CENTENNIAL
WATER AND SANITATION DISTRICT

2024
CAPITAL IMPROVEMENT PLAN

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GUIDING PRINCIPLES

OUR VISION

To set the standard of excellence for community-based water and wastewater utility services through innovative practices in finance, operations, and resource management

OUR MISSION

To provide safe, sustainable, and reliable water and wastewater services to our customers with superior quality and value.

OUR CORE VALUES

Safety

We work to ensure a safe environment for our employees and our customers.

Teamwork

We collaborate with internal teams and regional partners to achieve our goals.

Vision

We remain forward thinking to identify opportunities to benefit our community. We strive to provide leadership within the water and wastewater industry.

Excellence in Service

We strive for excellence in all facets of our industry, including customer service, water quality and environmental stewardship.

Integrity

We take pride in our work and demonstrate honest and ethical behavior to ensure we meet our obligations. We respect the valuable resources that we are entrusted with and are committed to protecting them.

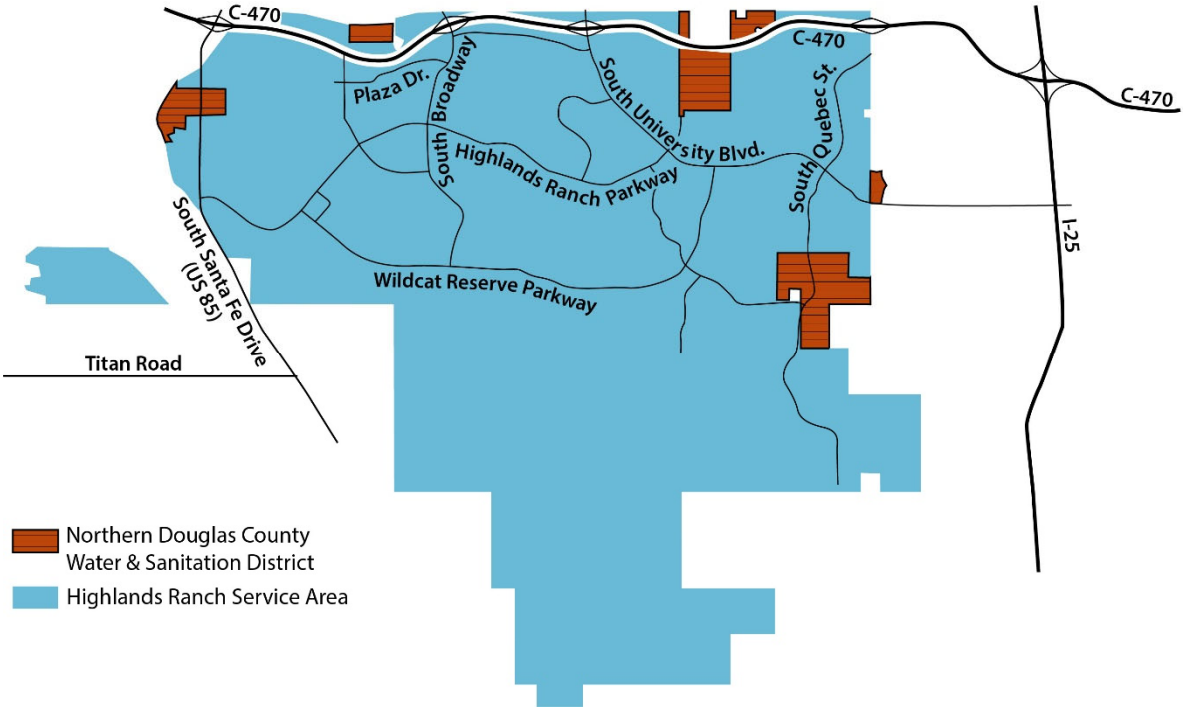
ABOUT CENTENNIAL WATER

In 1980, through a vote of eligible electors, Centennial Water & Sanitation District (the "District") was formed as a political subdivision of the State of Colorado and created as a quasi-municipal corporation to provide municipal water and wastewater services.

The District is authorized to construct, own, operate, and maintain municipal water and wastewater facilities, including, but not limited to, raw water storage and conveyance facilities, water treatment facilities, water pumping and transmission lines, treated water storage reservoirs, water supply wells and related equipment, metering facilities, trunk wastewater lines and manholes, lift stations, wastewater treatment facilities, and to provide water and wastewater service to residential and non-residential areas within its service area.

