

Crested Butte South Metropolitan District Water Efficiency Plan



Prepared for:

Crested Butte South Metropolitan District
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WWE

Wright Water Engineers, Inc.

April 2021

201-021.000

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ACRONYMS AND GLOSSARY

AF	Acre-Feet
BMP	Guidebook of Best Practices for Municipal Water Conservation in Colorado
CAMP	Commercial Area Master Plan prepared by the POA
CFS	Cubic Feet Per Second
CWCB	Colorado Water Conservation Board
DOLA	Colorado Department of Local Affairs
DISTRICT	Crested Butte South Metropolitan District
EQR	Equivalent Residential Use Unit used for billing:
	$1 \text{ EQR}_{\text{res}} = \frac{\text{ft}^2 \text{ of residential structure}}{2,000 \text{ ft}^2}$
	$1 \text{ EQR}_{\text{comm}} = \text{as low as 1, and as high as 8-10, depending on the nature of the business}$
FT	Feet
FT ²	Square feet
GPCD	Gallons Per Capita Per Day
GPD	Gallons Per Day
GPM	Gallons Per Minute
IWR	Irrigation Water Requirement
MGD	Million Gallons Per Day
MGY	Million Gallons Per Year
MWEPGD	Municipal Water Efficiency Plan Guidance Document
POA	Crested Butte South Property Owners Association
PVC	Polyvinyl Chloride
UGRWCD	Upper Gunnison River Water Conservancy District
WEP	Water Efficiency Plan
WWE	Wright Water Engineers, Inc.

EXECUTIVE SUMMARY

The purpose of the Water Efficiency Plan (WEP) for the Crested Butte South Metropolitan District (District) is to provide a guidance document to evaluate, prioritize, and implement activities in support of water efficiency. Water efficiency is the smart use of water resources, through water savings, to ensure reliable water supplies for the water users and growing population. With a growing customer base, the District is very interested in the most efficient use of the finite amount of physical water to which it has legal rights.

The goals developed during this planning process are to:

- Reduce total water demand by 5 percent across all sectors, including residential, commercial, and mixed-use customers.
- Lower peak day water usage.
- Identify the timeline and funding for continued planning studies.

The study period for this WEP is 2013-2019. The Project Team collected and evaluated well production data, water rights, customer structure types, and forecasted future water use scenarios for when the District would reach its maximum water use at full build-out. The Project Team led the District through a four-step process of assessment, identification, qualitative screening, and evaluation and selection. The District has selected the following water efficiency activities for its WEP:

1. Require all new developments and future annexations to conduct a Water and Sewer Adequacy Report before receiving service or a commitment for service by the District.
2. Preparation of a Capital Improvement Plan and Rate Study.
3. Preparation of a Meter Replacement Program.

The implementation of this plan will help the District improve water demand forecasts, plan for infrastructure needs, and manage water demands to stay within the District's available legal and physical water supplies. The District will implement, monitor, and adjust the final selected water efficiency activities throughout the planning period to achieve its water conservation goals.

Salient observations from the research indicate that:

1. The District's annual outdoor water use is 44 percent of total water use and is less when compared to the Colorado state average of 55 percent. Which makes sense given the District's higher altitude and mountain environment.
2. Billed Equivalent Residential Use Units (Billed EQRs) are based on a presumed water use of 350 gallons per day (GPD) per EQR. The actual average water demand calculated from water use records and assigned EQR's averages closer to 250 GPD per EQR.
3. The District's annual peak day water use for an EQR over 2013 through 2019 period of record ranges from 775 GPD per EQR to 968 GPD per EQR. The average peak day water use for an EQR over the period of record is 874 GPD per EQR and is roughly 3.5 times the average daily water use of 250 GPD per EQR.
4. The District's current peak day water use is roughly 600,000 GPD. The current well production capacity is 900,000 GPD, and the "preliminary sustainable yield" of the wells allowing for groundwater recovery is 600,000 GPD. Thus, the District's peak day water demand is currently at the preliminary sustainable yield of the District's water groundwater supply. In addition, the malfunction of a well pump or motor could be problematic during peak demand periods. WWE recommends adding an additional groundwater well with at least 285 gallons per minute (GPM) of capacity in the near future to provide system supply and redundancy.
5. Project full build-out water peak day demands equals 1,280,000 GPD. This exceeds the current well production capacity of 900,000 GPD and the preliminary sustainable yield of 600,000 GPD. WWE estimates an additional 3 wells with an average pumping capacity of 210 GPM for a combined maximum production capacity 900,000 GPD and sustainable yield of 680,000 GPD.
6. Build-out of the community will exceed the District's physical water production capacity and the Project Team recommends the District add wells with the necessary water rights to meet future water demands and provide redundancy in case of well equipment failure.

1.0 INTRODUCTION

1.1 Location

The District is located on the western slope of the Rocky Mountains, seven miles south of the historic town of Crested Butte, and about 20 miles north of the city of Gunnison, Colorado (see Figure 1). The District is located in the headwaters of the Gunnison River just downstream of the confluence of the Slate River and the East River.

According to data for 2019 published by the Colorado Department of Local Affairs, Gunnison County has an estimated population of 17,500 people, of which an estimated 9.4 percent, or 1,637 people reside within the District. Many of the population of whom live here full- and part-time because of the vast recreational opportunities provided by an annual average of almost 200 inches of snow and 20 inches of rain. Many economic drivers for the high-elevation communities in the Gunnison Basin are water- and weather-dependent: alpine and Nordic skiing, boating, fishing, hunting, and ranching.

1.2 Background

The District is a Colorado Title 32 Special District formed to provide treated potable water, wastewater treatment, and road maintenance services. The District was formed in 1977 and is served by a five-member board of directors. The District is a smaller water provider, delivering less than 200 acre-feet (AF) of retail water per year.

1.3 Approach

This WEP means to aid in spreading awareness and motivating action towards more efficient water management practices and water use. For this WEP, the Project Team relied on the *Municipal Water Efficiency Plan Guidance Document* (MWEPGD) prepared by AMEC, *Guidance of Best Practices for Municipal Water Conservation in Colorado* (BMP Guidebook), as well as information provided by District Staff. See Table 1 for a summary of the Project Team members who contributed towards this WEP and their contributions.

The Project Team began by gathering and tabulating well production and water use data, much of which is recorded and maintained manually. The project team performed a site visit and cataloged

the water system wells, storage, pump stations, and distribution system components. Lastly, the Project Team researched and summarized the District’s water rights portfolio. The selected study period is from 2013-2019, with the compilation of the following data:

1. Water production, peak water production, and well depletion rates
2. Indoor and outdoor water demand
3. Inventory of water system components and estimated maintenance and replacement costs
4. Groundwater production and projected groundwater needs
5. District population projection and water demand forecasts

2.0 PROFILE OF EXISTING WATER SUPPLY SYSTEM

2.1 Service Area

The District’s service area is shown in Figure 2 and is roughly 425 acres in size. The Service Area includes the Crested Butte South subdivision, a separate POA of 17 owners in River Rim, and the adjacent subdivision known as Allen Home Sites. At the end of 2019, the District served approximately 511 residential and 14 commercial accounts with approximately 1,637 residents. Table 3 shows the historical and projected population served for the District.

2.2 Land Use

2.2.1 Residential Land Use

The District is a covenanted subdivision that was originally platted in 1970 with a total of 839 lots (see Table 2, Column 2). The clustered lots are residential lots adjacent to each other and have been legally clustered, whereupon only one dwelling may be placed per lot. There are 87 clustered lots, which is likely to grow as future residents seek additional buffering space. More clustered lots result in fewer buildable lots. After removing all clustered lots (developed and undeveloped), the remaining developable residential land is fixed at 253 lots (see Table 2, Column 4). Of the 253 lots, 41 lots are located in Filings 1 and 2 (see Map, in Appendix A), and could be developed as Single-Family, Multi-Family, or Duplex units. The other 212 residential lots are located in Filings 3 and 4 and would allow only for the development of Single-Family homes and Duplexes but no Multi-Family units.

Recently observed building trends indicate that new single-family homes are larger than 2,000 square feet (ft²) and frequently have hot tubs, a greater number of Duplex units are being built instead of single-family units, and there has been consistent demand for more multi-family units. Multi-Family units may only be built in Filings 1 and 2; Single-Family and Duplex units may be built in Filings 1-4.

2.2.2 Commercial Land Use

All commercial lots are located in Filing 2, Blocks 4-6 of the platted subdivision. Block 6 is roughly 11 acres in size and is located in the heart of the commercial core of the District. Block 6 is not yet platted and is where high-density commercial and mixed-use (commercial and residential) development is planned for this area per the Commercial Area Master Plan (CAMP), (link: <https://crestedbuttesouth.net/wp-content/uploads/2020/04/SAR-Final.pdf>) and adopted by the District's Property Owners Association (POA), Board of Directors, and Gunnison County in April 2020. The densities for the development of Block 6 have not yet been finalized.

The types of businesses that might locate in the District run the gamut from professional offices, car washes, to restaurants and bars, and light manufacturing to breweries and distilleries. The CAMP has guidelines and requirements for future development. Given the wide variety of potential future development, it is difficult to project future water needs of the commercial sector.

2.3 Water Supply Sources

2.3.1 Current Groundwater Supply

The District's water supply sources include four groundwater wells shown in Figure 2. Table 4 provides well production and depletion rates for the District's four wells and is derived from a review of historical water pumping records, a review of water rights decrees, and discussions with District personnel. The primary source of potable drinking water is provided by three producing groundwater wells; Cascadilla Well, Shavano Well, and District Office Well, which provide the maximum pumping capacity total of 625 GPM. Currently, the fourth well, Utilities Well No. 1, also known as the Cement Creek Well, is offline and used as an emergency backup well. The

Cement Creek's well pumping capacity is 60 GPM and given the relatively low pumping rate and the expense of water quality monitoring and maintenance the well is not kept online.

The District's current peak day water use is roughly 600,000 GPD (see Table 9, Column (6)). The current well production capacity is 900,000 GPD and the sustainable yield of the wells allowing for groundwater recovery is 600,000 GPD (See Table 11). The sustainable yield is based on a current well utilization of 66.7 percent. This means during peak periods, the well can pump roughly two-thirds of the day (16 hrs.) and allows for one-third of the day (8 hrs.) for the groundwater level to recover. WWE recommends additional evaluation of each wells utilization rate to better define the sustainable yield of the wells.

Thus, the District's peak day water demand is currently at the sustainable yield of the District's water groundwater supply. In addition, the malfunction of a well pump or motor could be problematic during peak demand periods. WWE recommends adding an additional groundwater well in 285 GPM capacity in the near future to provide system redundancy.

2.3.2 Future Water Supply

Table 11 shows a summary of the existing groundwater production and future groundwater needs. At full build-out, the Districts peak day water demand without any reductions for water efficiency equals 1,280,000 GPD (See Table 11). The current sustainable yield of the wells is 600,000 GPD. Thus, the District will need to develop an additional sustainable yield of 680,000 GPD to meet full build-out peak day demands. Based on this shortage scenario three new wells would be needed with an instantaneous production rates of at least 210 GPM each.

2.3.3 Climate Change Impacts on Future Water Supply

Some of the broader comments received during the public review and comment process point to the important long-range considerations of population growth and future water supply in terms of climate change impacts felt more intensely in the Western states: a warmer, dryer climate with less precipitation and an increase in population density potentially exacerbated by a rapid increase in migration of people escaping hotter cities. Crested Butte and Crested Butte South are already experiencing record real estate sales and new construction with the recently observed "Zoom Boom." The EPA requires consideration of climate change for all NEPA projects, and therefore,

Crested Butte South would be prudent in giving climate change consideration in the analysis and recommendations. The Forest Service has developed guidance (US Forest Service. 2009. Climate Change considerations in project level NEPA analysis) for climate change considerations under NEPA, which focuses on the dual aspects of climate change 1) the effect of a proposed project on climate change through greenhouse gas emissions, and 2) the effect of climate change on a proposed project” (Leslie Brandt and Courtney Schultz, 2016).

Without rivers flowing into it, Colorado’s only water source is precipitation. The rivers and aquifers in the mountainous west still serve as a water storage system for rain, hail, and snow but the measured levels of precipitation have been steadily declining. Long-time local residents Dr. Bruce Bartleson retired geology professor at Western Colorado University in Gunnison, and Billy Barr (who formally uses lower case letters in his name), of the Rocky Mountain Biological Laboratory in Gothic, Colorado (eight miles north of Crested Butte and founded in 1928), have documented a roughly 20 percent decrease in snowfall in Gunnison and Crested Butte from the 1960’s through 2020 (DRI. 2021). And not only is snowfall decreasing, the amount of water contained in snowpack, the “snow water equivalent” (SWE), is also decreasing. According to the *Protect Our Winters 2018 Economic Report*, detailed records of SWE in the West have been tracked at high elevation stations since the 1960’s. “Based on this detailed dataset, scientists have observed a 10–20 percent loss in annual maximum snow water equivalent (Fyfe et al. 2017). (Elizabeth Burakowski and Rebecca Hill, 2018)”

Other articles look more into the global warming climate change impacts on flow reduction in the river. The USGS paper suggests 5 percent reduction in the streamflow per 1 Fahrenheit rise in Upper Colorado river basin (Milly, Paul. C. D. & Dunne, Krista. A. 2020). The Gunnison contributes about 16% of the Colorado River Basin (Miller, W. & DeRosa, Gina & Gangopadhyay, Subhrendu & Valdes, Juan. 2013). An outside source from the University of Arizona suggests a 15 percent reduction in Gunnison streamflow by 2099 (Miller, W. P. & Piechota, T. C. & Gangopadhyay, S. & Pruitt, T. 2010). The CWCB expects 10-25% streamflow reductions (Neely, B., R. Rondeau, J. Sanderson, C. Pague, B. Kuhn, J. Siemers, L. Grunau, J. Robertson, P. McCarthy, J. Barsugli, T. Schulz, and C. Knapp. Editors. 2011). Based on these citations' different sources, it was best to assume that streamflow reductions in the rivers in Colorado are projected to range between 10 and 25 percent decrease in an average annual runoff. Projections also include

more precipitation falling as rain rather than snow, earlier snowmelt, spring runoff peaks, and changes in flooding seasonality. Rising temperatures are projected to bring about these hydrologic changes no matter how precipitation patterns change in the basin.

The District currently monitors static and pumping water levels in the wells that can be used to access drawdowns and recovery during and after pumping events. Given the likelihood of reduced precipitation, prolonged drought, higher temperatures, and the incidence of earlier spring run-off, the District may want to consider a regional monitoring collaboration with other East River water users to more thoroughly understand the collective impacts to its wells and the common aquifer.

2.4 Water Storage

The District has two potable water storage tanks, see Figure 2. Tank 1 is an above-ground metal storage tank with 400,000 gallons located on Zeligman Street on the northwest side of the District. Tank 2 is a buried concrete tank with 300,000 gallons located northeast of the District subdivision. The District's total storage is 700,000 gallons or about 4.6 days of storage at an average day water use of 152,614 GPD. Storage volumes are also driven by firefighting needs of the District. Development of future storage needs based on fire suppression needs is beyond the scope of this project. WWE recommends the development of a Capital Improvement Plan to define fire flows and assess future storage needs under full build-out scenarios.

2.5 Water Distribution

From the wells, the potable water is distributed through approximately 50,000 feet (ft) of polyvinyl chloride (PVC) pipe distribution lines. The distribution system also consists of 2 booster pumping plants operating four pressure zones. See Table 6 for an initial inventory of the District's water distribution system components. Modeling of the water distribution system and booster pump stations for peak hour water use and firefighting demands was not conducted during this project. WWE recommends a capital improvement plan to assess flow demands and model the distribution system and booster pump stations and provide recommendations on the needed water distribution and pressure system improvements for full build-out.

2.6 Water Rights

The District water rights are detailed in Table 7, and the legal water supply is based primarily on:

1. A change of water right for the East River No. 2 Ditch to the Dietrich Spring No. 1 and the Utilities Well No. 1,
2. A plan of augmentation to offset out-of-priority depletions by the groundwater wells during the non-irrigation season, and
3. Water rights for the wells individually and as alternate points of diversion for the Utilities Well No. 1.

During the irrigation season, the District is permitted to withdraw up to 2 CFS under the East River No. 2 Ditch 1897 water right. The 2 CFS is equivalent to 3.96 AF per day or 122 AF per month. The change case originally involved the Dietrich Spring No. 1 and the Utilities Well, and in subsequent decrees, the Cascadilla Well, Shavano Well, and the District Office Well were added as alternate points of diversion. Future wells may need a water right decree to add the well as an alternate point of diversion.

The plan of augmentation is based on the District water system serving 900 single-family EQRs consisting of single-family, duplexes, condominiums, or townhouses. Each single-family EQR is calculated to use 350 GPD. At full build-out, 900 EQRs equals 315,000 GPD (0.97 AF per day) at full occupancy. Commercial units are estimated to total approximately 145,000 square feet in size at full build-out. The water demands are projected to total 380 EQR's or 133,000 GPD (0.41 AF per day) at full occupancy. Appendix B illustrates how EQRs are calculated during the building permitting process based on the size of a residential structure or the size and nature of a commercial building. In total, the augmentation plan covers 1,280 EQR's.

2.7 Water Supply Limitations and Summary

Water supply limitations can be generally divided into three categories: 1) legal water supply, 2) physical groundwater water supply, and 3) water treatment capacity.

The legal water supply is dependent upon the District's water rights and is discussed in Section 2.3 and is 2 CFS (3.96 AF per day) year-round and 1,280 EQR's (251.91 AF) during the non-irrigation season. The District appears to have sufficient legal water supply for full build-out.

However, as discussed above additional water rights decrees may be needed to add additional wells to the water system.

The physical water supply is composed of groundwater wells, and the District currently has a sustainable yield of 600,000 GPD. The District is reaching this daily maximum of 600,000 GDP on peak days, and additional supply is needed for full build-out.

