



To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
Roy Gallea, P.E., Engineering Manager
Jeanne Stevens, P.E., CIP Project Manager

Title: **Resolution Approving and Adopting the Town of Castle Rock 2023 Water Master Plan** *[Entire Castle Rock Water Service Area]*

Executive Summary

This memorandum has been prepared to request Town Council approval of a Resolution adopting the 2023 Water Master Plan (see **Attachment A**). The 2023 Water Master Plan (2023 Plan) presents findings and recommendations resulting from a reassessment of water program needs for the Town of Castle Rock through 2065, with a focus on near term needs through 2027.

Currently the Town of Castle Rock's potable water distribution system, which serves a population of over 82,000, has more than 14,800 system valves, more than 4,720 active fire hydrants, is over 439 miles in total length, and distributes (on average) in excess of 9.38 million gallons of potable water each day to the customers of Castle Rock. The 2022 peak day demand was 19.22 million gallons per day (MGD). At an estimated build-out population that accounts for future annexations of potential infill areas and extraterritorial services, the distribution system could serve more than 155,000 residents.

For planning purposes, the 2023 Plan estimates high-case and low-case scenarios to encompass a range of possibilities. In order to plan for varying scenarios, Castle Rock Water (CRW) has identified that projected demands could be as low as 12,546 Acre-Feet (AF) under the high water conservation scenario of 100 gallons per capita day (gpcd), and 112,000 people versus 23,439 AF under a low water conservation scenario of 135 gpcd with 155,000 people. In the 2023 Plan, the base scenario is 118 gpcd at a population of 122,000, and corresponds to a projected demand of 16,126 AF by 2050. This includes an assumption that once the estimated build-out population is reached, no more population growth is planned under that scenario.

The following represent key efforts and planned major investments CRW will be doing going forward as part of the plan:

- Investigate whether the migration to direct potable reuse (DPR) from the current indirect potable reuse (IPR) scenario is the right path forward for CRW, looking at the cost, regulatory, technical and water quality implications to make an informed decision for its customers;
- Evaluate water quality continuously, health advisories and maximum contaminant levels and continue to optimize water treatment to address these items as science and regulation develop;
- Monitor our drinking water reservoirs and develop programs to ensure raw water quality in these reservoirs is maintained;
- Complete Advanced Metering Infrastructure (AMI);
- Execute the SCADA Master Plan with a focus on continuing to improve our cybersecurity;
- Fully incorporate the service area to include the existing Bell Mountain Ranch system;
- Ramp up the Rehab and Replacement Plan with priorities being the Prestwick water line replacement in 2023 and Young American rehab and replacement in 2024 and 2025. Young American will be phased due to size and budget constraints of \$2 Million/year;
- Support state and local efforts to reduce phosphorus and nitrogen in the local watersheds through its participation with the Chatfield Watershed Authority (CWA) and the Cherry Creek Basin Water Quality Authority (CCBWQA);
- Work with partnering agencies to expand our capabilities to store and/or bring reusable water supplies back to the Town;
- Advance regional projects that position CRW for the future. Projects to construct infrastructure such as reservoirs, pipelines, and treatment facilities are occurring and Castle Rock will continue to support and participate in these projects where it makes sense. This infrastructure helps bring water to the area and, through economies of scale by partnering with other entities, reduces the cost impact to our customers for long-term renewable water supply;
- Defend our groundwater rights against harmful changes to management of those rights by the State, constructing new wells, acquiring additional groundwater rights, and adding new groundwater sources to our groundwater treatment plants that have available capacity as well as constructing new plant capacity where it makes sense;
- Utilize the interconnect with the Pinery to bring CCPWA renewable water back to RWRWTC for retreatment and distribution;
- Identify and implement projects to improve long term sustainability through resource recovery and reducing net energy use;
- Construct and integrate the East Plum Creek Open Space ASR Wells with a construction cost of \$2,613,215.01;
- Integrate Bell Mountain into the Castle Rock Water service with the construction of a pump station, pipeline, and tank in 2023;
- Expansion of PCWPF from 6MGD to 12MGD with an estimated cost of \$58.8 Million;
- Construction of Tank 11B, a new 2.3MG tank with an estimated cost of \$6,600,000;
- Replacement of the aging Tank 3 with an estimated cost of \$2,200,000;
- Upgrades to the existing Hillside pump station from 800gpm to 2,600gpm;

History of Past Town Council, Boards & Commissions, or Other Discussions

Town Council adopted the 2017 Water Master Plan by Resolution 2017-099 on November 14, 2017.

Castle Rock Water staff presented the 2023 Plan to the Castle Rock Water Commission at their meeting held on April 26, 2023, and the Castle Rock Water Commission voted 5 to 0 to 1 (Commissioner Gienger Abstained) to recommend Town Council approval of the Resolution as presented.

Discussion

This 2023 Plan builds on the previous master planning efforts and outlines general planning for expansion and optimization of the Castle Rock Water System necessary to meet the evolving needs of the local community.