District authority is vested in the five-member Board of Directors (the "Board"), with members being elected to serve as at-large representatives. In 2022, the Board began transitioning from a developer board to a resident board. Two resident members were elected in 2022 with the other three elected in 2023. The Board, among other things, is responsible for passing resolutions, adopting the Annual Budget and Capital Improvement Plan, appointing committees, and hiring the District's general manager and legal counsel. Board members are elected to four-year staggered terms with either two or three Board members elected every two years.

The District currently provides municipal water and wastewater services in accordance with service agreements entered between the District and the Highlands Ranch Metro District (HRMD), Mirabelle Metropolitan District (Solstice), and Northern Douglas County Water and Sanitation District. The District also delivers treated water to two neighboring special districts—Castle Pines North Metropolitan District and Roxborough Water and Sanitation District—pursuant to "wheeling agreements".



EXECUTIVE SUMMARY

Capital, major repair, and water acquisition projects (referred together as "capital") have a substantial impact to not only the overall quality of water and wastewater service delivery but also to the District's financial resources. This Capital Improvement Plan (CIP) provides a framework to comprehensively understand the overall infrastructure of the system and aids in prioritizing the projects needed to maintain the system to a standard of safety, integrity, and excellence in service. Projects for inclusion in the CIP come from a variety of sources including department requests, long-range strategic plans, the long-term capital replacement program, and regulatory changes. As capital costs in the aggregate customarily exceed regularly recurring revenue, the District has chosen to assemble this document to provide, in further detail, the rationale behind the long-range capital plan and the allocation of resources to the most essential infrastructure needs.

This CIP presents a 10-year capital plan across the various activities of the District, identifying and defining the capital projects that have a noteworthy impact on the financial resources and operations of the District. Further, the District found it valuable to provide qualitative information related to the District's water supply agreements as these agreements, if amended or cancelled, have the potential of impacting the District's financial needs for water acquisition, which may then reduce financial resources available for capital projects. The identified CIP projects will be funded through rates, debt proceeds, or other financing mechanisms available to the District.

Due to changes in operational needs, regulations, and any other impactful event, projects identified in this document may be removed or deferred to future years. While the District acknowledges there are inherent risks in deferring projects, the District is operationally and fiscally responsible when prioritizing projects.

The Capital Improvement Plan will be updated annually to capture any year-over-year quantitative and qualitative divergences.

OPPORTUNITIES

The District's leaders and staff are continuously alert for efficient and cost-effective opportunities that aid in achieving strategic priorities.

The most accessible opportunity the District has is utilizing (and relying on) the talent and commitment of staff. Employees at all levels have continuously proven that they are mindful of District assets and proactive in addressing concerns when they arise. This allows the District to internally execute a robust preventive maintenance program to assist in extending the life of capital assets. Through this proactive approach, additional financial resources may be available for larger or more pressing projects and other capital purchases such as vehicles and equipment.

Further, by having a robust preventive maintenance program, the District is able to identify ways of achieving multiple goals, such as replacing aging infrastructure or meeting a new regulatory requirement, as part of one project. Not only does this opportunity have the potential of keeping costs down, but proactively replacing aging infrastructure with newer technologies and updated systems can further increase the reliability, efficiency, and resiliency of District operations.

A unique opportunity is that the District's service area is approaching full development and, as such, the District can accurately predict its future service population. Likewise, since all indoor use water is returned as wastewater for treatment, the District can calculate projected demand to predict future requirements for wastewater treatment. When evaluating needs, the District is mindful that meeting build-out demand is integral to the success of the CIP.

Another focus area of opportunity for the district is conservation. If per capita demand for water decreases because of conservation efforts, the District will be able to support its population with a reduced amount of water resources and preserve room for future challenges such as diminishing supply due to variable climate conditions. See pages 25-27 for an insight into some of the District's conservation measures.

Finally, partnerships with other water utilities are becoming more common in the Denver Metro Area as many providers get more creative with managing their water supplies in this semi-arid region. Regional solutions to complex problems are an opportunity to extend the District's reach while keeping costs down.

CHALLENGES

A noteworthy challenge the District is facing is supply chain issues. Due to the long lead time in acquiring vital project components, the District has had to re-evaluate project start dates and, in some cases, enter into contracts sooner than expected. While this is an outside pressure to manage, the District's prudent management of its financial resources, along with staff engagement, has in the short-term prevented this issue from having an overall negative impact to operations and capital planning.