For full Build-out, the maximum day water demand equals 1,290,370 GPD, and the District will need to develop an additional 680,000 GPD to meet projected maximum day demands at full build-out. Based on a well utilization rate of 66 percent, the District will need to develop an additional 715 GPM of groundwater pumping capacity. WWE estimated roughly three additional wells at 210 GPM each.

The District is currently classified as a groundwater source, and the water treatment is disinfection with sodium hypochlorite. Thus, currently, the treatment capacity is not a major factor for the District. If the District is reclassified as a groundwater under the influence of surface water, a surface water treatment facility would be required and would be a major consideration.

3.0 WATER USE AND DEMANDS

3.1 Municipal User Categories and Historical Demands

To create customer segments and quantify water demand across each segment, each land parcel was paired with the account addresses and associated EQR for each address. The customer type (Single Family, Multi-family, Duplex, Commercial Only, Commercial with Residential, and Unspecified) was determined by the parcel location on the map and verified during site visits.

Presently, there are 511 residential, 14 commercial accounts, and 27 unidentified users. The District's total demand in 2019 was 674 EQRs, spread across eight customer categories, see Table 8. The largest use sector is Single-Family, at 51.5 percent of total demand, followed by duplexes at 25 percent, and Multi-Family at just over 15 percent. The largest irrigator is the POA, which oversees the maintenance of, and provides irrigation to about 5 acres of common area at the subdivision entrance on Teocalli Road and at Red Mountain Park, along with a 17,000 ft² enclosed

hockey rink and 11,000 ft² open hockey pond, both flooded in December and used for play through February.

Historically, the POA has not paid for District water, as the two agencies often share project and program costs collaboratively and reciprocally. As part of a conservation effort between the POA, the District, and the Upper Gunnison River Water Conservancy District (UGRWCD), water meters were installed in 2020 in common irrigated areas. Starting in 2021, the meters will be read and recorded on a weekly basis. They will help the POA establish a baseline irrigation water consumption and demand profile to assist future water-saving investments.

The District’s average water use is 152,600 GPD, approximately 0.47 AF per day, see Table 5. Table 9 provides water and peak demand values for 2015-2019. The District’s annual water use average is nearly 54 million gallons per year (MGY).

A typical Colorado household averages about 150,000 GPY (411 GPD) for indoor and outdoor water needs. The state’s average indoor demand is estimated at 185 GPD, or 73 GPD per person for an average household of 2.53 people. The state’s average outdoor demand of 55 percent of total demand equals 226 GPD, or 89 GPD per person (Waskom, R. and Neibauer, M., 2014). Table 10 provides a breakdown of total water demand by indoor and outdoor uses. While the District’s share of outdoor water use is estimated at 44 percent and below the Colorado state average of 55 percent, outdoor water use has increased an average of 19 percent annually, where indoor use has increased 8 percent annually during this same time.

3.2 Population Projection and Water Demand Forecasts

For this WEP, the population projection and water demand forecasts calculation for the District uses a planning horizon of 2019 to 2050. Projected growth rates from the Colorado Department of Local Affairs (DOLA) for Gunnison County where and the following exponential equation calculates the population forecasts:

$$P = P_0 e^{rt}$$

- P = population
- P₀ = initial population
- e = exponential
- r = growth rate
- t = time

3.2.1 Population and Water Demand Projections

Based on the population data from DOLA, the District's 2019 population is 1,637 people. The summary and projection growth rates are provided in Table 3. The average historical growth rate from 2012-2019 is 1.5 percent. After discussing projected growth rates with the District personnel, it was recommended that the District's growth rate for the low, medium, and high range be 1.74 percent, 2 percent, and 2.4 percent. The range of the forecasted water demands is based on the projected population multiplied by the average per capita water demands (98 GPCD).

Gunnison County, including the District, saw significant increases in population during the Covid pandemic. Before Covid, the highest recommended population growth rate recommended was 2.4 percent. This equates to a doubling of population in approximately 30 years, or by 2050. Recent growth trends appear to be accelerating. Since the outbreak of Covid and the resultant "Zoom boom," reports of real estate sales, lodging bookings, and other indicators have exceeded historical values dramatically. For example, a Liv Sotheby's report for 2020 states, "Land parcels in the Town of Crested Butte experienced a remarkable 183.3 percent increase in the number of properties sold during 2020, compared to 2019. The most dramatic increase in listings sold was seen in Rural Crested Butte, where the total listings sold for all property types reached 178, climbing 102.3 percent from 2019 when 88 properties sold. The single-family home market also saw a 129.6 percent increase in listings sold in addition to the condominium and townhome market which experienced an astonishing 175.0 percent increase in listings sold." The project team added a scenario that accommodates the Covid population growth rate of 6 percent to account for the possibility that people working from home become a long-lasting driver to increase the population (see Table 3).

Figure 3 shows the water demand forecast per capita based on low, medium, high, and Covid-water demand projections. The low range water demand projection for 2050 equals 99 MGY. The medium water demand projection for 2050 equals 109 MGY. The high range water demands projection for 2050 equals 139 MGY. The Covid range water demands projection for 2050 equals 375 MGY. If the District continues to proceed at a growth rate due to Covid, the District will hit the legal water available by the year 2036.

3.2.2 Water Demand Projections under Various Water Savings Scenarios

To examine the District's projected water demands under various water saving conditions, WWE used the low, medium, high, and Covid range population growth projections to calculate the water demand projection, and applied 10, 20, 30 percent savings. Figures 4, 5, 6, and 7 show the water demand forecasts at build-out based on low, medium, high, and Covid water demand projections.

Figure 4 shows the 10, 20, and 30 percent savings applied to the low range water demand projections, which results in water demands of 89 MGY, 79 MGY, and 69 MGY, respectively by the year 2050. Figure 5 shows the 10, 20, and 30 percent savings applied to the medium-range water demand projections, which results in water demands of 98 MGY, 87 MGY, and 76 MGY, respectively by the year 2050. Figure 6 shows the 10, 20, and 30 percent savings applied to the high range water demand projections, which results in water demands of 111 MGY, 98 MGY, and 86 MGY, respectively by the year 2050. Figure 7 shows the 10, 20, and 30 percent savings applied to the Covid range water demand projections, resulting in water demands of 337 MGY, 300 MGY, and 262 MGY, respectively year 2050. Based on the District's future growth rate, the projected demands can be modified to help provide the timing of acquiring additional water supply and potentially new water rights.

4.0 WATER EFFICIENCY MEASURES, GOALS, AND ACTIVITIES

4.1 Existing Water Efficiency Measures

4.1.1 Water Rate Structure

The District's current water rate structure is a flat rate based on EQRs. EQRs are based on the size of an average residential unit, where:

$$\text{Residential EQR} = \frac{\text{square feet of residential unit}}{2,000 \text{ square feet}}$$

All residential units that are up to 2,000 ft² in size will use 1 EQR, whether they are a Single-Family home, a Duplex unit, or a Multi-Family unit. EQRs assigned to houses greater than 2,000 ft² are adjusted upwards. Commercial EQRs are determined by the impact on water demand of a particular type of business relative to residential impact. For example, commercial customers in

offices, retail stores, or similar small businesses calculate at .6 EQR per 1,000 square feet. Bars and restaurants calculate at 1.36 EQR per 25-person seating capacity. Laundromats calculate at 1 EQR for the first standard machine, adding 0.5 to 2 EQR per additional machine depending on size. Appendix B describes the 2019 rate structure and the full schedule of customer classifications and EQRs. The District does not charge additional fees for increases over the base EQR rate, since it is not able to read meters nor bill by metered usage.

The monthly service charge for the use of the District system's water is \$34.50 times the number of EQRs assigned to the water user account. The current rate structure is a flat rate and does not charge additional costs for increases in water use over a base rate. The District would like to move forward with a tiered rate structure to promote water efficiency; however, the following issues need resolution first:

- 1) Age of Meters. While water meters are included in every new building, any meter older than 10 years might be questionable regarding its functionality and accuracy. In addition, the existing meters require manual reading, which is not possible given existing District staffing and access, especially in the winter months. Since 2011, approximately 100 new taps were installed, meaning about 78 percent of all existing meters would require replacement. This will be a significant investment in new meters, automation, and software that can merge readings with a new rate structure and billing system.
- 2) Capital Improvement Plan. The District does not have an Infrastructure Capital Improvement Plan (CIP) for the water system. Development of a CIP would be helpful to identify and further refine existing operation, maintenance, repair, and replacement costs and future capital expenditures needed for full build-out of the water system. Development of these costs for planning purposes is an important component in the development of a rate and fee structure that is cost-based and provides the needed revenue to properly operate, maintain, and build the necessary infrastructure to provide safe reliable drinking water and fire protection to the Districts users. Once this level of capital costs and needed revenue is better defined, tap fees and base and tiered rate structures could be developed to meet the necessary existing and future revenue requirements and promote water use efficiency.

4.2 Final Selection of Water Efficiency Activities

In the original Water Efficiency Application submitted to the Colorado Water Conservation Board (CWCB) in March 2019, the District explained the following objectives for the WEP at that time:

1. The water security of the subdivision at maximum community build-out,
2. The feasibility, capacity requirements, costs, and water-savings potential of implementing metered water billing within 3-7 years,
3. Exploring a more water-efficient rate structure, and
4. Determining the role of efficiency in offsetting/deferring future infrastructure improvements as the District approaches maximum capacity.

As work on the project progressed, it became clear that some of the original objectives would require study beyond the scope of this report. As a smaller water provider, the District has not yet completed activities that are likely considered foundational for most larger providers, such as metering programs, metered billing, and water-efficient rates. Originally, the team believed that this project scope could include an initial study on some of these foundational areas, however, additional studies are needed to continue evaluation. These studies include the development of a Capital Improvement Plan, a Rate Study, and a Water and Sewer Adequacy Report for the new developments and future annexations.

The selection process for the water efficiency activities consisted of general discussions and data and information sharing between the District and WWE specific to the District's historical water use and future water demands. WWE then presented the District with a list of potential water efficiency activities. WWE discussed the potential activities with the District during the site visit on September 25, 2020. Appendix C documents the selection process. The District selected the following water efficiency activities:

1. Require new developments and future annexations to conduct a Water and Sewer Adequacy Report for submittal to the District for review before receiving service or a commitment for service by the District.
2. Recommend preparing a Capital Improvement Plan and Rate Study.
3. Recommend preparing a Meter Replacement Program

4.3 Water and Sewer Adequacy Report Requirement for New Developments and Future Annexations

The District's total water rights at 1,280 EQR are allocated at 900 EQR for residential, and 300 EQR for commercial development. As the District approaches full build-out of the community, it will help the District to fully understand the impacts to available EQRs by requiring certain types of new developments to complete a Water and Sewer Adequacy Report. The purpose of the Water and Sewer Adequacy Report is for the proposed development to provide the necessary information to evaluate current and future water supply infrastructure and water rights as well as sewer treatment needs.

Water and Sewer Adequacy Reports will be required for commercial developments, proposed multi-family, Duplex, mixed-use (combination of commercial and residential) units, and all new developments proposed as part of any future annexation to the District's service area, prior to water service and/or sewer service being committed or connected. Single-family residential structures have historically used 1-1.5 EQR per home, depending on the size of the home. Residential building trends are currently favoring the construction of multi-family and Duplex units over single-family structures, accelerating the allocation of EQRs from 1-1.5 EQR to 3-4 EQR per residential lot. This potential tripling or quadrupling of the allocable residential EQR is cause for the District to require a Water and Sewer Adequacy Report for any residential project proposing Duplex or multi-family densities.

The District will require new and proposed developments to provide a water and sewer adequacy report based on the proposed use, see Appendix D. The District will require the water and sewer adequacy submittals for review and approval before the water and/or sewer service is committed or connected. The water and sewer adequacy report should include the water demand estimates and calculations, including fixture counts, provisions for water efficiency measures, and an evaluation of water supplies available from the District for the proposed development. Water demand estimates and calculation should include for the water portion of the Water and Sewer Adequacy Report should include:

- Instantaneous peak water demands calculations, including fixture counts and fire flows,
- Peak day water demands including peak irrigation demand,

- Annual water demands and
- Proposed water efficiency measures by the proposed developments

Water portion of the Water and Sewer Adequacy Report is proposed to answer the following questions:

- How much water will the proposed development use?
- Does the District have sufficient infrastructure to provide the proposed developments in terms of water mains, fire flows, waters supply, and storage both at existing conditions and full development of the residential and commercial demands?
- Is the development proposing water efficiency measures in line with the District's goals, capability, and capacity to serve?
- What is the percent full build-out of the District water system, and is there an adequate water supply based on the full build-out for both the residential and commercial units?
- What are the proposed water efficiency measures for the proposed development and the water efficiency measures inline with District goals.

4.4 Capital Improvement Plan and Rate Study

A Capital Improvement Plan should include a water rate study that will assess current and future water system capital improvement needs to serve current and projected full build-out water system demands with a level of redundancy and fire flow capability. The CIP will then incorporate existing and future capital costs and incorporate ongoing debt payments, operation, maintenance, repair and replacement costs and operating reserves, and will provide cost projections and revenue requirements. The revenue requirements are typically broken into tap fees, special assessments, debt, and monthly service fees. WWE recommends the CIP provide multiple rates and fee programs for the District to consider. WWE also recommends the CIP and Rate Study include District Board workshops and public information programs.

4.5 Meter Replacement Program

Currently, water service connections have water meters, however, the water meters have not been routinely read, maintained, and replaced. In order to transition from the current EQR flat-rate

structure to a water use-based rate structure, the District will need operating and functional meters. In addition, meter information from service taps is an important method of calculating water losses and repair needs in the water distribution system. The meter replacement program will provide a plan for replacing water meters, suggest appropriate types of replacement water meters, determine the schedule of meter replacement, how the water meters will be read and how data will be collected and managed, and assess methods of funding the different phases of a water meter replacement program.

4.6 Estimated Water Savings of Efficiency Activities

The District's primary goal is to reduce total water consumption by 5 percent across all customer sectors within one year of implementation of the water efficiency activities. The estimated annual savings for the final selected water efficiency measures for this WEP are not specifically covered in the MWE PGD, see Appendix C, Step 7. The District believes, however, that the final selected activities will conservatively achieve the primary goal of a 5 percent reduction in total water demand.

5.0 IMPLEMENTATION AND MONITORING PLAN

5.1 Implementation Plan

5.1.1 Order and Timing for Plan Implementation

All water efficiency activities are anticipated to begin within one year after the approval of the WEP; start times, however, may change depending on the funding availability and costs. For planning purposes only, the activities will be pursued in the following order:

- Policy by the District Board to require Commercial Applicants to prepare and submit a Water and Sewer Adequacy Report for New Developments and Future Annexations
- Preparation of a Capital Improvement Plan and Rate Study
- Preparation of a Meter Replacement Program

Anticipated start times may change depending on funding availability and costs.

5.1.2 Additional Actions for Plan Implementation

Once the WEP is reviewed and approved by CWCB, there are several action items necessary to implement the water efficiency activities. These action items include training staff to administer the WEP and monitor water savings and conduct public outreach and education for the water efficiency activities.

5.1.3 Entities or Staff Responsible for Implementing the Water Efficiency Activities

- Water and Sewer Adequacy Report for New Developments and Future Annexations: Coordination among Ronnie Benson, the District Board, and the commercial developer as applicant.
- Capital Improvement Plan and Rate Study: Coordination among Ronnie Benson and the District Board.
- Meter Replacement Program: Coordination among Ronnie Benson, the District, and POA.

5.2 Monitoring Plan

The monitoring plan will adapt and adjust over the course of plan implementation depending on changing conditions to document the effectiveness of the water efficiency activities and to properly monitor water efficiency as they too may adapt.

5.2.1 Data Monitoring

A key aspect of the monitoring plan is data collection. Monitoring of water demand and usage by user category will be continued, and documentation maintained by the District. Additional relevant areas for monitoring may include commercial areas and residential development statistics - weather data, annual population estimates, new and replace equipment/infrastructure schedules and costs, and customers/stakeholder feedback. The District may need to consider investing additional staff time to collect and maintain sufficient data for such monitoring.

5.2.2 Additional Monitoring Considerations

In addition to collecting, maintaining, and tracking the monitoring data, the District should periodically consider the following aspects for each water efficiency activity.

- Annual costs and avoided costs
- Water-saving estimates
- Public feedback
- Lessons learned
- Any significant changes relevant to the water efficiency activities
- Potential improvements for increased efficiency and ease

5.2.3 Evaluation and Communication of Monitoring Data

Evaluation and communication of the monitoring data to decision-makers, along with recommendations on how to improve the effectiveness of each activity, should be an ongoing process that occurs at a minimum of every two years. The more frequently this evaluation and communication can occur, the less effort will be required in effectively utilizing the monitoring data and when updating the WEP.

5.2.4 Monitoring of Water Savings

Estimation of water-saving for this WEP should be done on a per capita basis by comparing recent per capita water demands with historical per capita water demands. Depending on the timing of implementation of the water efficiency activities, per capita saving may be estimated for individual water efficiency activities or the overlapping water efficiency activities. Once all water efficiency activities have been implemented, total per capita water savings may be estimated. Additional factors should be considered that may influence per capita water demands, such as drought, water restrictions, or interruptions in service when estimating per capita water savings.

5.2.5 Data Organization and Adaptive Adjustments

Thorough and well-organized documentation of monitoring data and the associated decisions made to adapt water efficiency activities will play a key role in the success of the WEP. Maintaining

thorough and well-organized documentation will provide current and future decision-makers with a clear idea of which activities have been most effective for water savings, which aspects of WEP implementation could use improvement, and will be very helpful when updates are made to the WEP.

6.0 PUBLIC REVIEW AND FORMAL APPROVAL

6.1 Public Review Process

In February 2021, WWE provided the District with a draft of the WEP for public review and comment. Following standard required public notification procedure, the District published a notice regarding the WEP public review process in the Legal section of the February 25, 2021 issue of the local newspaper, the Crested Butte News. Sue Wallace and WWE presented the WEP to the District's Board of Directors on March 10, 2021, and to the public on March 11, 2021, through a virtual meeting where public comment and feedback on the WEP were obtained. The required term of the review process was 30 days and public comment closed on March 25, 2021. WWE then incorporated comments and provided feedback into the final WEP. Appendix F documents the public comments received and their resolution.