The following principles serve as the base for the Town's water programs:

- Principle 1: Protect People, Property and the Environment
- Principle 2: Plan for the Future
- Principle 3: Encourage Coordination of Infrastructure Needs
- Principle 4: Operate the Water Enterprise Fund as a Business, Balancing Revenue and Expenses
- Principle 5: Provide for Effective Long-term Operation and Maintenance of Water System Facilities
- Principle 6: Ensure Water Planning is Consistent with, and Considered Part of, a Fully Integrated Total Water Management Approach
- Principle 7: Identify and Implement Changes to the Water System which will improve long term sustainability through resource recovery and net zero energy use

Much of the effort to revise the 2023 Plan was to revisit the hydraulic planning model based on future and evolving water supply and demand models, and to update the Capital Improvement Plan to incorporate WISE and other regional components into the Castle Rock Water system. After changes to the landscape and irrigation criteria for new development were adopted in November 2022 (very limited turf for new development), the modeling was revisited. The landscape and irrigation criteria changes resulted in the changed timing of many capital projects consistent with the updated water supply and demand model as well as availability of capital reserves, and also eliminated and / or reduced the scope of projects consistent with the expected reduction in total water supply needs and peak demand infrastructure (i.e., reduced the size of future pipes and other infrastructure consistent with revised lower future demand).

Collateral to that effort was revisiting future near-term and long-term capital plans and the cost estimates used. The capital plan is used to identify needed improvements to the supply, treatment, storage, pumping, transmission and distribution systems to handle growth and meet future system demands, but also identifies capital rehabilitation and replacement projects for existing assets. Rehabilitation and replacement of aging

infrastructure will take a higher priority in future years, especially as the Town approaches build out. With respect to capital plans, there were some significant changes to the five-year capital plans, but there were also several major changes to the long term (>5 years out) capital plan which were made for this study year. Additional requirements for desalination related to the Water Infrastructure Supply Efficiency (WISE) project as well as increases in capacity in the Plum Creek Water Purification Facility (PCWPF) expansion were incorporated into the Water Resources capital plan and account for a large increase in near term spending.

Long term planning was impacted by upcoming proposed changes to turf restrictions on new homes and non-residential development, which will reduce the future capacity needs as consumption and peak demands in new development will be significantly less than current areas of Town. In the Water fund, additional funds were allocated for future deep groundwater well redrills, new wells, and associated raw waterlines because groundwater resources will still be a component of CRW's water portfolio even as we continue the transition to more renewable and reusable supplies. The total water capital plan for the years 2024-2066 is estimated at \$416,388,796, with over \$86 Million dedicated to rehabilitation and replacement, an increase of over \$113 Million to the previous plan that covered 2021-2060. This does include \$50 Million planned for a new water treatment plant in the Crystal Valley Ranch area.

Budget Impact

Annually, Castle Rock Water conducts a rates and fees study and revises the cost of the service model in order to recommend changes, if any, to the rates and fees schedule. Further, the capital plan is devised to try to spread out capital costs in order to minimize any unexpected jump in rates or fees in any one year.

Increases in system development fees (SDF's) primarily affect new development, and support the expansion of facilities or development of new infrastructure to accommodate the increase in demand that comes from growth. System development fees (SDFs) are a function of year-end 2021 fixed assets, 2022 year-end estimates of capital improvement project costs, 2023 through 2065 capital improvement project plans, and system capacity for water, water resources, and wastewater and developable acres for stormwater. For 2023 the adopted increase in SDFs for the water fund was 10%. Several factors drove the recommended increases in SDFs identified in the SDF model and financial model for 2023. The projections for 2024 are 13.3%. First, Castle Rock continues to see strong growth in both residential and non-residential customers from existing entitlements in Town. While growth has slowed in the current year due to external economic factors, projections still indicate continued strong growth in the coming years.

To keep pace with this population increase, additional projects have been added to the long term plan over the last several years and the infrastructure and capital costs for these projects are now better defined. Additional infrastructure and the costs for that infrastructure have also been identified to meet the increased peak demands from a larger customer base. Next, the pace of growth has exceeded projections even though it slowed significantly in 2022 and is continuing slower than projected in 2023. This drives the need to build projects sooner to meet annual water supply needs creating the need to generate more revenue sooner. It also requires building peak demand capacity

sooner than expected. For example, recent growth has driven the need for additional water SDFs for new wells to help fill the supply needs until longer term renewable water projects can be completed. If growth was occurring more slowly, these wells might not have been needed.

For the monthly water user charges and volumetric fees, there are planned increases of 3.0 to 4.5 percent from 2023 rates for 2024 through 2028. Increases in water user charges reflect fixed operations and maintenance costs, variable operational costs such as electricity (CRW's second largest operating cost) and the costs of capital rehabilitation and replacement.

Staff Recommendation

Staff recommends Town Council approve and adopt the 2023 Water Master Plan.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Alternative Motions

"I move to approve the resolution as introduced by title, with the following conditions: (list conditions)."

"I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed)."

Attachments

Attachment A:	Resolution
Exhibit 1:	2023 Water Master Plan