A further challenge is that in recent years, pressure has been put on elected bodies to amend how water is treated and delivered. As these topics are still in the discussion stage, it is uncertain what the financial impact of any legislative action will be. There are some emerging requirements that are relatively easy to plan for but still costly to implement. The District will continue to be diligent in balancing the use of financial resources necessary to address current infrastructure needs while at the same time managing funds so that financial resources are available for unanticipated or unforeseen costs; for example, regulations imposed by the State or Congress. See page 33-38 for current regulatory matters.

Other challenges - such as long-term weather patterns including rainfall and temperature - are harder to predict. Thus, the District must exercise judgment in investing in areas that are most vulnerable to environmental changes and may therefore impact water supply.

Finally, while partnerships are an opportunity, they can also be a challenge. The District relies on partners to execute many of its missions, specifically the reliability of water supply. Maintaining effective partnerships is critical to the success of capital planning efforts. See Pages 21-25 for a detailed look at District water supply agreements.

FUNDING CONSIDERATIONS

The District has the responsibility of safeguarding the community's water resources and the quality of that water. As such, the largest cost component of the CIP at $168 million is related to necessary upgrades to the Joseph. B. Blake Water Treatment Plan (JBWTP) which are designed to meet maximum demand. See pages 8-11. Staff and the Board are committed to responsibly fund these necessary upgrades in a fiscally

prudent manner; making funds available while ensuring the reliable continuity of District operations. As such, in 2024 the District issued $70 million in revenue bonds to assist in funding a portion of the JBWTP improvements. As the District currently holds a AAA rating from S&P and a AA+ rating from Fitch, the bond terms are very favorable and allow the District to spread out the cost of these upgrades over 30 years through debt service payments versus dramatic increases in rates.

In 2023, staff evaluated current and projected financial resources available to support the CIP long term. As a response, the Board implemented a $7.50 (per ¾-inch tap equivalent, per month) "Infrastructure Improvement Fee" which will be used solely for capital and major repair project funding. This fee is projected to generate approximately $4 million in 2024. See page 40 for the full list of water and wastewater fees.

Capital project foresight of the overall system is paramount to District operations therefore the District closely scrutinizes the CIP against the known availability of financial resources and identifies areas where further financial support may be required.

IDENTIFYING PROJECTS

ANALYZING AND EVALUATING LONG-TERM NEEDS

The District's analysis of long-term needs begins by examining:

- Are we operating as efficiently and safely as possible?
- Are we providing a superior level of service?
- Are we meeting the requirements and standards of water and wastewater operations?
- Are we providing a safe and healthy environment for our employees?
- Are we achieving our Mission, Vision, and adhering to our Core Values?

The District's driving daily obligation is to provide safe and reliable water, in sufficient quantity, to end users. The District strives to approach the CIP with integrity by annually evaluating project priority, focusing on the attributes of (1) operational reliability, (2) employee safety, (3) financial prudence, and (4) excellence in service.

The District also approaches long-term capital planning by keeping the current regulatory environment in mind, recognizing that there are known (and even unknown) compliance requirements outside of the 10-year plan that may require significant financial resources. See pages 33-38 for regulations currently impacting the CIP.

PROJECT PRIORITIZATION

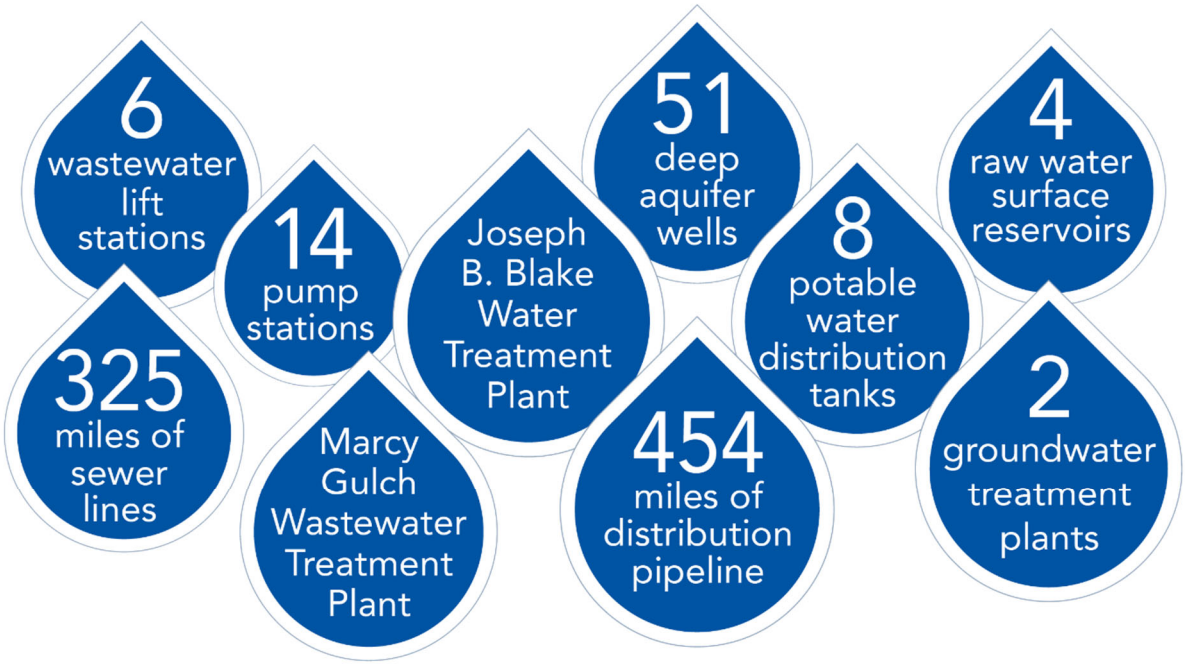
During the annual budget process, the General Manager and staff meet to re-evaluate the CIP. Together they analyze the previous year's identified projects to determine if any changes need to be made. To make these determinations they review:

1. Changes in financial resources available for capital projects.
2. Changes in project costs due to inflation and/or change in scope.
3. Events that occurred during the year that warrant a new (or accelerated) project.
4. Any regulatory changes requiring capital improvements.
5. Any change to water supply needs.

During this process, the group will also review changes to on-hand and projected financial resources by inputting the updated CIP costs into a forecast model. The model shows if the District's financial resources can absorb all project costs within a water and wastewater rate increase that is justifiable to customers and the Board. If more financial resources are needed, there are two options:

1. Re-prioritize projects in the CIP and/or,
2. Identify ways the District can augment financial resources.

District staff presents the final CIP schedule and forecast model to the Board during their November Budget Workshop where, utilizing staff feedback, the Board can review the CIP schedule and provide direction regarding project prioritization.



INFRASTRUCTURE PROJECTS

SUMMARY

The District has eight distinct infrastructure related categories for capital projects. They are:

- The Joseph B. Blake Water Treatment Plant
- The Marcy Gulch Wastewater Treatment Plant
- The Groundwater Treatment Plants and wells
- Pump stations and the water distribution system
- Lift stations and the wastewater collection system
- Supervisory Control and Data Acquisition (SCADA)
- District administrative offices and maintenance facilities

This section discusses the notable capital projects in each of these categories.

JOSEPH B. WATER TREATMENT PLAN

OVERVIEW

The Joseph B. Blake Water Treatment Plant ("JBWTP") was constructed in 1986 and then expanded and upgraded in 1999. The JBWTP is a conventional surface water treatment facility and is located at the northwest corner of Highlands Ranch just south of C-470 on the south side of Plaza Drive. See Page 41 for a detailed look at the JBWTP site.

Primary raw-water sources to the JBWTP come from the South Platte River (including some local South Platte alluvial groundwater) and groundwater from a Laramie-Fox Hills aquifer well located near the forebay of the JBWTP. The District uses the Chatfield Reservoir water storage facility (partially owned by the District), the South Platte Reservoir (owned by the District) and McLellan Reservoir (leased through the City of Englewood) to store raw water.

Staff has established an ultimate goal of achieving a reliable maximum treatment capacity of 40 million gallons per day (MGD). In 2018, the District commissioned a Water Treatment Utility Plan (WTUP) for the purpose of evaluating the condition of existing equipment and the effectiveness of each treatment process, provide design recommendations, and develop conceptual cost estimates for improvements that would enable the District to achieve its core values.

The WTUP outlined five sequential design and construction phases intended to achieve capacity goals while maintaining compliance with anticipated regulatory requirements. After an evaluation of project financing, the District determined Phase 1 would be more financially viable if it was split into two phases:

1A and 1B. Additionally, Phase 5 of the WTUP improvement project is currently deemed unnecessary under existing regulatory requirements, however staff evaluates this annually.

Upon completion of several projects currently identified in the 10-year CIP, the JBWTP will meet the maximum day demand (MDD) required after the District's service boundaries are at 100% buildout. This will maximize flexibility of available water resources by allowing MDD to be met wholly from surface water sources. Other water resources, such as WISE water (see pages 21-22) or groundwater, are available to meet the community's needs during severe drought or during winter months if the District needs to take the JBWTP off-line to accommodate maintenance, repairs, and/or construction projects.