6.2 Future Work

1. Recommended additional future work identified during this planning process includes the following: Consider a Drought Management Plan that will include the following:
 - 1.1. Additional evaluation of climate change impacts on the alluvial aquifers that supply groundwater for the District.
 - 1.2. Drought impacts of increased water rights administration on the river and how this may impact the District's water rights.
 - 1.3. What strategies can the District utilize to reduce water demands during droughts and improve water supply sustainability?
2. Analyze the Districts' wells drawdown and recovery data to evaluate how the wells perform under lower streamflow levels during drought conditions. Evaluate future drawdown and recovery under potential future reductions in streamflow under various climate change scenarios.

3. Evaluate future locations for additional groundwater development. Include the potential for a surface water treatment facility in case groundwater supplies are found to be influenced by surface water.
4. In the context of water efficiency, the District should consider creating incentives to cluster lots that provide reducing the property tax burden or offering a partial refund of tap fees to homeowners who cluster.
5. Evaluate and compare EUI energy efficiency and CO2 for carbon to equate use among different communities.

6.3 Local Adoption and State Approval Processes

The District's Board of Directors adopted the WEP on (adoption is expected on or before April 28, 2021). The District sent the final, adopted version of the WEP to CWCB for formal state approval as of the date of this final report.

6.4 Periodic Review and Update

The District will review and update the WEP as needed on an annual basis. A formal review and update to the WEP is anticipated in 2028.

7.0 REFERENCES

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TABLES

Table 1
Project Team
Crested Butte South Metropolitan District

Name	Title/Role	Expected Contribution
Crested Butte South Metropolitan District		
Sue Wallace	Project Coordinator	Will oversee project delivery, coordinate communication and research between Crested Butte South Metropolitan District and the project staff of WWE, and will coordinate and oversee the Public Review Process.
Ronnie Benson	Crested Butte South Metropolitan District Manager	Will help provide additional data and information to profile the existing water demands, historical demand management, and help select potential water efficiency approaches and water conservation efforts.
Wright Water Engineers, Inc.		
Peter Foster, P.E.	Project Manager	Lead overall project, direct consultant team, and perform project work.
Trevor Downing, G.E.	Consultant	Provides GIS assistance, contribution of content and review of the WEP document.
Brett Oliver	Consultant	Provides GIS assistant and contribution of content.
Hayes Lenhart, P.E.	Consultant	Provides counsel and QA/QC review of the WEP, attend meetings with Crested Butte South Metropolitan District, and ensures the WWE team has organized resources needed to successfully and efficiently compete the project.
Danielle Nelson	Consultant	Compose significant portions of the WEP including profile of the District's distribution system, gather data and information from the District for inclusion into the WEP, coordination, and support the Project Manager and fellow project team members throughout development of the WEP.

Table 2
Summary of Built and Remaining Development in 2019
Crested Butte South Metropolitan District

Lot Type	Total Number of Lots	Number of Developed Lots	Number of Undeveloped Lots	% Built
(1)	(2)	(3)	(4)	(5)
Residential	700	447	253	64%
Commercial – platted	52	15	37	29%
Commercial- Block 6, not platted	6 acres	1 2-story development at 12,000 ft ² total; 6,000 ft ² footprint	Undetermined	4.6%
Clustered	87	N/A	N/A	N/A
Total-Overall	839	462	290	61%

Notes:

The information was provided by Crested Butte South Metropolitan District.

Table 3
Population Statistics and Growth Projections at Build-out
Crested Butte South Metropolitan District

Census Year	Estimated Crested Butte South Metropolitan District Population				Average Historical Growth Rate
	Low Projection	Medium Projection	High Projection	Covid Projection	
	1.70%	2.00%	2.40%	6.00%	
	(1)	(2)	(3)	(4)	
2012	1,455	1,455	1,455	1,455	-
2013	1,475	1,475	1,475	1,475	1.41%
2014	1,493	1,493	1,493	1,493	1.21%
2015	1,525	1,525	1,525	1,525	2.12%
2016	1,554	1,554	1,554	1,554	1.92%
2017	1,596	1,596	1,596	1,596	2.68%
2018	1,625	1,625	1,625	1,625	1.86%
2019	1,653	1,658	1,665	1,726	1.71%
2020	1,681	1,692	1,705	1,832	
2021	1,710	1,726	1,747	1,946	
2022	1,740	1,761	1,789	2,066	
2023	1,769	1,796	1,832	2,194	
2024	1,800	1,832	1,877	2,330	
2025	1,831	1,869	1,923	2,474	
2026	1,862	1,907	1,969	2,627	
2027	1,894	1,946	2,017	2,789	
2028	1,926	1,985	2,066	2,961	
2029	1,959	2,025	2,116	3,145	
2030	1,993	2,066	2,168	3,339	
2031	2,027	2,108	2,220	3,545	
2032	2,062	2,150	2,274	3,765	
2033	2,097	2,194	2,330	3,998	
2034	2,133	2,238	2,386	4,245	
2035	2,170	2,283	2,444	4,507	
2036	2,207	2,330	2,503	4,786	
2037	2,245	2,377	2,564	5,082	
2038	2,283	2,425	2,627	5,396	
2039	2,323	2,474	2,690	5,730	
2040	2,362	2,524	2,756	6,084	
2041	2,403	2,575	2,823	6,460	
2042	2,444	2,627	2,891	6,860	
2043	2,486	2,680	2,961	7,284	
2044	2,529	2,734	3,033	7,734	
2045	2,572	2,789	3,107	8,213	
2046	2,616	2,845	3,183	8,720	
2047	2,661	2,903	3,260	9,260	
2048	2,707	2,961	3,339	9,832	
2049	2,753	3,021	3,420	10,440	
2050	2,800	3,082	3,503	11,086	
Average Historical Growth Rate (2012-2019)					1.61%

Notes:

The years 2012-2018 list the historical population.

- Column (1): Crested Butte South Metropolitan District's low population projection of 1.7%. Population data from Department of Local Affairs (DOLA).
- Column (2): Crested Butte South Metropolitan District's medium population projection of 2.0%. Population data from Department of Local Affairs (DOLA).
- Column (3): Crested Butte South Metropolitan District's high population projection of 2.4%. Population data from Department of Local Affairs (DOLA).
- Column (4): Crested Butte South Metropolitan District's Covid population projection of 6.0%. Population data from Department of Local Affairs (DOLA).
- Column (5): $(\text{Current year Column (1)} - \text{previous year Column(1)}) / \text{previous year Column (1)}$

Table 4
Reported Well Production and Well Depletion Rates
Crested Butte South Metropolitan District

Online Wells	Reported Approximate Maximum Well Production Rate	Maximum Well Depletion Rates	
	gpm	%	gpm
(1)	(2)	(3)	(4)
Cascadilla Well	285	87%	249
Shavano Well	200	75%	151
District Office Well	140	88%	123
Average	210		174
Total	625		522
Total without Cascadilla Well	340		273

Offline Wells	Reported Approximate Max Well Production Rate	Max Well Depletion Rates	
	gpm	%	gpm
Utilities Well No. 1 ¹	60	88%	53

Notes:

¹ The Utility Well No. 1, also known as Cement Creek Well, is used as an emergency back-up well.

Column (1): Well names provided by Crested Butte South Metropolitan District

Column (2): The reported approximate maximum production for each well, provided from Site Visit.

Column (3): The Max Well Depletion Rates listed in Case No. 99CW68

Column (4): Column (2) * Column (3)

Table 5
Well Production and Treated Wastewater Effluent
Crested Butte South Metropolitan District

Year	Water Pumped From Wells			Treated Wastewater Effluent			% of Well Production Discharge from the Wastewater Treatment Plant
	(million gallons/year)	(gallons/day)	(AF/day)	(million gallons/year)	(gallons/day)	(AF/day)	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2013	54	148,744	0.46	27	73,766	0.23	49.6%
2014	52	143,634	0.44	27	73,180	0.22	50.9%
2015	45	121,955	0.37	26	71,266	0.22	58.4%
2016	51	138,954	0.43	27	72,990	0.22	52.5%
2017	55	151,509	0.46	28	77,107	0.24	50.9%
2018	70	190,838	0.59	24	66,891	0.21	35.1%
2019	63	172,663	0.53				
Minimum	45	121,955	0.37	24	66,891	0.2	35.1%
Maximum	70	190,838	0.59	28	77,107	0.2	58.4%
Average	54	152,614	0.47	26	72,533	0.2	49.6%

Notes:

- Column (1): Total well water pumped each year, provided by the Crested Butte South Metropolitan District.
- Column (2): Column (1) x 1,000,000 / 365
- Column (3): Column (2) / 325,851
- Column (4): Wastewater treated per year from 2013-2018, provided by Crested Butte South Metropolitan District.
- Column (5): Column (4) x 1,000,000 / 365
- Column (6): Column (5) / 325,851
- Column (7): Column (6) / Column (3)

Table 6
Major Components, Replacement, and Maintenance Costs of Water Distribution System
Crested Butte South Metropolitan District

Equipment	Number	Replacement / Maintenance Cost		Replacement / Maintenance Period		Annual Maintenance / Replacement Budget	
		Low	High	Low	High	Low	High
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Submersible Well Pumps	3	\$ 15,000	\$ 20,000	15	20	\$ 2,250	\$ 4,000
Tank 1 Booster Pump Station							
Tank 1 Booster Pumps 20 hp	2	\$ 15,000	\$ 20,000	15	20	\$ 1,500	\$ 2,667
Tank 1 Booster Pumps 40 hp	2	\$ 10,000	\$ 10,000	15	20	\$ 1,000	\$ 1,333
Gloria Booster Pump Station							
Baker Inline 20hp Booster Pumps	2	\$ 10,000	\$ 10,000	15	20	\$ 1,000	\$ 1,333
Pressure Reducing and Sustaining Valves	3	\$ 15,000	\$ 15,000	20	20	\$ 2,250	\$ 2,250
Generators	3	\$ 25,000	\$ 25,000	25	25	\$ 3,000	\$ 3,000
Storage Tanks	2	\$ 120,000	\$ 120,000	15	20	\$ 12,000	\$ 16,000
Distribution System Lines (feet)	50,000	\$ 20	\$ 40	40	50	\$ 20,000	\$ 50,000
Fire Hydrants	121	\$ 6,000	\$ 8,000	50	50	\$ 14,520	\$ 19,360
Meters	518	\$ 500	\$ 750	20	20	\$ 12,950	\$ 19,425
Total						\$ 70,470	\$ 119,368

Notes:

- Column (1): The different materials that have been considered for replacement or maintained.
- Column (2): The unit count of equipment.
- Column (3): The low estimated budget for equipment needed.
- Column (4): The high estimated budget for equipment needed.
- Column (5): The least estimated number of years the equipment will need to be replaced/maintained.
- Column (6): The highest estimated number of years the equipment will need to be replaced/maintained.
- Column (7): Column (3) / Column (6) x Column (2)
- Column (8): Column (4) / Column (6) x Column (2)

**Table 7
Water Right Summary
Crested Butte South Metropolitan District**

Structure Name	Decreed Name	Structure ID (WDID)	Administration Number	Adjudication Date	Appropriation Date	Registration/ Permit Number	Case Number	Original Decreed Rate (CFS)	Alternate Point Decreed Rate (CFS)	Adjudication Type	Status	Decreed Uses	Decree Comments	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Cascadilla Well	W-2417	5905270	17425.00000	9/14/1906	9/15/1897	64921-F	99CW0068			O, AP	Absolute	1,2,7,8	Alternate Point of Diversion for Utilities Well No.1	
			53325.44769	12/31/1996	7/28/1972					S, AP		3	Alternate Point of Diversion for Utilities Well No.1	
Shavano Well	W-2417	5906003	17425.00000	9/14/1906	9/15/1897	039658-F	79CW0352		2	O, AP, TF, TT	Absolute	1,2,7,8	Alternate Point of Diversion for Utilities Well No.1	
			53325.44769	12/31/1996	7/28/1972		96CW0116			S		3	Alternate Point of Diversion for Utilities Well No.1	
District Office Well	W-2417	5905269	17425.00000	9/14/1906	9/15/1897	76051-F	99CW0068			O, AP	Absolute	1,2,7,8	Alternate Point of Diversion for Utilities Well No.1	
			53325.44769	12/31/1996	7/28/1972					S, AP		3	Alternate Point of Diversion for Utilities Well No.1	
Dietrich Spring No. 1 ¹	W-2417	5901283	17425.00000	9/14/1906	9/15/1897		99CW0068			O, AP	Conditional	1,2,7,8	Alternate Point of Diversion for Utilities Well No.1	
			53325.44769	12/31/1996	7/28/1972		S, AP			3		Alternate Point of Diversion for Utilities Well No.1		
			55698.00000	12/31/2002	6/30/2002		02CW0243			S, C		Conditional	2,3,7	
Utilities Well No.1 ²	W-2417	5905203	17425.00000	9/14/1906	9/15/1897	016461-F	W2417	2		O, C, TT	Conditional	1,2,7,8	2 CFS originally decreed to East River No. 2, WDID 5900550, was changed to point of diversion of Utilities Well No.1 for year round use. Adds Municipal, Domestic, and Fires Uses	
							96CW0116			O, TF, TT		Absolute	1,3,7,8	Use Added; Alternate Points 6003, 5269, 5270, 1283
							80CW0165			O, CA, TT		Absolute	1,2,7,8	2 CFS originally decreed to East River No. 2, WDID 5900550, was changed to point of diversion of Utilities Well No.1 for year round use. Adds Municipal, Domestic, and Fires Uses
							96CW0116			S		Absolute	3	Alternate Points 6003, 5269, 5270, 1283
			45290.44769	12/31/1996	7/28/1972		W2417			S	Conditional	1,2,7,8		

Crested Butte South Metropolitan District Reservoir Storage Agreements

Blue Mesa Reservoir Lease Agreement (2004) - The District leased 13 AF of stored water annually at Blue Mesa Reservoir.
Upper Gunnison River Water Conservancy District Agreement (1997, active for 25 years) - The District purchased 5 AF of water from Meridian Lake.

Notes:

¹ Dietrich Spring No. 1 is not currently connected to the municipal water system.

² The Utility Well No. 1 is used as an emergency back-up Well.

- Column (1): Structure name from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (2): Decreed name from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (3): Structure ID from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (4): Administration number from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (5): Adjudication date from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (6): Appropriation date from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (7): Registration number from Colorado's Decision Support Systems (CDSS) Site
- Column (8): Case number from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (9): Original decree rate from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (10): Alternate point decreed rate from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (11): Adjudication type from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
AP - Alternative Point, O - Original, S - Supplemental, TF - Transfer from, TT - Transfer to, AB - Abandoned, C - Conditional, CA - Conditional made Absolute
- Column (12): Status from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
- Column (13): Decreed uses from Crested Butte South Metropolitan District Judgement and Decree Adjudicating Water Right
1 - Irrigation, 2 - Municipal, 3 - Commercial, 7 - Fire, 8 - Domestic
- Column (14): Decree comments from CDSS Well Structure Summary Reports

Table 8
2019 Water Use Categories by Customer Type
Crested Butte South Metropolitan District

Water User Type	Number of Parcels	Number of EQRs	Percent of Respective Contributions
(1)	(2)	(3)	(4)
Commercial Water Only	8	8.8	1.3%
Commercial with Residential	10	9.35	1.4%
Duplex	126	168.19	24.9%
Multi-Family	103	99.5	14.8%
Multi-Family River Rim	1	2.09	0.3%
Single Family River Rim	15	20.554	3.0%
Single Family Water	288	327.25	48.5%
Unidentified Water Type	27	38.64	5.7%
Total	578	674.37	100.0%

Notes:

Column (1): Categories by Customer Type

Column (2): Number of Parcels per Water Type User, provided by Crested Butte South Metropolitan District

Column (3): Number of EQRs per Water Type User, provided by Crested Butte South Metropolitan District

Column (4): Column (3) / 674.37 EQRs

Table 9
Annual Water and Peak Production on a Per Capita and EQR Basis
Crested Butte South Metropolitan District

Year	Population	Billed EQR	Well Production			Peak Day Water Production		
			(gallons/year)	(gallons/day/ person)	(gallons/day/ billed EQR)	(gallons/day)	(gallons/day/ person)	(gallons/day/ billed EQR)
			(1)	(2)	(3)	(4)	(5)	(6)
2013	1,475	548	54,291,600	101	272	-	-	-
2014	1,493	557	52,426,300	96	258	-	-	-
2015	1,525	587	44,513,400	80	208	455,141	299	775
2016	1,554	601	50,718,178	89	231	545,787	351	909
2017	1,596	620	55,300,960	95	244	599,707	376	968
2018	1,625	649	69,655,894	117	294	583,147	359	898
2019	1,637	674	63,021,886	105	256	553,257	338	820
Minimum	1,475	548	44,513,400	80	208	455,141	299	775
Maximum	1,637	674	69,655,894	117	294	599,707	376	968
Average	1,558	605	55,704,031	98	252	547,408	344	874

Notes:

- Column (1): Crested Butte South Metropolitan District is estimated from Gunnison County population data from Department of Local Affairs (DOLA)
- Column (2): Number of Equivalent Residential Unit's (EQR) served by Crested Butte South Metropolitan District per year.
- Column (3): Total well water produced per year, provided by the Crested Butte South Metropolitan District.
- Column (4): Column (3) / Column (1) / 365
- Column (5): Column (3) / Column (2) / 365
- Column (6): Top 5 max peak day water production average from all the wells for years 2015 to 2019, provided by Crested Butte South Metropolitan District. No data provided for 2013 and 2014.
- Column (7): Column (6) / Column (1)
- Column (8): Column (6) / Column (2)

