3	56	5,000	1	56
Phase 4	46	5,000	1	46
Phase 5	18	5,000	1	18
Phase 6	17	5,000	1	17
Aspen Ridge	110	1,200	0.24	26.4
Hawks Nest	44	750	0.15	6.6
Mountain Gateway	48	105	0.02	1.0
Total Lots	**443**		**Total**	**275**

Undeveloped Lots				
Development	**Number of Lots**	**Allocated Square Feet of Irrigated Land per Lot**	**SFE Per Lot**	**Total SFE**
Unplatted Single Family	362	5,000	1	362
Hawks Nest	16	750	0.15	2.4
Unplatted Multi-Family	72	750	0.15	10.8
Total Lots	**450**		**Total**	**375.2**

As shown in Table 3-4, SGM estimates that there are currently 275 SFEs of developed lots and 375.2 SFEs of undeveloped lots within the District. These values are used in the following sections to determine the base fee and service fee.

3.4.2 Base Fee

The proposed base fee is structured to pay for fundamental administrative costs and capital improvement costs for major system infrastructure projects. All lots within the District, both developed and undeveloped, would be charged this base fee to keep the irrigation system in good working order. The District's Enterprise Fund operating budget was analyzed to determine expenditures related to administrative and maintenance items that should be covered by the base fee. Yearly cost inflation for most line items is incorporated at a rate of 2% per year.

Table 3-5. Estimated District Enterprise Fund Expenditures and Base Fee, 2023-2027[1]

General and Administrative	**2023**	**2024**	**2025**	**2026**	**2027**
District management and accounting	$43,860	$44,737	$45,632	$46,545	$47,475
Dues and licenses	$1,020	$1,040	$1,061	$1,082	$1,104
Insurance and bonds	$8,160	$8,323	$8,490	$8,659	$8,833
Management, operations, and supervision	$20,400	$20,808	$21,224	$21,649	$22,082
Legal	$25,500	$26,010	$26,530	$27,061	$27,602
Miscellaneous	$1,020	$1,040	$1,061	$1,082	$1,104
Office Expenses	$13,464	$13,733	$14,008	$14,288	$14,574
Transfers to General Fund	$45,000	$45,000	$45,000	$45,000	$45,000
Sub-total	$158,424	$160,692	$163,006	$165,366	$167,774
Operations and Maintenance					
Salaries	$76,500	$78,030	$79,591	$81,182	$82,806
Payroll taxes	$5,865	$5,982	$6,102	$6,224	$6,348
Employee benefits	$8,568	$8,739	$8,914	$9,092	$9,274
Utilities	$11,730	$11,965	$12,204	$12,448	$12,697
Billing	$15,810	$16,126	$16,449	$16,778	$17,113
Repairs and maintenance	$30,600	$31,212	$31,836	$32,473	$33,122
Water system operations and maintenance	$10,200	$10,404	$10,612	$10,824	$11,041
Sub-total	$159,273	$162,458	$165,708	$169,022	$172,402
Capital Costs					
Water Rights Preservation Legal and Eng. Costs	$6,000	$6,000	$6,000	$6,000	$6,000
Capital Outlay[2]	$43,603	$44,911	$84,007	$86,221	$64,872
Engineering	$37,767	$12,377	$12,748	$10,000	$10,000
Sub-total	$87,370	$63,288	$102,755	$102,221	$80,872
Total Expenses	$405,067	$386,439	$431,469	$436,609	$421,048
Total General, Administrative, Maintenance (a)	$187,627	$190,795	$231,789	$235,939	$216,564
Developed SFEs	300	325	350	375	400
Undeveloped SFEs	350.2	325.2	300.2	275.2	250.2
Total SFE *(b)*	650.2	650.2	650.2	650.2	650.2
Monthly Base Fee *(a / b / 12 months per year)*	$24.05	$24.45	$29.71	$30.24	$27.76

Notes: 1 – Line items highlighted in green are assumed to be expenditures related to administrative and maintenance tasks that are covered by the monthly base fee.
2 – Capital outlay for major system infrastructure projects such as re-lining Buckhorn Reservoir and modifications to the two pump stations.

The average monthly base fee for years 2023 through 2027 calculated in Table 3-5 is $27.24 per SFE. This is the proposed monthly per SFE base fee for the new rate structure.

3.4.3 Service Fee

The service fee, paid by developed lots, is structured to pay for operation of the irrigation system and delivery of water to the customers. Table 3-6 summarizes the revenue characteristics and calculated service fee for 2023 through 2027.

Table 3-6. Estimated Revenue Characteristics and Service Fee, 2023-2027

Revenue Characteristic	2023	2024	2025	2026	2027
Revenue Target *(a)*	$404,545	$420,881	$436,588	$451,734	$466,375
Base Rate Revenue *(b)*	$212,537	$212,537	$212,537	$212,537	$212,537
Inspection Fee Revenue *(c)*	$12,500	$12,500	$12,500	$12,500	$12,500
Service Fee Revenue *(d = a - b - c)*	$179,508	$195,844	$211,551	$226,697	$241,338
Developed SFEs *(e)*	300	325	350	375	400
Service Fee *(d / e / 12 months per year)*	$49.86	$50.22	$50.37	$50.38	$50.28

The average monthly base fee for years 2023 through 2027 calculated in Table 3-6 is $50.22 per SFE. This is the proposed monthly per SFE service fee for the new rate structure.

3.4.4 Rate Structure Summary

The proposed rate structure, incorporating the base fee and service fee detailed above, is summarized in Table 3-7. The fees are scaled based on the SFEs per lot for individual developments within the District.

Table 3-7. Proposed Rate Structure

Development	Existing Monthly Fee	SFE Per Lot	Proposed Base Fee	Proposed Service Fee	Proposed Monthly Fee
Buckhorn Valley Phases 1 through 6	$50.99	1	$27.24	$50.22	$77.46
Aspen Ridge	$24.77	0.24	$6.54	$12.05	$18.59
Hawks Nest	$21.25	0.15	$4.09	$7.53	$11.62
Mountain Gateway	$21.25	0.02	$0.54	$1.00	$1.55
Undeveloped Single Family	$38.28	1	$27.24	$0.00	$27.24
Undeveloped Multi-Family	$21.25	0.15	$4.09	$0.00	$4.09

3.5 Discussion

The proposed rate structure presented in Section 3.4 is expected to adequately fund the District while incorporating the anticipated administrative, operating, maintenance, and capital improvement costs. Development within the District is expected to increase the customer base in the coming years. This would allow District revenue to keep pace with increases in operating costs without raising the irrigation service rates. If development pauses, rate increases may be necessary to maintain sufficient revenues.

Water service rates are inherently sensitive to changes in development rates, operating costs, system utilization, and more. It is recommended that the District review their revenue targets and costs on a yearly basis to verify that the current rate structure is adequate.

Eagle River Pump Station
3, 75 HP Pumps
Only 1 Pump Owned by BVMD

Midway Pump Station
1, 75 HP Pump

Buckhorn Supply Pipeline, 12" HDPE
Eagle River PS to Midway PS

Buckhorn Supply Pipeline, 12" HDPE
Midway PS to Buckhorn Reservoir

Buckhorn Reservoir
60 Acre-Feet

Buckhorn Valley Metro District

Abrams Creek Pipeline
17,000 LF of 18" HDPE
w/short segment of open ditch

JPO Diversion #2
Abrams Creek
Fish Screen Intake

JPO #1 to JPO #2
Ditch

JPO Diversion #1
Hernage Creek
Grading/Slide Gate

Appendix A: Irrigation System Map