MAJOR CAPITAL PROJECTS

PHASE 1A

This phase focuses on the modification of existing pre-treatment processes, providing a system that meets the minimum Colorado Department of Public Health and Environment (CDPHE) flocculation hydraulic retention time requirements and improves settled water turbidity (a measure of the clarity of a liquid) by replacing existing tube settlers with plate settlers. Additionally, this project includes the in-kind replacement of raw water piping and flow control. These upgrades will allow the JBWTP to produce 30 MGD of potable water reliably.

In March 2020, the District selected Carollo Engineers, Inc. for engineering design. In January 2021, the District awarded construction to Garney Companies, Inc. The project is currently underway and will be completed in the 2nd quarter of 2024 at an estimated cost of $22.2 million.

PHASE 1B

This phase consists of constructing a new chemical building (and related feed lines), which will allow the District to reliably store chemicals for up to 30 days. Additionally, the power system will be upgraded with a replacement backup generator and power feed due to aging infrastructure concerns. Improvements to HVAC in the pre-treatment facility and SCADA network modernization are also included in the project. These upgrades will allow the WTP to continue to produce 30 MGD of potable water reliably.

The design work on this project began in the fall of 2023, and the District awarded a Construction Manager at Risk (CMAR) contract to Garney Companies, Inc. in January 2024. Construction time is estimated to bring improvements online at the beginning of the 2026 water season. The project is currently budgeted in the CIP at a cost of $62 million, an increase of $7 million over the 2023 CIP due to inflationary related costs of construction. The increase in price was not a result of a change in scope.

PHASE 2

The 2nd phased step will focus on upgrading the filtration system and the chlorine contact basin (CCB), which will allow the JBWTP to produce 35 MGD of potable water reliably. Improvements to the pretreatment system in Phase 1A, and the future addition of a pre-oxidation system are expected to reduce solids loadings onto the filters, thereby helping to further improve the treatment capacity. The improvements consist of:

- Converting to a deep-bed configuration with larger diameter media, allowing filters to operate at a higher hydraulic loading rate (HLR) of eight gallons per minute per square foot, or greater.
- Modifying the Filter Effluent Structure to increase the available head through the filters.
- Improving the backwash system to allow the filters to be adequately cleaned following a filter backwash.

Improvements to the CCB include modifications to accommodate a backwash water supply, a new Backwash Supply Pump Station, and an improved baffling factor for the basin so that it can be rated for the JBWTP full capacity of 40 MGD. The CCB upgrades include the following components:

- Inner-basin walls will be partially demolished in order to convert into a single basin at all operating water levels within the tank.
- Construction of concrete walls at the first row of support columns in order to create a separate and independent backwash supply volume while keeping an unchlorinated water volume for the backwash supply.
- Construction of perpendicular baffling walls to create an approximate 44:1 length to width flow path, and with baffled inlets and outlets to the CT (concentration * contact time) volume, to receive a rated baffling factor of 0.6.
- Addition of chlorine and ammonium sulfate feeds directly into the CCB in lieu of the finished water pumping headers.
- Repair a potential backflow path identified during a CDPHE sanitary survey in March 2023.

Other miscellaneous upgrades are planned to improve the operability of the filters. Once pre-oxidation is implemented at the JBWTP, the filters will operate in a biologically active filtration mode.

Project design is anticipated to begin in 2025 with the project bid going out in 2026 for a 2028 completion date. The project is currently budgeted in the CIP at an estimated cost of $65 million. This is an increase of $30 million over the 2023 CIP. This change is based on the project costs for Phase 1B plus an inflation escalation.

Note: the District may also use this phase of construction to implement treatment processes that may be required to address the EPA's recent rule concerning PFAS in drinking water (see pages 33-34). If necessary, these treatment processes could add significant costs to Phase 2 of the project.

PHASE 3

This phase will address upgrades to the Zone 1 (constructed in 2001) and Zone 2 (constructed in 1987) pump stations, allowing for 40 MGD of reliable potable water delivery to the distribution system. Additionally, the backup power system for these pump stations will be upgraded through the replacement of the backup generator.