Table 10
Modelled Indoor versus Outdoor Water Usage
Crested Butte South Metropolitan District

Year	Population	Billed EQR	Indoor (Non Irrigation)			Outdoor (Irrigation)			% Annual Outdoor Water Use
			(million gallons/year)	(gallons/day/person)	(gallons/day/Billed EQR)	(million gallons/year)	(gallons/day/person)	(gallons/day/Billed EQR)	
			(1)	(2)	(3)	(4)	(5)	(6)	
2015	1,525	587	30	55	142	15	27	69	33%
2016	1,554	601	28	49	128	25	44	114	47%
2017	1,596	620	30	51	131	26	45	117	47%
2018	1,625	649	36	60	150	36	60	151	50%
2019	1,637	674	39	65	158	24	41	98	38%
Crested Butte South Metropolitan District Average			32	56	142	25	43	110	44%
Colorado State Average				73			89		55%

Notes:

- Column (1): Crested Butte South Metropolitan District is estimated from Gunnison County population data from Department of Local Affairs (DOLA)
- Column (2): Number of billed Equivalent Residential Unit's (EQR) served by Crested Butte South Metropolitan District per year
- Column (3): Annual average Indoor Well Production from October through April water use
- Column (4): Column (3) / Column (1) / 365
- Column (5): Column (3) / Column (2) / 365
- Column (6): Annual average Outdoor Well Production from May through September water use
- Column (7): Column (6) / Column (1) / 365
- Column (8): Column (6) / Column (2) / 365
- Column (9): Column (6) / (Column (6) + Column (3))

Table 11
Existing Groundwater Production and Future Groundwater Needs Summary
Crested Butte South Metropolitan District

Existing Groundwater Production Summary

	Existing Conditions Parameters	Units	100% Well Utilization (pumping 24 hrs./day)
(1)	Calculated Max Day Production at 625 gpm pumping continuously for 24 hours	gpd	900,000
(2)	Crested Butte South Metropolitan District's Reported Max Day Water Production (2015-2019)	gpd	600,000
(3)	Calculated Utilization Rate based on Max Day Water Production (2015-2019)	%	66.7%
(4)	Additional Well Production Rate Needed to meet Shortage with Cascadilla Well Offline	gpm	285

Notes:

Row (1): 625 gpm (Calculated Max Day Production, see Table 3) * 1440 mins/day

Row (2): Max Day Water Production (2015-2019), see Table 8

Row (3): Row (2) / Row (1)

Row (4): Cascadilla Well Production, see Table 3

Future Groundwater Needs for Full Buildout

	Future Conditions Parameters	Units	100% Well Utilization (pumping 24 hrs./day)	66% Well Utilization (pumping 16 hrs./day)
(1)	Additional Well Production Rate Needed to meet Shortage	gpm	472	715
(2)	The Number of Additional Wells Needed with an Instantaneous Production Rate of 210 gpm to meet Shortage	No. of Wells	2	3

Notes:

Row (1): 100% Well Utilization = 680,000 gpd (Max Day Water Use Shortage, see Table below) / 1440 mins/day
66% Well Utilization = 472 / 66%.

Row (2): Row (1) / Instantaneous Production Rate of 210 GPM (Average Well Production, see Table 3)

Assumptions

	Parameters	Units	Values
(1)	Well Permit and Decreed Max Production Rate (2 cfs)	gpd	1,290,370
(2)	Full Buildout EQRs (Case No. 96CW116)	EQRs	1,280
(3)	Crested Butte South Metropolitan District's 2015-2019 Average Day Demand	gpd/EQR	252
(4)	Crested Butte South Metropolitan District's 2015-2019 Max Day Demand	gpd/EQR	1,000
(5)	Crested Butte South Metropolitan District's Max Day Demand at Full Buildout (2015-2019)	gpd	1,280,000
(6)	Max Day Water Use Shortage	gpd	680,000

Notes:

Row (1): The Well Permit (64921-F) and Decreed Max Production Rate (99CW68)

Row (2): The Number of EQRs at full build out, prior to Case Number 96CW116

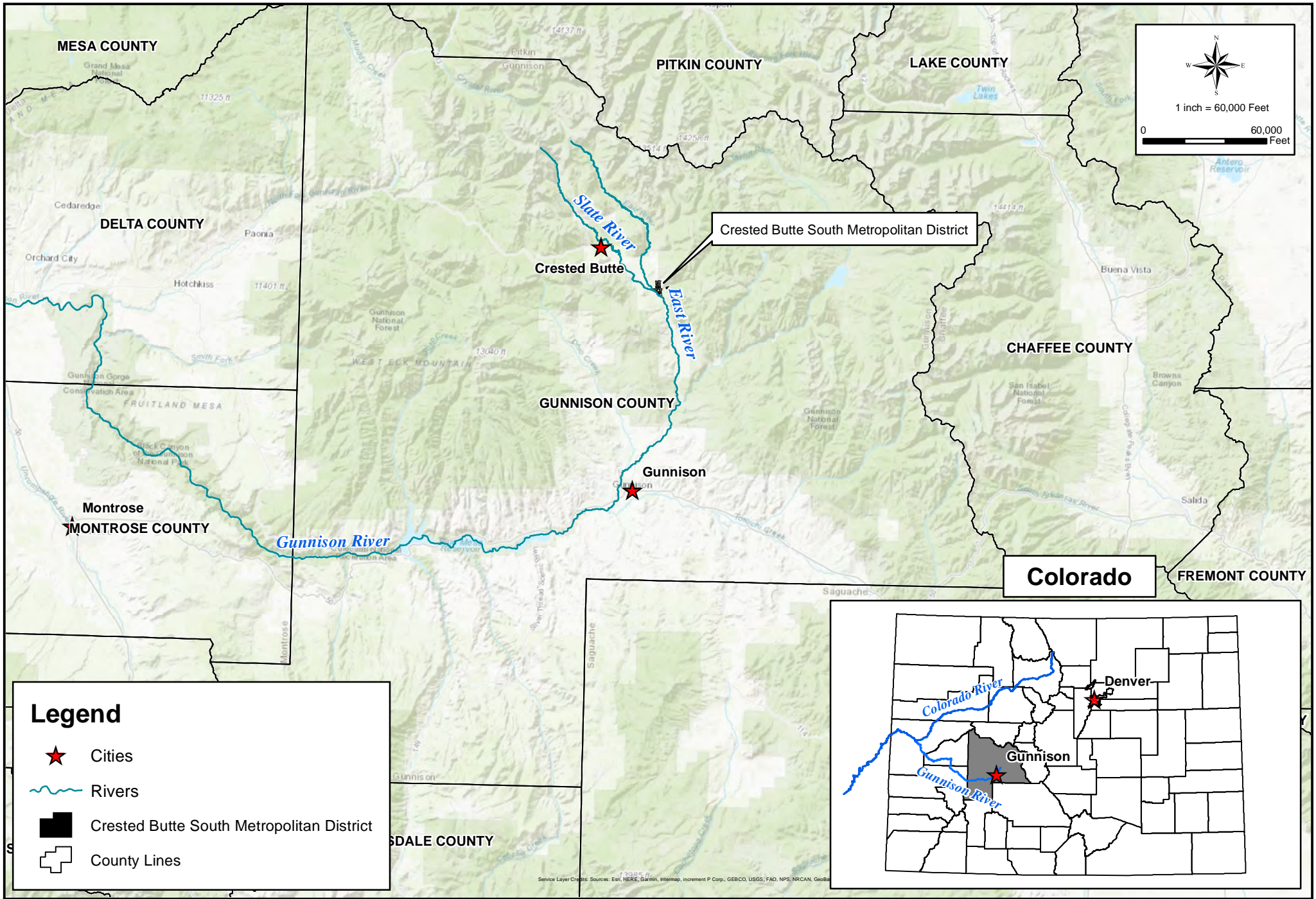
Row (3): Average Day Demand (2015-2019), see Table 8

Row (4): Max Day Demand (2015-2019), see Table 8

Row (5): Row (2) * Row (4)

Row (6): Row (5) - 600,000 gpd (Max Day Water Production (2015-2019), see Table 8)

FIGURES



Date: 11/6/2020 Document Path: P:\201-021 Crested Butte South\000 Water Efficiency Plan\Mapping\Figure 1 - Location Map.mxd

User Name: boliver



Wright Water Engineers, Inc.
1666 N. Main Ave., Ste.C
Durango, CO 81301
(970) 259-7411 ph 259-8758 fx

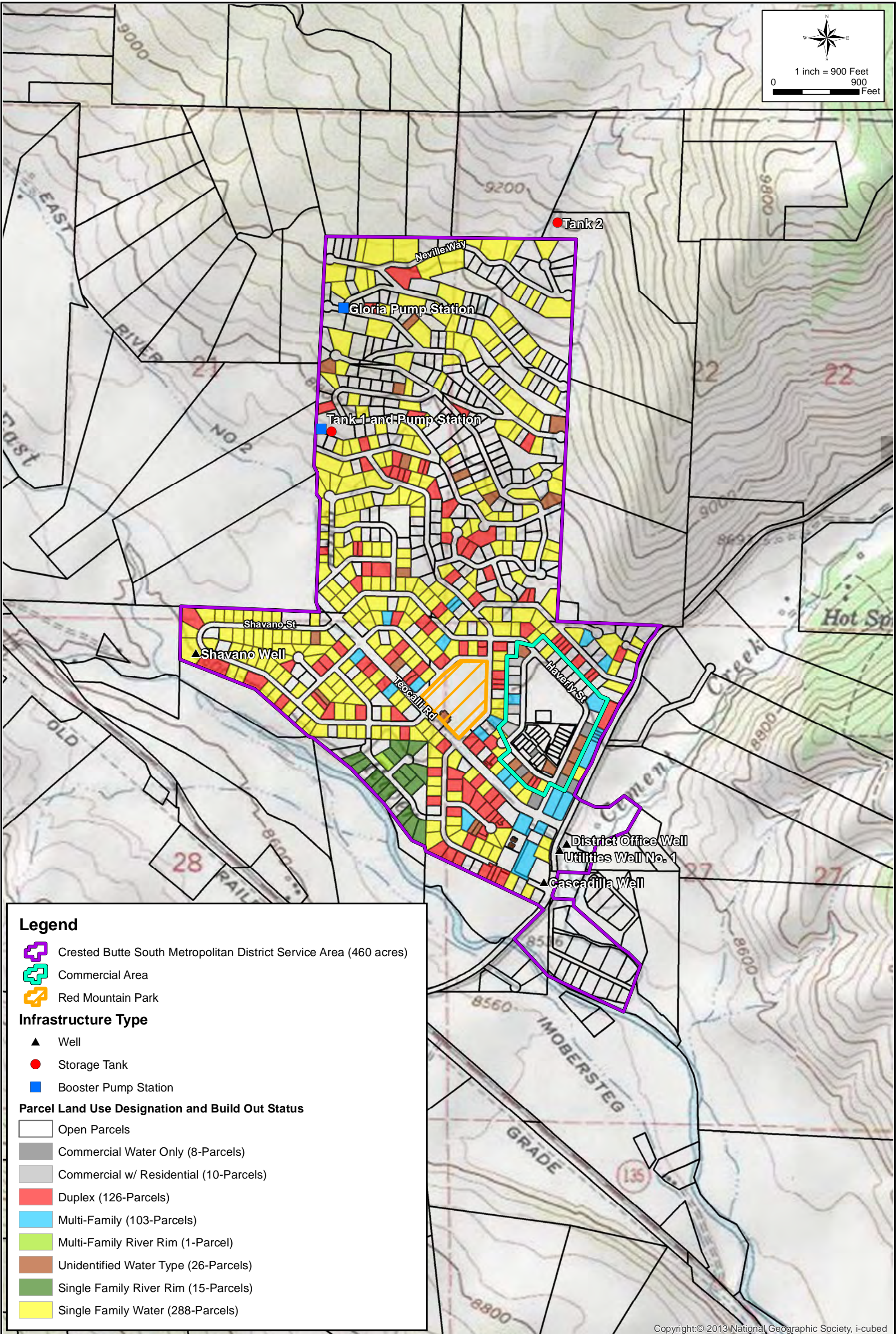
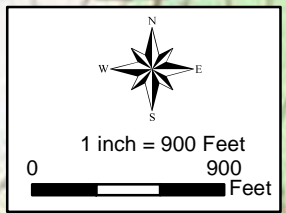
GUNNISON COUNTY, CO

CRESTED BUTTE SOUTH METROPOLITAN DISTRICT LOCATION MAP

PROJECT NO.
201-021.000

FIGURE
1

CRESTED BUTTE SOUTH METROPOLITAN DISTRICT



Legend

- Crested Butte South Metropolitan District Service Area (460 acres)
- Commercial Area
- Red Mountain Park

Infrastructure Type

- Well
- Storage Tank
- Booster Pump Station

Parcel Land Use Designation and Build Out Status

- Open Parcels
- Commercial Water Only (8-Parcels)
- Commercial w/ Residential (10-Parcels)
- Duplex (126-Parcels)
- Multi-Family (103-Parcels)
- Multi-Family River Rim (1-Parcel)
- Unidentified Water Type (26-Parcels)
- Single Family River Rim (15-Parcels)
- Single Family Water (288-Parcels)

Copyright:© 2013 National Geographic Society, i-cubed

Date: 2/24/2021 Document Path: P:\201-021 Crested Butte South\000 Water Efficiency Plan\Mapping\Figure 2 - Crested Butte South Parcel Water Type with Infrastructure from Site Visit.mxd

User Name: boliver

Figure 3. Water Demand Forecast

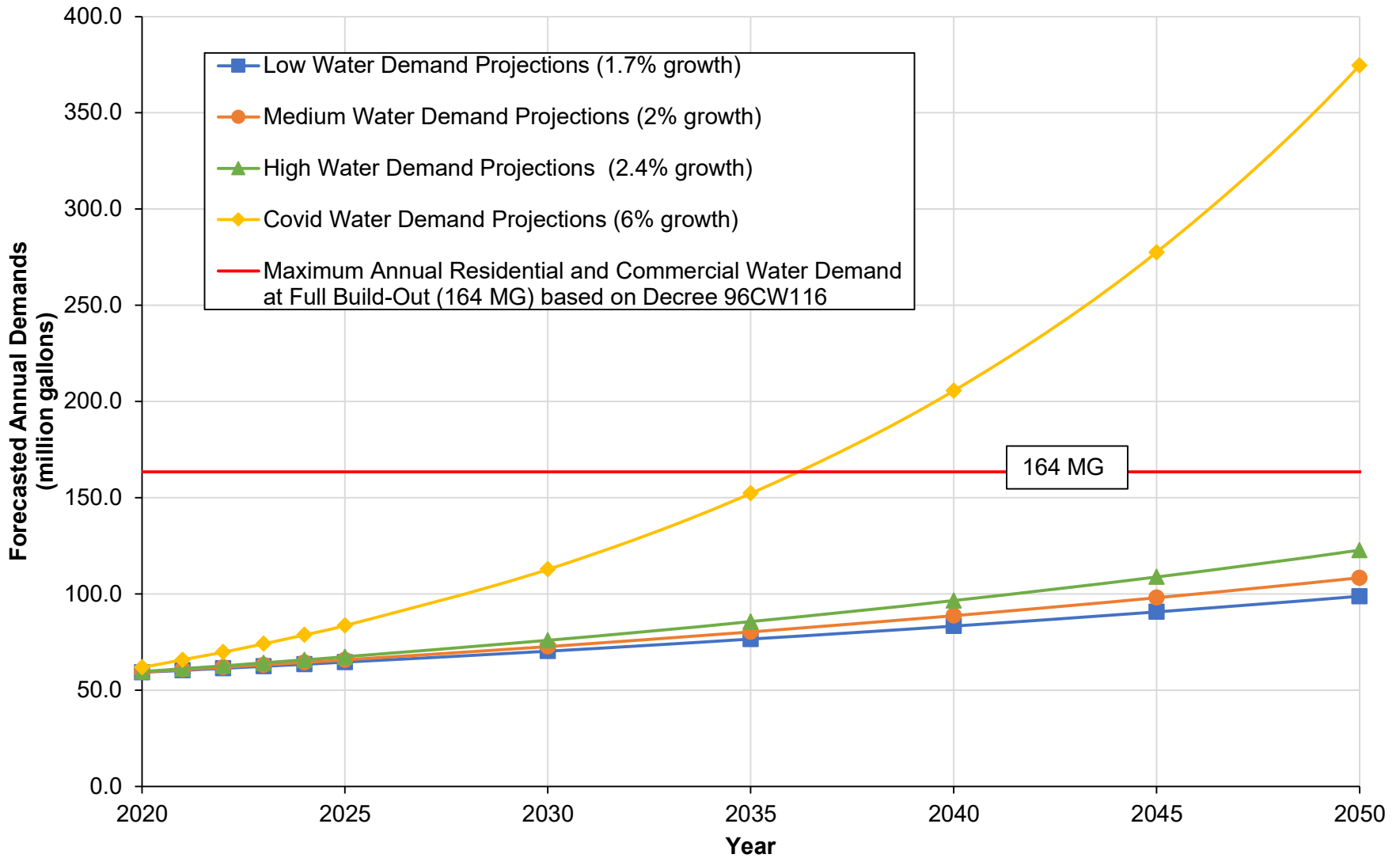


Figure 4. Low Water Demand Projections with Projected Savings Applied

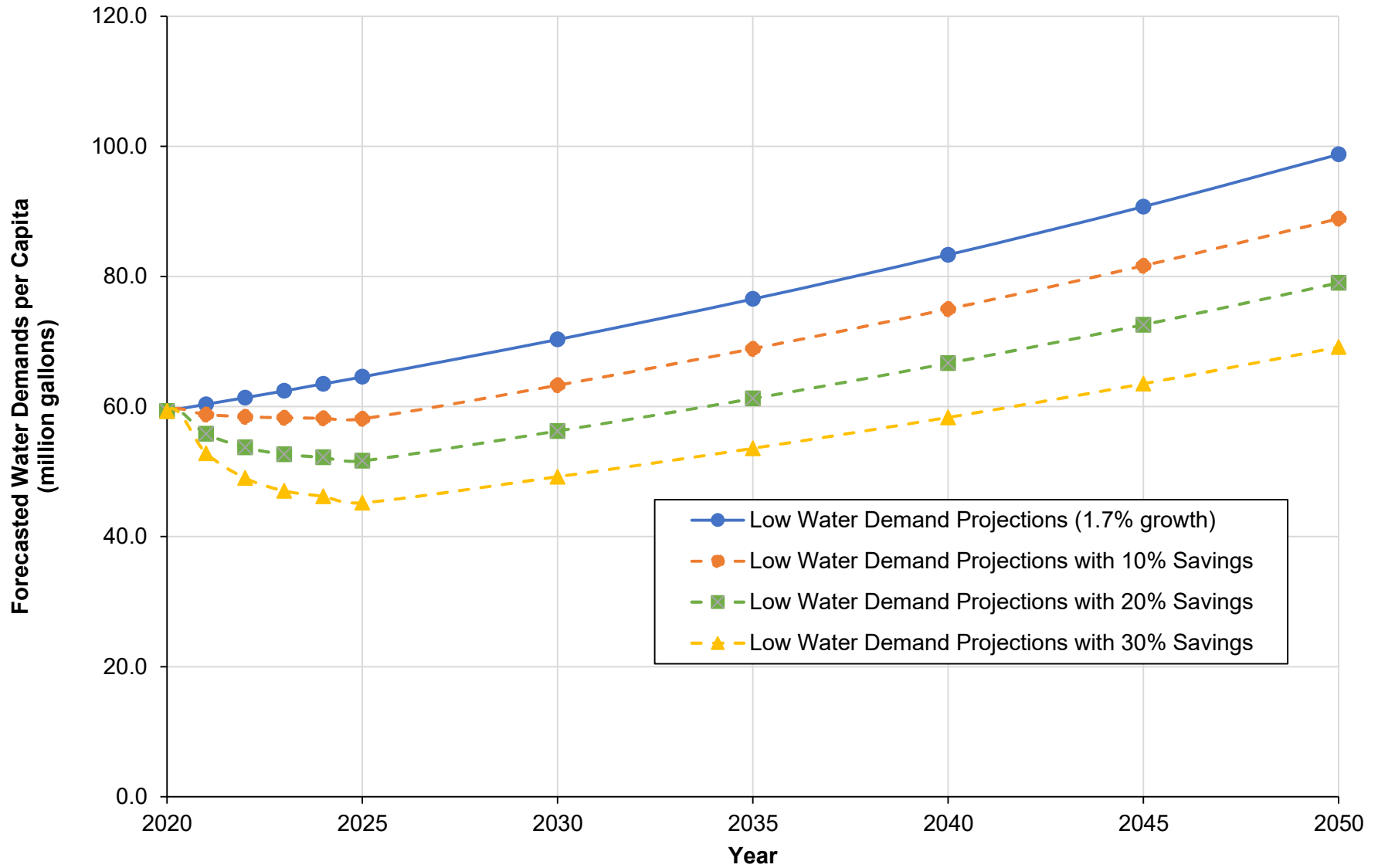


Figure 5. Medium Water Demand Projections with Projected Savings Applied

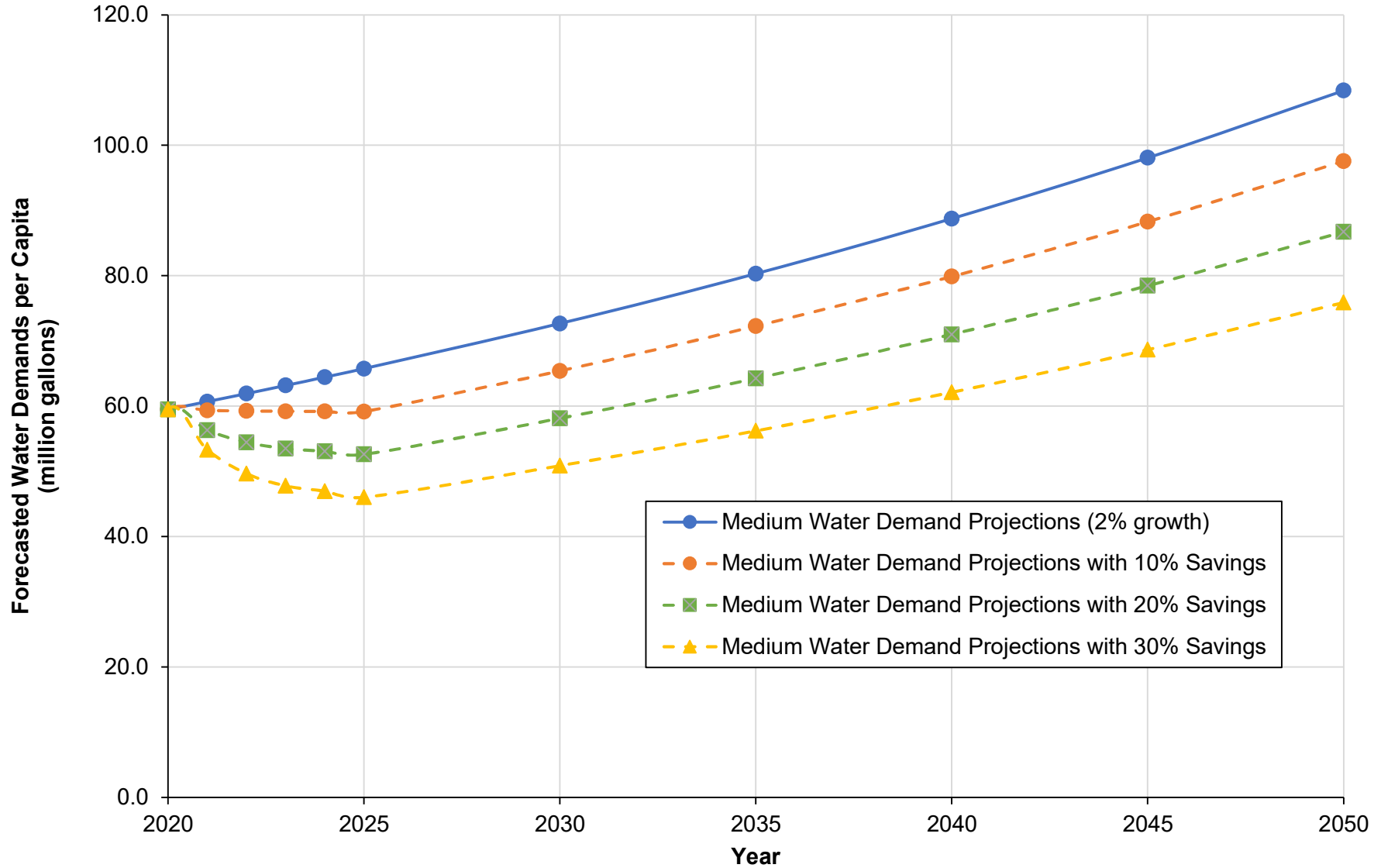


Figure 6. High Water Demand Projections with Projected Savings Applied

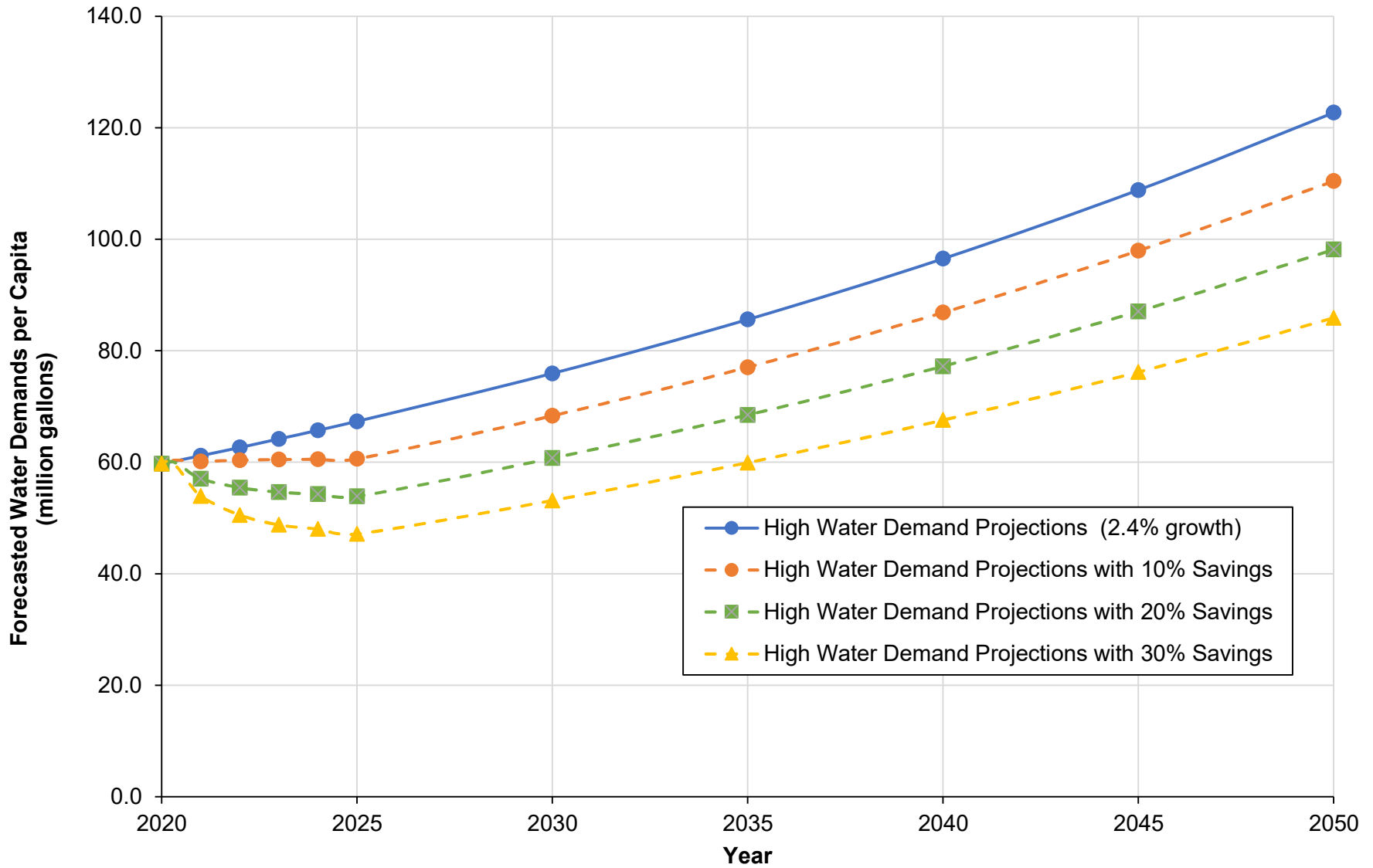
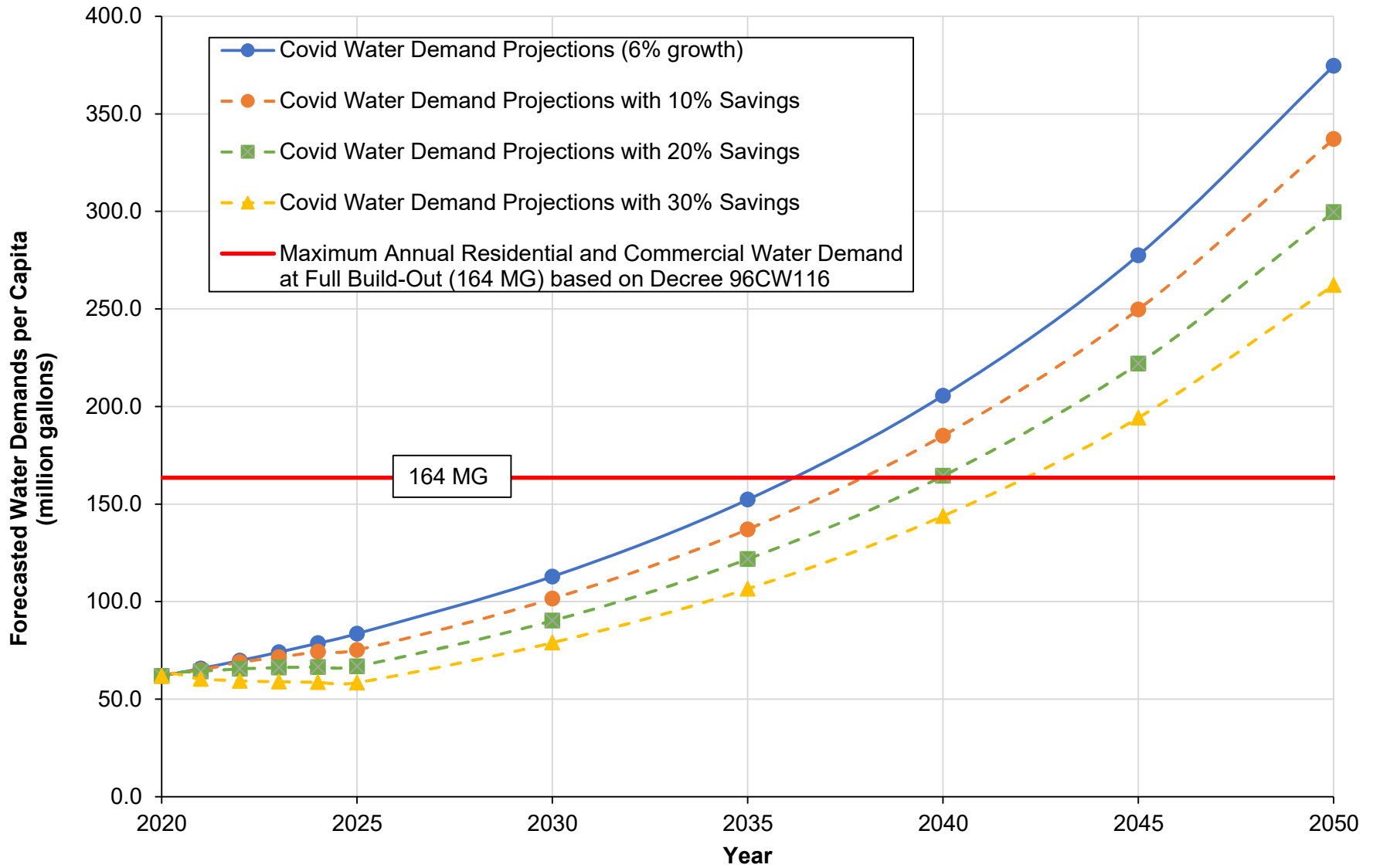


Figure 7. Covid Water Demand Projections with Projected Savings Applied

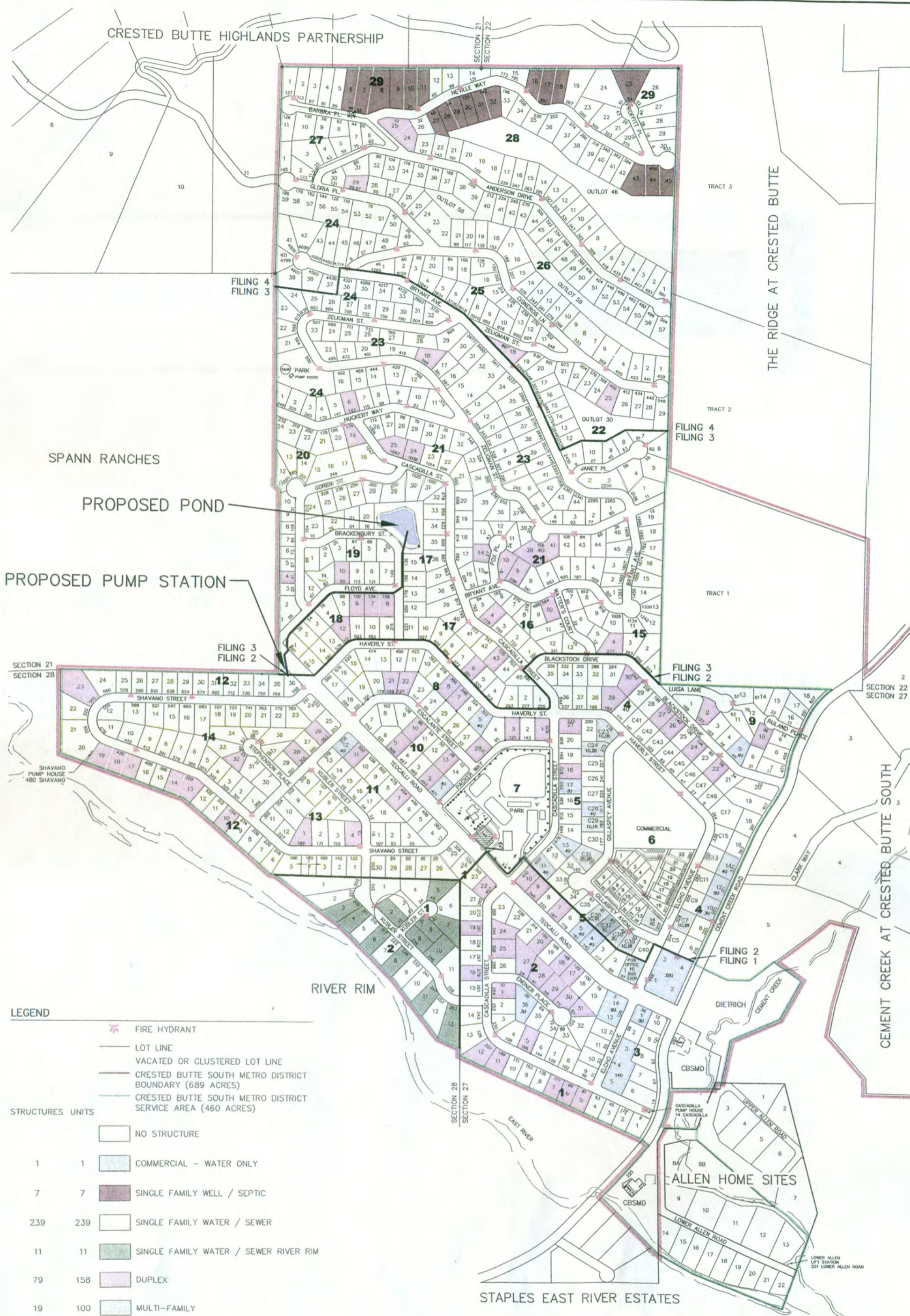


APPENDICES

Appendix A

Crested Butte South Metropolitan District Filings and Blocks Map

CRESTED BUTTE HIGHLANDS PARTNERSHIP



THE RIDGE AT CRESTED BUTTE

CEMENT CREEK AT CRESTED BUTTE SOUTH

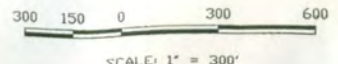
LEGEND

- FIRE HYDRANT
- LOT LINE
- VACATED OR CLUSTERED LOT LINE
- CRESTED BUTTE SOUTH METRO DISTRICT BOUNDARY (689 ACRES)
- CRESTED BUTTE SOUTH METRO DISTRICT SERVICE AREA (460 ACRES)

STRUCTURES UNITS

		NO STRUCTURE
1		COMMERCIAL - WATER ONLY
7		SINGLE FAMILY WELL / SEPTIC
239		SINGLE FAMILY WATER / SEWER
11		SINGLE FAMILY WATER / SEWER RIVER RIM
79		DUPLEX
19		MULTI-FAMILY
14		COMMERCIAL W/ RESIDENTIAL
1		FIRE HALL

372 542



COPYRIGHT 2009 NCW & ASSOCIATES, INC. DATE: 1/12/11
CRESTED BUTTE SOUTH
 PORTIONS OF SECTIONS 21, 22, 27 & 28
 TOWNSHIP 14 SOUTH, RANGE 85 WEST, 6TH P.M.
BUILD-OUT STATUS
 DECEMBER 31, 2010

Appendix B

Crested Butte South Metropolitan District 2019 Rate Structure

APPENDIX A (2019)

CRESTED BUTTE SOUTH METROPOLITAN DISTRICT

RATE SCHEDULE

Disclaimer: While many types construction classifications are outlined in this document, the District reserves the right to deviate from or account for tap fee types that are not specifically called out due to the nature of what may be constructed. The District will focus on the impacts on the water and sewer system and may relate tap fees based on other contents of this document in order to establish a fair tap fee when the need to deviate from the existing tap fee structure arises.

I. Issuance of Permit. If the application discloses that all work to be performed under the permit will be in full compliance with all statues, laws, resolutions and upon proof that the work to be performed has been approved by the Crested Butte South Property Owner's Association. The District shall issue the permit upon payment of all fees and charges required by this schedule.

II. Tap Privilege Fee.

A. A tap privilege fee must be paid prior to the issuance of the permit required above, prior to the commencement of the construction, prior to installation or expansion of use of a service line, and prior to connecting any service line to the District system.

B. The tap privilege fee for each EQR shall be \$18,000.00 for each District system connection.

C. Any Expansion or change in use of, or addition to, a building, structure, or piece of property already connected to a District system, which raises the EQR of that user, shall result in the obligation to pay an incremental system development fee, to be computed as follows:

Incremental system development fee = {(EQR) new – (EQR) old} times
\$18,000.00 for each District system connection.

III. System Connection Fee. A system connection fee must be paid prior to the issuance of the permit required above, prior to the commencement of construction or installation of a service line, and prior to connecting any service line to a District system. The system connection fee shall be \$100.00 for water and \$100.00 for sewer. A \$500 connection fee will be charged when T's are cut into a water or sewer main to supply larger structures and is to include fire flow cut-ins. The system connection fee shall only be charged when a service line is connected to a District system.

IV. Road Maintenance Fee. A road maintenance fee will be charged at a rate of \$10.00 per month for every “UNIT” that uses a Metro District road. A UNIT is defined as any structure that can be rented. For example: a single-family home with a garage apartment would be 2 units, a duplex would be 2 units and so on. The fee will be charged regardless. Even if the unit is not being rented. A fee of \$5.00 per month, billed quarterly, will be charged to vacant lot owners within the District that use District roads.

V. Service Rates. There is hereby levied and charged against all “owners”, as that term has been previously defined, a monthly service charge for the use of the District system. The monthly service charge for use of the District system – Water shall be \$34.50 times the respective EQR for each use. The monthly service charge for use of the District system – Sewer shall be \$39.60 times the respective EQR for each use. Monthly service charges shall commence six (6) months after the issuance of a tap privilege permit, or upon occupancy, whichever is first.

	<u>User Fees</u>		
	<u>Water</u>	<u>Sewer</u>	<u>Total</u>
Per EQR	\$34.50	\$39.60	\$74.10
Road (Flat Fee)			<u>\$10.00</u>

User fee is a flat rate, per month billed monthly, User fees commence 6 months from the date of the tap application, or upon occupancy whichever comes first. Road Fee is \$10.00 per month per unit. Apartments/Caretaker Units will be considered 1 Unit for billing the Road Fee.

Availability Fees (50% of the base user fee)

	<u>Water</u>	<u>Sewer</u>	<u>Total</u>
Per Lot	\$17.25	\$19.80	\$37.05
Road (Flat Fee)			<u>\$5.00</u>
Total Per Quarter			<u>\$126.15</u>

Availability fee is per month, per lot billed quarterly including the Road Fee of \$5.00 per month, per lot billed quarterly.

VI. Equivalent Residential Use Schedule. The following Equivalent Residential Use Units, or EQR’S, are hereby established for the various customer classifications within the District. EQR or Equivalent ratio means a use which is estimated to have an impact upon the water or sewer system equal to that of the average dwelling unit. Dwelling unit is one or more habitable rooms arranged, occupied, or intended or designed to be occupied with facilities for living, cooking, sleeping, eating, bathing, and storage. Residential units, including multifamily units, with a floor area greater than 2,000 square feet shall have an EQR calculated by the following formula:

$$\frac{\text{Square footage of unit}}{2,000} = \text{EQR}$$

Service rates for each unit will be calculated the same for determining monthly rates.

Customer Classification

A. Permanent Single-Family Residential Units:

1. Residential units with a floor area of 2,000 square feet or less is 1.00 EQR

B. Caretaker/Rental Units in Single Family Residential Units including Detached Garage Units: (See C-2-a for Detached Garage Units)

1. Residential units in single family residential unit which cannot be sold separately from the main single-family residential unit, with floor area of 1,000 sq. ft. or less is 0.50 E.Q.R. (See Appendix G Restrictive Covenant Prohibiting Separate Sale Of Second Residential Unit. This Covenant must be signed before or when tap fee is paid.)

C. Multi-Phase Residential and Commercial Projects:

1. Stamped/Approved plans for phases the owner has available, must be submitted with phase one of the project to document future tap fee requirements for the additional phases.
2. Detached garages which are planning for a Caretaker/Rental Unit in a future phase will be required to pay the tap fee during phase one of the project if the owner stubs water and sewer services out during phase one in preparation for the next phase.
 - a) Detached garages with water and sewer services will be charged 0.5 EQR, in advance, and will then be eligible for a Caretaker/Rental Unit if wanted in the future.
3. Phases with no stub-outs for future phases do not require a tap fee during phase one of the project and will be required to pay appropriate tap fees prior to commencement of the next phase.

D. Permanent multi-family residential units, including duplexes, condominiums, apartments:

1. First unit with a floor area of 2,000 square feet or less
.....1.00 EQR
2. Additional units with a floor area of 2,000 square feet or less
.....1.00 EQR
3. All square footage is calculated from the outside of exterior walls with no deletion for interior partitions or stairways.

4. An additional kitchen is an additional EQR as determined by this rate schedule and is defined as including, but not limited to, hot and cold water, stove and or microwave and or hot plate, sink and refrigerator. Plumbing, electrical and gas stub-outs arranged in an area which would accommodate the installation of a kitchen will be considered a kitchen.
5. All square footage with a ceiling height of 4' or more will be counted. Floor area less than 4' in height must be located under a pitched roof. Garages will not count in the square footage calculation.
6. All livable square footage will be counted in the floor area calculation, finished or unfinished, including storage.

E. Swimming pools, hot tubs and other bathing fixtures larger than a bathtub in conjunction with other use classification:

1. Bathing fixtures with a water capacity of 151 to 750 gallons.
 (Single Family).....\$550.00
 (Multi Family).....\$1,100.00
2. Bathing fixtures with a water capacity of 751 to 5,000 gallons.
\$2,200.00
3. Fixtures with a water capacity of 5,001 gallons or more shall have
 A Tap Fee of \$2,200.00 for every 5,000 gallons or part thereof.

F. Temporary and /or transient residential units for rent in hotels, motels, lodges and bed & breakfasts:

1. Basic rate, including manager's quarters. 1.00 EQR
2. Each additional sleeping unit without plumbing 0.18 EQR
3. Each additional sleeping unit with plumbing but no cooking facilities.....0.30 EQR
4. Each additional sleeping unit with plumbing and cooking facilities.....0.50 EQR
5. Accessory area per 1,000 sq. ft.....0.25 EQR

G. Bars, restaurants, and establishments serving food and or beverages:

1. Establishments with 25 or less seating capacity1.36 EQR
2. Each additional 25 seats or part thereof0.55 EQR
3. Outside seating will be calculated at 50% of inside seating

H. Automobile service stations or similar business:

1. Without a wash rack.....1.36 EQR
2. Additional for each wash rack.....0.80 EQR
3. Additional for each gas pump nozzle.....0.20 EQR

I. Commercial or public buildings used as stores, offices, warehouses, storage, or other similar uses, including small business:

1. Each building or customer with 1,000 square feet or less.....0.60 EQR
2. Each additional 1,000 square feet or part thereof0.60 EQR
3. Restrooms per toilet or urinal.....0.10 EQR (Deduct restroom square footage)
4. Public restrooms per toilet or urinal.....0.20 EQR (Deduct restroom square footage)

J. Churches and non-profit organization halls with no residence or regular eating facilities 1.00 EQR

K. Public or private schools:

1. Base rate for first 30 students or part thereof, square footage not to exceed 2,000 sq. ft.....1.00 EQR
2. Each additional 30 students or part thereof, Including 2,000 sq. ft. of space.....1.00 EQR

Schools exceeding square footage will pay the same per sq. ft. as residential units.

L. Coin operated laundromats, per machine in service by load capacity:

1. Basic fee including first standard size machine size
Machine.....1.00 EQR
2. Each additional machine less than 12 lbs. (standard) ...0.50 EQR
3. Each additional machine of 12.1 to 21.0 lbs. capacity...0.70 EQR
4. Each additional machine of 21.1 to 31.0 lb. capacity...1.00 EQR
5. Each additional machine of 31.0 to 41.0 lb. capacity...1.30 EQR
6. Each additional machine of 41.1 to 51.0 lb. capacity...1.60 EQR
7. Each additional machine of 51.1 to 61.0 lb. capacity...2.00 EQR

M. Metered service, where metered billing is required for any user as determined by the District, the EQR basis for charges shall be as follows:

1. Minimum rate for first 8,000 gallons monthly, or 24,000
Quarterly1.00 EQR \$34.50
Per. Month
2. Each additional 1,000 gallons, or fraction of per
month.....0.20 EQR \$6.36
Per. Month

N. Rates for uses not specifically described in the above schedule shall be individually negotiated.

O. Any building or structure containing multiple uses shall have cumulative EQR based on the sum of the separate uses.

P. More than one set of service lines tied onto district mains serving one lot shall be considered a separate tap fee for the building served for calculations of the E.Q. R.

Q. The Board of Directors of the Crested Butte South Metropolitan District reserves the right to interpret this rate schedule when necessary. The Board interpretation is final.

Other Fees

1. **Tax Roll:** \$200 plus an additional 10% will be added to the overall account balance to cover a 10% processing fee that the Gunnison County Assessor's Office charges the Crested Butte South Metropolitan District for tax roll.
2. **Back Flow Test:** A \$100 charged will be billed to customers who choose to have the Crested Butte South Metropolitan District test their residential or commercial back-flow preventer.
3. **Certificate of Assessment:** \$50 billed to the seller during the sale of a property.

Appendix C

Crested Butte South Metropolitan District Proposed Water Efficiency Activities Screening and Selection

Appendix C
Water Efficiency Plan
Step 1: Identification and Screening of Foundational Activities

Water Efficiency Activities for Screening	State Statute Requirement	Identification		Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing/Potential Activity	Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
Metering										
Phased Metering Throughout System										
Automatic Meter Reading Installation and Operators										
Submetering for Large Users (Indoor and Outdoor)										
Meter Replacement Program		P	R/C						X	
Meter Upgrades										
Identify Unmetered/Unbilled Treated Water Uses										
Water Use Efficiency Oriented Rates and Tap Fees										
Volumetric Billing		P	R/C						X	
Water Rate Adjustments		P	R/C						X	
Frequency of Billing										
Inclining/Tiered Rates		P	R/C						X	
Water Budgets		P	R/C						X	
Tap Fees with Water Use Efficiency Incentives		P	R/C						X	
Rate Study		P	R/C						X	
System Water Loss Management and Control										
System Water Audit										Has not been done on a formal level ever.
Control of Apparent Losses (with Measuring on system infrastructure)										Metro meters well production and water treated and these typically are very close to agreeing in winter months; summer months are assumed to be irrigation.
Leak Detection and Repair										Metro's distribution is plastic pipe and leak detectors are expensive and not really effective for plastic. Currently, Metro goes hunting if a leak is suspected, but there is no program in place.
Water Line Replacement Program										Clarify what this is with WWE
Water Service Meter Program										Clarify this with WWE; is this referring to Customer Meters or Plant Meters? Red Mtn Park will have meters read starting May 2021; all built units have meters but the age and type of the meter is in question, and they are not currently being read.
Planning										
Integrated Water Resources Plans										Metro does not have any of the following plans completed to date, but perhaps these could be the focus of the next Water Project with CWCB:
Master Plans/Water Supply Plans										
Capital Improvement Plans										
Feasibility Studies										
Water Adequacy Report for Commercial Development		P	C						X	
Staff										
Water Conservation Coordinator		E								Ronnie Benson serves this role.

**Appendix C
Water Efficiency Plan
Step 2: Identification and Screening of Targeted Technical Assistance Incentives**

Water Efficiency Activities for Screening	State Statute Requirement	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing or Potential Activity	SWSI Framework Levels			Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
			Level 1 Municipal Uses	Level 2 Customers with the Largest Water Use	Level 3 Customer Type(s) in Service Area								
Installation of Water Efficient Fixtures and Appliances													
Indoor Audits													With the exception of toilet rebates/retrofits and evaporative cooling, most of the actions described are not of particular interest to Crested Butte South Metropolitan District.
Toilet Retrofits													
Urinal Retrofits													
Showerhead Retrofits													
Faucet Retrofits (e.g. aerator installation)													
Water Efficient Washing Machines													
Water Efficient Dishwashers													
Efficient Swamp Cooler and Air Conditioning Use													
Low Water Use Landscapes													
Drought Resistant Vegetation													There are no programs through Crested Butte South Metropolitan District or the Crested Butte South Property Owners Association (POA) that incentivize buildings to achieve savings "beyond code".
Removal of Phreatophytes													
Irrigation Efficiency Evaluations/Outdoor Water Audits													
Outdoor Irrigation Controllers													
Irrigation Scheduling/Timing													
Rain Sensors													
Residential Outdoor Meter Installations													
Xeriscaping													
Other Low Water Use Landscapes													
Irrigation Equipment Retrofits													
Water Efficient Industrial and Commercial Water-Using Processes													
Specialized Nonresidential Surveys, Audits, and Equipment Efficiency Improvements													The commercial area in Crested Butte South Metropolitan District is at a very young stage. Industrial will not be a permitted use, and currently code is the standard-there is no incentive for going beyond.
Commercial Indoor Fixture and Appliance Rebates/Retrofits													
Cooling Equipment Efficiency													
Restaurant Equipment													
Incentives													
Toilet Rebates													With the exception of toilet rebates/retrofits and evaporative cooling, most of the actions described are not of particular interest to Crested Butte South Metropolitan District.
Urinal Rebates													
Showerhead Rebates													
Water Efficient Faucet or Aerator Rebates													
Water Efficient Washing Machine Rebates													
Water Efficient Dishwasher Rebates													
Efficient Irrigation Equipment Rebates													
Landscape Water Budgets Information and Customer Feedback													
Turf Replacement Programs/Xeriscaping Incentives													
Give-Always													

**Appendix C
Water Efficiency Plan
Step 3: Identification and Screening of Ordinances and Regulations**

Water Efficiency Activities for Screening	State Statute Requirement	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
		Existing or Potential Activity	SWSI Framework Levels			Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
			Level 1 Customer Type(s) within the Existing Service Area	Level 2 New Development	Level 3 Point of Sales on Existing Building Stock								
General Water Use Regulations													
Waste Water Ordinance		E											Crested Butte South Metropolitan District. internal docs, Appendix E is where irrigation restrictions are referenced.
Time of Day Watering Restriction		P										X	
Day of Week Watering Restriction		P										X	
Water Overspray Limitations		P										X	
Landscape Design/Installation Rules and Regulations													
Rules and Regulations for Landscape Design/Installation													Crested Butte South Metropolitan District is open to considering the savings that could be achieved through some of these measures, and it would require a partnership with CBS POA.
Landscape Training and Certification													
Soil Amendment Requirements													
Turf Restrictions													
Irrigation Equipment Requirements													
Outdoor Water Audits/Irrigation Efficiency Regulations													
Outdoor Green Building Construction													
Indoor and Commercial Regulations													
High Efficiency Fixture and Appliance Replacement													Without meters and a definitive way to understand cost-benefit
Commercial Cooling and Process Water Requirements													
Green Building Construction													
Indoor Plumbing Requirements													
City Facility Requirements													
Required Indoor Residential Audits													
Required Indoor Commercial Audits													
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)													

**Appendix C
Water Efficiency Plan
Step 4: Identification and Screening of Education Activities**

Water Efficiency Activities for Screening	Identification					Qualitative Screening					Carry to Evaluation	Reason for Elimination
	Existing/Potential Activity	SWSI Framework Levels			Targeted Customer Category	Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Public Acceptance or Public Education	Additional Pro/Cons (i.e. financial feasible, measurable, appropriate for City's current system)		
		Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-Way Communication								
Customer Education												
Bill Stuffers	E											Crested Butte South Metropolitan District has a Facebook page with few followers, quarterly newsletters, website with pow cam, and seasonal banners with irrigation hours posted at both entrances to Crested Butte South Metropolitan District.
Newsletter	E											
Newspaper Articles												
Mass Mailings												
Web Pages	E											
Water Fairs												
K-12 Teacher and Classroom Education Programs												
Message Development/Campaign												
Interactive Websites	E											
Social Networking	E											
Customer Surveys												
Focus Groups												
Citizen Advisory Boards												
Technical Assistance												
Customer Water Use and Landscape Design and Maintenance Workshops	P										X	
Xeriscaping Demonstration Garden	P										X	
Water Conservation Expert Available												

**Appendix C
Water Efficiency Plan
Step 5: Evaluation and Selection of Proposed Efficiency Activities**

Water Efficiency Activities for Evaluation	Information on the Activates	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening				Evaluation								Final Selection	
				Qualitative Goals				Projected Water Savings		Projected Implementation Costs	Quantitative Goals				Notes on Additional Pros/Cons to Consider	Selected for Implementation	If Eliminated, Reason Why Eliminated
				Provides or Improves Water Use Data Collection and Monitoring	Provides Operational Cost Information	Helps to Decrease System Losses	Promotes Public Acceptance or Public Education	Total Water Savings (gallons)	Average Annual Water Savings (gallons)		Improved ability to track water use through main system infrastructure	Provides data on quantity of water processed by system	Reduction in system losses as meter data becomes available	Public approval of funding allocations to activity			
Metering																	
Meter Replacement Program	Helps prepare a plan on how to replace water meters, what type of water meters to use, the schedule of meter replacement, how the water meters data will be collected and managed, and assess methods of funding water meter replacement program	P	R/C	Y	Y	Y	Y	NA	NA	\$ 25,000	Y	Y	Y	Y		X	
Water Use Efficiency Oriented Rates and Tap Fees																	
Volumetric Billing	Volumetric charges are water use costs that vary due to water use.	P	R/C	Y	Y	Y	Y	22,057,660	3,151,094	\$ 24,500	Y	Y	Y	Y			No use of readable metes.
Water Rate Adjustments	The water rate adjustments allow the community to adjust rates based on the communities water use in different sectors.	P	R/C	Y	Y	Y	Y	22,057,660	3,151,094	\$ 24,500	Y	Y	Y	Y			
Inclining/Tiered Rates	The inclined of rates can help decrease the amount of water used in the community that will apply in the community.	P	R/C	Y	Y	Y	Y	22,057,660	3,151,094	\$ 24,500	Y	Y	Y	Y			
Water Budgets	The water budgets set the target, water efficiency evaluations help costumers hit the target by providing the tools and recommendations for maintaining a healthy landscape using the proper amount of water. Once customers have been targeted, efforts should be made to reach out and schedule an irrigation efficiency evaluation is usually voluntary, the offer of substantial potential water savings over time is often sufficient to encourage participation.	P	R/C	Y	Y	Y	Y	NA	NA	\$ 44,100	Y	Y	Y	Y	Water budgets can be enhance drought responses and help identify leakage and supply issues.		
Tap Fees with Water Use Efficiency Incentives	Tap fees can be developed based on anticipated future demand. By tying tap fees to more efficient fixtures, developers are encouraged to implement water conserving fixtures and landscapes from the very beginning. Linking tap fees to water budgets will insure that the low demands projected when tap fees are paid will actually be observed over time.	P	R/C	Y	Y	Y	Y	22,057,660	3,151,094	\$ 44,100	Y	Y	Y	Y	No current Program, but Metro is open to considering.		
Rate Study	A rate study can help determine whether existing utility rates are sufficiency to meet all of the utility's needs or whether the rates need to be increased.	P	R/C	Y	Y	Y	Y	NA	NA	\$ 60,000	Y	Y	Y	Y		X	
Planning																	
Water Adequacy Report for Commercial Development	This will be a report that will help determine water use of proposed commercial developments that want to e built in CBS. It will help determine if CBS can allow the commercial development the necessary water use while still having enough water to give throughout the community.	P	C	Y	Y	Y	Y	NA	NA	\$ 8,000	Y	Y	Y	Y		X	
General Water Use Regulations																	
Time of Day Watering Restriction	Seasonal and time of day variations in water use may be more pronounced for non-residential customers.	P	C	Y	Y	Y	Y	840,000	120,000	\$ 94,500	Y	Y	Y	Y			
Day of Week Watering Restriction	Day of week variations in water use may be more pronounces for residential costumers.	P	R/C	Y	Y	Y	Y	840,000	120,000	\$ 94,500	Y	Y	Y	Y	Regardless, Metro is open to reconsidering Time Of Day, Day of Week, and Overspray Restrictions.		
Water Overspray Limitations	Controlling water overspray will not allow spraying over impervious surfaces such as walls, fences, sidewalks, and streets.	P	R/C	Y	Y	Y	Y	840,000	120,000	\$ 94,500	Y	Y	Y	Y			
Technical Assistance																	
Customer Water Use and Landscape Design and Maintenance Workshops	Customer communications is a prominent piece of the implementation process. This will allow communication with community members and will act as a learning practice that they can individually indulge.	P	R	Y	Y	Y	Y	1,680,000	240,000	\$ 94,500	N	N	N	Y			
Xeriscaping Demonstration Garden	Xeriscape plants also provide drought flexibility. In times of drought and mandatory water restrictions, low-water using plants may survive better and therefore reduce replacement costs.	P	R	Y	Y	Y	Y	1680000	240,000	\$ 94,500	N	N	N	Y			

**Appendix C
Water Efficiency Plan
Step 6: Cost and Water Savings Calculations for Proposed Efficiency Activities**

Water Efficiency Activities for Evaluation	Planning Period (No. of Years)	Total Cost					Total Water Savings*			Cost per Thousand Gallons Saved (\$)	Notes on Measure	Sources
		Quantity (#)	One Time Labor/ Material (\$)	Average Annual Staff Labor (\$ = # hrs. x \$35/hr.)	Annual Materials (\$)	Total Cost in Planning Period (\$)	Gallons saved per unit	Annual Gallons Saved	Total Gallons Saved			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Metering												
Meter Replacement Program	7	1	\$ 25,000	\$ -	\$ -	\$ 25,000.00	NA	NA	NA	\$ -	Assume an annual initial conceptual budget of \$25,000. The total water savings is based on the Crested Butte South Metropolitan District's rate structure, type of meters used, and how many will be replaced.	1
Water Use Efficiency Oriented Rates and Tap Fees												
Volumetric Billing	7	7	\$ -	\$ 1,750.00	\$ -	\$ 24,500.00		3,151,094	22,057,660	\$ 0.001	Assume 50 hours each year of staff time to coordinate work. Assume the water volumetric billing can save 0.5% of overall annual water use (data from 2019).	2
Water Rate Adjustments	7	7	\$ -	\$ 1,750.00	\$ -	\$ 24,500.00		3,151,094	22,057,660	\$ 0.001	Assume 50 hours each year of staff time to coordinate work. Assume the water volumetric billing can save 0.5% of overall annual water use (data from 2019).	2
Inclining/Tiered Rates	7	7	\$ -	\$ 1,750.00	\$ -	\$ 24,500.00		3,151,094	22,057,660	\$ 0.001	Assume 50 hours each year of staff time to coordinate work. Assume the water volumetric billing can save 0.5% of overall annual water use (data from 2019).	2
Water Budgets	7	7	\$ -	\$ 3,150.00	\$ -	\$ 44,100.00	NA	NA	NA	\$ -	Assume 90 hours at end of water year to account of the rates of water movement and the change in water storage in all or parts of the atmosphere, land surface, and subsurface.	1
Tap Fees with Water Use Efficiency Incentives	7	7	\$ -	\$ 3,150.00	\$ -	\$ 44,100.00		3,151,094	22,057,660	\$ 0.002	Assume the tap fees will save 0.5% of water. Assume 90 hours each year of staff time to coordinate work.	3
Rate Study	7	1	\$ 60,000.00	\$ -	\$ -	\$ 60,000.00	NA	NA	NA	\$ -	Assume Rate Study Cost with Capitol Improvement Plan.	1
Planning												
Water Adequacy Report for Commercial Development	7	1	\$ 8,000.00	\$ -	\$ -	\$ 8,000.00	NA	NA	NA	\$ -	Assume 75 hours during planning period of staff time to coordinate and collaborate work with the community. Assume a budget of \$7,500. Assume \$500 of annual materials cost like ink, paper, etc.	3
General Water Use Regulations												
Time of Day Watering Restriction	7	7	\$ -	\$ 1,750.00	\$ 10,000.00	\$ 94,500.00		120,000	840,000	\$ 0.113	Assume 50 hours each year of staff time to inspect and coordinate work. Assuming an annual initial conceptual budget of \$10,000. Assume the water restrictions will save 0.5% of irrigation water annual (data from 2019).	1
Day of Week Watering Restriction	7	7	\$ -	\$ 1,750.00	\$ 10,000.00	\$ 94,500.00		120,000	840,000	\$ 0.113	Assume 50 hours each year of staff time to inspect and coordinate work. Assuming an annual initial conceptual budget of \$10,000. Assume the water restrictions will save 0.5% of irrigation water annual (data from 2019).	1
Water Overspray Limitations	7	7	\$ -	\$ 1,750.00	\$ 10,000.00	\$ 94,500.00		120,000	840,000	\$ 0.113	Assume 50 hours each year of staff time to inspect and coordinate work. Assuming an annual initial conceptual budget of \$10,000. Assume the water restrictions will save 0.5% of irrigation water annual (data from 2019).	1
Technical Assistance												
Customer Water Use and Landscape Design and Maintenance Workshops	7	7	\$ -	\$ 1,750.00	\$ 10,000.00	\$ 94,500.00		240,000	1,680,000	\$ 0.056	Assume 50 hours each year of staff time to coordinate and collaborate work with the community. Assume an annual budget of \$10,000. Assume the workshops will save 1.0% of irrigation water annual (data from 2019).	1,2
Xeriscaping Demonstration Garden	7	7	\$ -	\$ 1,750.00	\$ 10,000.00	\$ 94,500.00		240,000	1,680,000	\$ 0.056	Assume an annual initial conceptual budget for interpretive materials like brochures and plant lists of \$10,000. Assume 50 hours each year of staff time to inspect and coordinate work. Assume the workshops will save 1% of irrigation water annual (data from 2019).	1,2
						Total Cost: \$ 727,200			Total Water Saved: 94,110,640 gallons			
						Annual Cost: \$ 103,886			Annual Savings: 13,444,377 gallons			

Notes:

- (1) Only measures selected for further evaluation are included here (see appendices A-D).
- (2) Planning period for implementation of measure: WEP Renewal - 7 years.
- (3) Total number of units to be implemented over the planning period for each measure.
- (4) Capital costs to implement the program such as purchase of equipment. Labor required to manage the program, install equipment or otherwise carry out the measure is also included. Costs subject to change upon further study and implementation
- (5) Annual City staff labor costs for maintaining the equipment or program. Costs subject to change upon further study and implementation
- (6) Annual material costs for maintaining the equipment or program. If installation of equipment is annually completed by contractor, the contractor costs are included in this column. Costs subject to change upon further study and implementation
- (7) Equals (Column 2 x (Column 5 + Column 6) + (Column 3 x (Column 4 + Column 5))).
- (8) May be based on savings per unit x no. of units or may be a percentage of water savings over the entire system (see notes in Column 12).
- (9) Equals water saved on an annual basis by the measure.
- (10) Equals Column 8 X Column 9 x Column 2.
- (11) Equals Column 7 / Column 10. Costs subject to change upon further study and implementation
- (12) Notes on implementation of the measures. Notes on the basis of assumptions for the calculations used in this sheet.
- (13) Sources to accommodate the assumptions for cost and water savings.
 - 1) The Colorado Waterwise Guidebook of Best Practices for Municipal Water Conservation in Colorado (Colorado Water Conservation Board)
 - 2) United States Environmental Protection Agency (EPA) website
 - 3) Colorado Waterwise website

Appendix C
Water Efficiency Plan
Step 7: Proposed Implementation and Monitoring Plan

Selected Water Efficiency Activities	Period of Implementation	Implementation Actions	Milestone Deadlines	Total Budget	Entity/Staff Responsible for Implementation	Entity/Staff Responsible for Data Collection	Schedule of Data Collection	Coordination and Public Involvement	Additional Comments
Meter Replacement Program	1 Year	Replace, adjust, and implement findings to adjust water efficiency course of plan, if needed.	1 year	\$ 25,000.00	Ronnie Benson / District	Successful consultant	Annually	Coordinate with Red Mountain Park and District	The total budget only includes the meter replacement. The total cost does not include the labor, software installation cost, etc.
Capital Improvement Plan and Rate Study	1 Year	Hire firm to study Districts budgeting, purchases, goals, and resources. Propose a plan/design more efficient systems.	1 year	\$ 60,000.00	Ronnie Benson / District	Ronnie Benson / District	-	Coordinate with District	Includes the Capitol Improvement Plan cost \$40,000 and Rate Study \$20,000.
Water Adequacy Report for Commercial Development	1 Year	Utilize local resources and develop a collaborative Water Adequacy Report Outline with guidelines and required information needed.	1 year	\$ 8,000.00	Ronnie Benson / District	Ronnie Benson / District	-	Coordinate with District and Proposed Commercial Developer	The total budget includes the District's review on submitted reports. The District will review calculations, requirements, etc. for commercial development acceptance.

Total Cost for Implementation of All Proposed Measures: \$93,000

Deadlines are based on time from the approval of the Water conservation Plan. For example '1 year' is 1 year from the time the plan is approved.
Data collection is only for system-wide meters and the leak detection study. Future updates to the plan may consider more extensive monitoring once system baseline data is available.
For cost estimate basis, see Appendix B6: Cost and Water Savings Calculations for Efficiency Measures.

Appendix D

Crested Butte South Metropolitan District Water and Sewer Adequacy Reports Submittal Information for New Developments and Future Annexations



Wright Water Engineers, Inc.

1666 N. Main Avenue, Suite C
Durango, Colorado 81301
(970) 259-7411 TEL
(970) 259-8758 FAX

www.wrightwater.com
e-mail: pfooster@wrightwater.com

April 28, 2021

Via email: ronnie@cbsouthmetro.net

Ronnie Benson
Crested Butte South Metro District
PO Box 1129
280 Cement Creek Road
Crested Butte, CO 81224

Re: Water and Sewer Adequacy Report Submittal Information for New Developments and Future Annexations

Dear Ronnie:

Wright Water Engineers (WWE) prepared the Water Efficiency Plan (WEP) for Crested Butte South Metropolitan District (District), A Water and Sewer Adequacy Report for new developments and future annexations was selected as a water efficiency measure. Thus, each new development would prepare a Water and Sewer Adequacy Report for review and approval before a water and sewer tap is provided to the development. A new brewery is also requesting water and sewer service from the District. The purpose of this letter is to outline informational and submittal needs that the developer would include in the preparation of a Water and Sewer Adequacy Report. Given the potential for a brewery in the near future, brewery specific information is provided at the end of the outline.

1) Background Information

a. Select Development Type:

- i. Commercial Development,
- ii. Duplex / Multi-Family Residential Development
- iii. Future Developments outside of the District's service area (annexation)
 - 1. Residential lots,
 - 2. Commercial lots, or
 - 3. Mixed lots (residential and commercial)

(For Residential Developments and Future Residential Annexations)

- b. Project description of the residential property includes a description of the proposed development's water and sewer discharge aspects.

- c. Information would include development acreage, projected occupancy, the projected number of parcels and units, and the projected number of taps.
- d. Provide infrastructure information, including water source, water treatment, water distribution, water storage, etc.
- e. Provide proposed water efficiency measures and calculate associated water savings.
- f. Provide the amount of water the development will need or use in the water adequacy report.

(For New Commercial Developments and Future Commercial Annexations)

- g. Project description of the commercial property includes a description of the proposed business's water and sewer discharge aspects.
- h. Information would include the number of employees, number of square feet of commercial space, projected occupancy, hours of operation. For restaurants, the number of seats and meals served.
- i. Provide proposed water efficiency measures and calculate associated water savings.

2) Water Demand (For all development types)

- a. Project peak instantaneous or peak hour water demand
- b. Minimum and maximum water pressure needed at the service tap
- c. Fire demands
 - i. Peak instantaneous flow rate
 - ii. Duration on fire demand and associated volume of water
- d. Maximum day water demand
- e. Annual water demand
- f. Monthly outdoor demand, including irrigation and other applications.
- g. Existing capacity of the water system and amount of capacity needed for the proposed commercial development.

3) Wastewater (For all development types)

- a. Documentation of proposed waste stream,
- b. Pre-treatment methods, including grease traps.
- c. Peak instantaneous discharge
- d. Peak day discharge
- e. Effluent characteristics
 - i. Presence of chemicals, pollutants, or other notable constituents
 - ii. Chemical and/or biological loading, including fats, oils, and grease (FOG)

- iii. Variability in septage amounts, waste stream strength, or discharge conditions
- iv. Seasonality in anticipated monthly discharge volumes and rates

4) Brewery/Distillery operations (if applicable)


- i. Anticipated monthly Barrels (BBLs) produced (as may be seasonal).
- ii. Process Flow Diagrams of the Brewing/Distilling process proposed.
- iii. Brewery identified Best Management Practices on water/waste management (including spent grain), Clean in Place (CIP), and general operations.
- iv. Permits, pretreatment requirements, or surcharges proposed by the District.
- v. Estimates on the waste streams or biochemical oxygen demand (BOD) loading from the brewery operations.
- vi. Direct information from any brewing or distilling operations is important as the BOD loads can vary widely (between 1,000 and 10,000 mg/l) as well as cleaning operations placing high temperature and acidic or caustic materials (pH variabilities between 3 and 12) that can impact the longevity of the collection system.
- vii. Review of existing District's wastewater treatment facility's ability to treat the proposed discharge stream.
- viii. Provide proposed water efficiency measures and calculate associated water savings.


This information will prove helpful in the District's assessment of the proposed development's water and wastewater service needs. However, these criteria may not be comprehensive and additional information could be needed from the proposed commercial and future annexed developments.


Please let us know if you have any questions or comments.

Sincerely,

WRIGHT WATER ENGINEERS, INC.

By 
Peter Foster, P.E.
Vice President

By 
Michael Glade
Senior Water Resources Engineer

By 
Tyson Williams
Water Resources Engineer

Appendix E

Proof of Publication

Appendix E
Proof of Publication in Crested Butte News
February 26, 2021 Issue –
Public Notice of Draft Water Efficiency Plan
for Public Review and Public Comment Period

NOTICE SEEKING
PUBLIC COMMENT

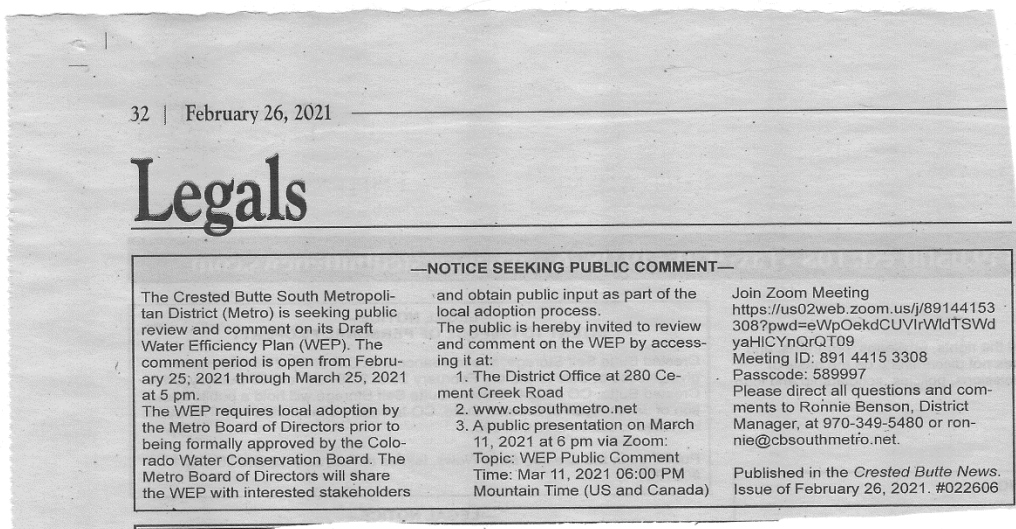
The Crested Butte South Metropolitan District (Metro) is seeking public review and comment on its Draft Water Efficiency Plan (WEP). The comment period is open from February 25, 2021, through March 25, 2021, at 5 pm.

The WEP requires local adoption by the Metro Board of Directors prior to being formally approved by the Colorado Water Conservation Board. The Metro Board of Directors will share the WEP with interested stakeholders and obtain public input as part of the local adoption process.

The public is hereby invited to review and comment on the WEP by accessing it at:

1. The District Office at 280 Cement Creek Road
2. www.cbsouthmetro.net
3. A public presentation on March 11, 2021, at 6 pm via Zoom:

Please direct all questions and comments to Ronnie Benson, District Manager, at 970-349-5480 or ronnie@cbsouthmetro.net.



Appendix F
Public Comments Received and
Resolution

APPENDIX F: Public Comments Received and Resolution

Black text are public comments on the Draft WEP. **Blue text** are WWE's resolution addressing the public comments.

The following comments were received during the Public Comment and Review Period and have been :

Bob Goettge's Comments:

Regarding the Executive Summary on Pg 4:

1. The WEP should be written in a way that a member of the community can read it, understand it and support the District's actions. Explain what water efficiency is and why it is important to CB South.
2. What does 5% water consumption reduction mean? Is it gross use for a sector after community growth?

See report, page 4.

3. Missing items: drought management and planning and water reliability, effects of climate change on supply and demand.

See report, page 24. New section: Future Work. See report, pages 9-11.

Regarding Section 1.1 - Location on Pg 5:

1. Need to derive the population figure of 1,637 used throughout and show it in an appendix.

See report, page 15.

2. Bob prefers expressing growth in unit terms, like EQR, housing units, or bedrooms rather than population or number of people added each year.

We used population statistics because we have demographics that tell us what the future population is.

Regarding Section 3.0 - Water Use and Demands on Pgs 11 and 12:

1. I'd like to see a comparison with other communities, like we use EUI for energy efficiency and CO2 for carbon to equate use among different communities. The comparison to Denver helps set a context for the lay reader.
2. How is the 2.53 people per household derived? Is it determining population by # of households?

1). See report, page 24. This report focuses mainly on water efficiency; therefore, this was recommended for future work. 2). See report, page 14 for reference.

Regarding Section 3.2.2 - Water Demand under Various Water Savings Scenarios on Pg 13:

1. Does acquiring additional water supply mean rights to additional water?

See report, page 16.

Regarding Section 4.3 - Water Adequacy Report for Commercial Development on Pgs 16-17:

1. How would a developer know if the District has sufficient infrastructure? From what we are asking the developer to provide in the adequacy report, it seems the onus is on the developer to demonstrate this?

See Report, Appendix D.

Regarding Section 4.5 - Meter Replacement Program on Pg 16:

1. Could we start a voluntary meter reading program now by asking some residents to read their meters?

This is probably not operationally possible for the District at this time.

Regarding Section 4.6 - Estimated Water Savings of Efficiency Activities Pg 16:

1. 5% savings goal is good but needs more technical description. Is it for total water use or by sector and what is the time frame?

See report, page 20.

Bill Oliver's General Comments:

1. Emphasize our water only comes from precipitation.

The document discusses sources of water in terms of the extant wells, deeded water rights and historic well production. A statement recognizing that all our water comes from precipitation and that, as they say in the stock market, "Past performance is no guarantee of future results" would reinforce the fragility of our water supply which should be kept in mind by the board and the residents of CB South.

“Colorado gets new water supplies from only one source: precipitation, in the form of rain, hail, or snow. Colorado gets all of its water from precipitation because there are no major rivers that flow INTO Colorado. There are several major river basins originating in the Colorado Rockies, that flow OUT of the state, providing water to much of the southwestern United States, and contributing to the Missouri and Mississippi rivers as well. Thus, Colorado earns its title as “the Mother of Rivers.”

See report, pages 9-11. New section: Climate Change Impacts on Future Water Supply

2. Consider climate change.

Discuss trends in precipitation, snow melt, declining SWE and declining water in the Colorado River basin. Emphasize potential decline in groundwater recharge. Put more content in section 4 of the WEP along the lines discussed in the Municipal Water Efficiency Plan Guidance Document. Emphasize the need to model, monitor and report on aquifer and well conditions.

The report should acknowledge that the EPA requires consideration of climate change for all NEPA projects and therefore CB South would be prudent in giving climate change consideration in the analysis and recommendations.

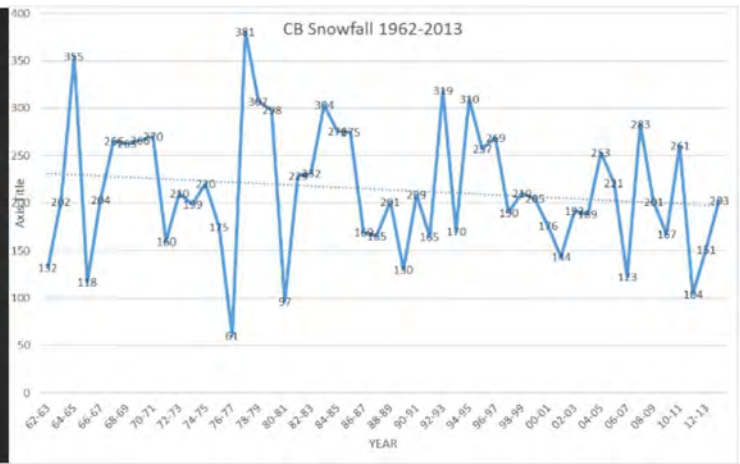
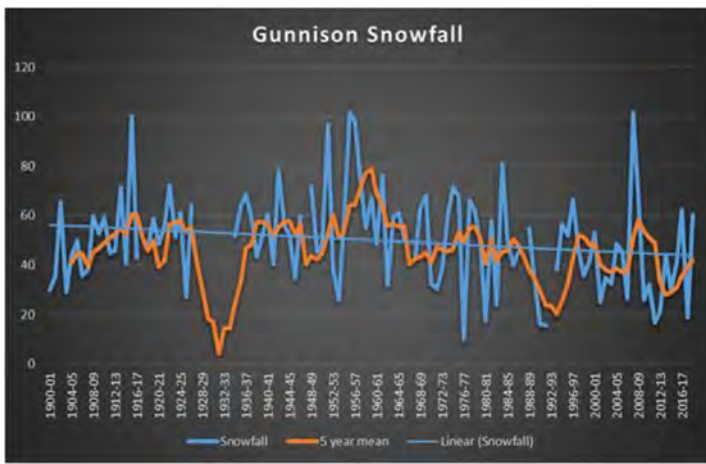
“NEPA - Introduction to Incorporating Climate Change”

The Forest Service has developed guidance (US Forest Service. 2009. Climate Change considerations in project level NEPA analysis) for climate change considerations under NEPA, which focuses on the dual aspects of climate change 1) the effect of a proposed project on climate change through greenhouse gas emissions, and 2) the effect of climate change on a proposed project.”

From; <https://www.epa.gov/arc-x/adaptation-actions-water-utilities#modelclimaterisk>

“Model and monitor groundwater conditions; Understanding and modeling groundwater conditions will inform aquifer management and projected water quantity and quality changes. Monitoring data for aquifer water level, changes in chemistry and detection of saltwater intrusion can be incorporated into models to predict future supply. Climate change may lead to diminished groundwater recharge in some areas because of reduced precipitation and decreased runoff.”

Data solicited from local experts Dr. Bruce Bartleson and Billy Barr indicate a steady decline in precipitation. The graphs below were received from Dr. Bartleson;



Note the year-over-year linear decline in snowfall for both Gunnison and Crested Butte. More data is available at <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?co3662> (Gunnison) and: <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?co1959> (Crested Butte).

Per Dr. Bartleson, “Our annual long-term snowfall in Gunnison was around 50” and in the past 30 years or so it is closer to 40”. The same is true for CB (only a different scale).”

For the Gunnison data, going from an annual average snowfall of 50” to 40” represents a 20% decline. If extrapolated out to the year 2050 we might expect another 5% decline in annual snowfall. The linearity of the data is not likely to incorporate any as yet unapparent acceleration in precipitation decline that may be caused by acceleration of effects due to climate change.

A report entitles *The Economic Contributions of Winter Sports in a Changing Climate*, February 2018, may be found at <https://protectourwinters.org/wp-content/uploads/2019/12/POW2018-economic-report.pdf>. This report provides important data on what is happening in our area regarding snow-water equivalent;

“The amount of water contained in snowpack, called the snow water equivalent (SWE), is also sensitive to warming temperatures. The western United States keeps detailed records of SWE via the SNOTEL network (SNOTEL, 2017), which has been tracking snow at remote, high elevation stations since the 1960s. Based on this detailed dataset, scientists have observed a 10–20 percent loss in annual maximum snow water equivalent (emphasis mine) (Fyfe et al. 2017). Winter season (December through February) snowfall in the Rockies is projected to decrease by 16 percent by the end of the century under higher emissions scenario (Figure 5; Rhoades et al. 2017)”

The Municipal Water Efficiency Plan Guidance Document, July 2012, recommends understanding the reliability of the water system and states; “For instance, supply systems located in areas designated by the Statewide Water Supply Initiative (SWSI), or by other regional studies as currently water short or projected to be water short in the future, could benefit from an increase in water efficiency efforts. It is important to have a thorough understanding of the reliability of the provider’s water supply system.” I suggest that the WEP should place more emphasis on the question of reliability, especially in the face of climate change. I’d like to see section 4 of the WEP, Future Water Supply, expanded to address the potential effects of prolonged drought (actually mega-drought) and climate change. Utilizing section 4.1.2, Water Supply Reliability, of the Municipal Water Efficiency Plan Guidance Document to improve section 4 of the WEP would be more informative in regards to what long term scenarios the Metro might expect.

I’d also like to see the WEP include recommendations for monitoring and modeling of our wells and aquifer. Modeling should include consideration for declining precipitation. It might be part of a larger regional water monitoring program or it might be specific to CB South. But we need some way to understand what is

happening to our East River aquifer over time. Especially in light of the probable annual decrease in precipitation.

[See report, pages 9-11. New section: Climate Change Impacts on Future Water Supply](#)

3. Consider recent indications of accelerating growth and add an additional growth scenario with a higher rate of growth.

The report states that the average historical growth rate from 2012-2019 is 1.5 percent. The report recommends utilizing presumed growth rates of low, medium and high ranges of 1.74 percent, 2 percent, and 2.4 percent. The report says “After discussing projected growth rates with the District personnel, it was recommended that the District’s growth rate for the low, medium and high range be 1.74 percent, 2 percent, and 2.4 percent.”

Growth rates used are derived from historical data. The highest growth rate recommended is 2.4%. This equates to a doubling of population in approximately 30 years, or by 2050. Recent growth trends appear to be accelerating. Since the outbreak of Covid and the resultant “Zoom boom”, reports of real estate sales, lodging bookings and other indicators have exceeded historic values dramatically. For example, a Liv Sotheby’s report for 2020 states, “Land parcels in the Town of Crested Butte experienced a remarkable 183.3% increase in the number of properties sold during 2020, compared to 2019. The most dramatic increase in listings sold was seen in Rural Crested Butte, where the total listings sold for all property types reached 178, climbing 102.3% from 2019 when 88 properties sold. The single-family home market also saw a 129.6% increase in listings sold in addition to the condominium and townhome market which experienced an astonishing 175.0% increase in listings sold.” Is it prudent to rely only on historically derived growth rates in light of recent events? Wouldn’t it be prudent to look at growth projections that aren’t so reliant on historic values or at least incorporate in the report the recent growth trends? In other words, should we be more liberal in our estimate of growth rate? Perhaps add another scenario to the analysis that uses a growth rate derived from data originating in the last year.

[See report, pages 15 -16.](#)

4. Consider encouraging lot clustering as an efficiency tactic as well as other inducements to reduce water consumption. (Metering is proposed and is an excellent way to encourage conservation.)

The report mentions at “1.3 Land Use-..... clustered lots are residential lots that are adjacent to each other and have been legally clustered, whereupon only one dwelling may be placed per lot. There are 87 clustered lots, and this number is likely to grow as future residents seek additional buffering space. More clustered lots result in fewer buildable lots.”

In the context of water efficiency measures, consider creating incentives to cluster lots. The county already provides an incentive to cluster by reducing the property tax burden for a clustered lot. The Metro might consider other incentives such as offering a partial refund of tap fees to homeowners who cluster. Presumably the cost of tap fees is retained in the price of a home so whether the owner is the original owner or not, the tap fee is included in the value of the home and could be rationally refunded, in part, to the current homeowner as incentive to cluster an adjacent lot. Other strategies to encourage clustering should be considered.

[See report, page 24. New section: Future Work](#)

5. Consider where adjacent lands may be annexed into CB South and include estimates of the impacts on our water system capacity.

Annexation of adjacent parcels being developed for housing would likely place a greater burden on the district’s water and sewer systems. Currently the district is considering a request to annex the 90-acre parcel at the intersection of Hwy 135 and Cement Creek Rd. The number of housing units and additional demand on the district’s systems is yet to be determined but regardless of the final numbers annexation will without doubt increase demand. One presumption related to annexation is that the party requesting annexation may bring water rights to the table. This presumes that the party will be able to drill productive wells. Fine, but we should keep in mind that drilling a productive well, adequate for the proposed development is speculative. And if

trends in diminishing precipitation continue there can be no guarantee that a well that is productive today will be productive tomorrow.

A quick review of some of the properties adjacent to CB South which may be developed in the future for housing include:

HGC HOLDINGS LLC, 91.503 AC, 48 COUNTY ROAD 740, CEMENT CREEK

INGHAM LLC, 35 AC, COUNTY ROAD 740, CEMENT CREEK

NICCOLI ROBERT CHARLES, 37.2 AC, 21000 STATE HIGHWAY 135 (under conservation easement?)

SPANN VIRGIL & LEE RANCHES INC, 37.73 AC, LOT 7, EAST RIVER HIDEAWAYS SUBDIVISION

Total; 201.4 acres

CB South is currently approximately 460 acres. If just these adjacent lands were to be annexed in, the acreage of the subdivision would increase significantly. The WEP should provide some consideration of potential future annexations and what this could mean for our current systems. Annexations in conjunction with efforts to increase density in the Commercial Area should be addressed. Presumably, at some point, we will exceed capacity of our water availability. This should be described and emphasized.

This WEP sticks to the “as-is” condition and would not get into any specifics regarding annexations. However, in the likelihood of any future expansion, the District will need to review the proposals and its ability to provide water and sewer. Consider what type of water and sewer the development is bringing, and examine its own legal and physical water available. See Report, page 19.

Appendix G

Adoption of the Water Efficiency Plan by Crested Butte South Metropolitan District

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