PUMP STATIONS

The nature of the project is conducive to phased upgrades to the pump station and isolating individual parts of the project for completion, such as addition of the Zone 1 surge tank and replacement of the

damaged discharge header. The JBWTP can be off-line for approximately five months during the winter shut down period and, during this time, relies on groundwater resources available to the District. Initial portions of improvements to the Zone 1 and Zone 2 pump stations can only be completed while the pump station is offline, which in turn means the JBWTP cannot supply water to the distribution system.

BACKUP POWER

Involves the replacement of the existing site backup power consisting of a single 420 kW generator with power systems of adequate capacity to run the entire JBWTP. Multiple configurations were evaluated for the backup power system and it was determined that a single generator system is infeasible due to the required size of the resulting generator. The WTUP suggests three independent generators with individual auto-transfer switching for each generator.

Project design is anticipated to begin in 2027 with the bid going out in 2028 for a 2029 completion date. The project is currently budgeted at an estimated cost of $38 million, an increase of $3 million over 2023 due to inflationary adjustments.

PHASE 4

This currently anticipated (however reevaluated annually) final phase of the project will add a pre-ozonation system to the JBWTP, which tackles biological compounds that impact overall taste and odor as well as improving total organic compound removal. The system can also assist with flocculation characteristics to help improve removal of particles and colloidal material in the raw water. This phase of the project will begin to address water quality regulations as they continue to progress through state and federal legislative bodies.

Project design is anticipated to begin in 2035 with the bid going out in 2036 for a 2038 completion date. The project is currently budgeted at an estimated cost of $70 million.

PHASE 5

This phase addresses on-site residuals handling. As there are no current regulatory or process limitations that would compel improvements, Phase 5 is not identified in the long-range CIP.

MARCY GULCH WASTEWATER TREATMENT PLANT

OVERVIEW

The Marcy Gulch Wastewater Treatment Plant (“MGWWTP”) is located southeast of Highway 85 and the C-470 intersection. It was constructed in 1984 and underwent major facility upgrades in 2000, 2002, and 2014. The MGWWTP discharges to Marcy Gulch, which then flows northwest into the South Platte River just upstream of the C-470 bridge crossing the river. In addition to its service area, the MGWWTP receives treatment residuals from the JBWTP via the collection system. See page 42 for a detailed look at the site.

Improvements at the MGWWTP are driven by (a) regulatory requirements (see pages 34-35), (b) capacity and redundancy, (c) aging infrastructure, and (d) health and safety.

MAJOR CAPITAL PROJECTS

PHASE 1

Completed in 2015 at a cost of $6,875,000, the Phase 1 project included the following:

- Conversion of the existing trickling filters into primary clarifiers and a new Primary Clarifier Pump Station.
- Modifications to the Headworks building including replacement of the ferric sulfate feed system and modifications to the flow monitoring flumes.
- Modification to the existing flow splitting structure.
- Addition of sludge pumps, heat exchanger and gas compressor in the Digester Building and rehabilitation of the west digester cover.

PHASE 2

The MGWWTP Phase 2 Improvements consist of complex and time sensitive modifications to the existing treatment facility that will enable the MGWWTP to comply with new regulatory discharge requirements (see pages 34-35).

Award of construction for Phase 2 was approved in January 2019; the Notice to Proceed date was March 18, 2019. The project remains under construction with a current estimated completion in 2024 at an estimated cost of $86.5 million.

Key elements of the Phase 2 project include:

- Construction of a new Blower Building and conversion of the existing Blower Building to a new Chemical Feed building.
- Construction of a UV building and a Biosolids Hopper building.
- Rehabilitation of the Digester Control building, the Headworks, and the Dewatering building.
- Construction of two activated sludge basins and renovation of the four existing basins.
- Construction of a RAS fermenter and renovation of the RAS/WAS Pump Station.
- Additional construction includes a cascade aerator, gas holder, primary effluent flow split structure, and mixed liquor flow split structure.
- Rehabilitation of the existing secondary clarifiers and east and west anaerobic digesters.
- Installation of new sitewide electrical and SCADA control systems.

WASTEWATER REUSE FACILITY

This facility has previously provided non-potable irrigation water from wastewater effluent to Windcrest, Highlands Ranch Golf Course and Redstone Park. Construction during the Phase 2 project rendered the

reuse facility inoperable, and renovations are required to put it back into service. Without the reuse system, the irrigation demands are being met by providing raw water to these customers that would have otherwise been available to produce drinking water. Once this project is complete, approximately 500 AF of reuse water will again be available for drinking water production.

Project components include the replacement of: (1) chemical storage tanks and pumps, (2) filters, (3) the electrical room, and (4) valves and piping. The expansion of water storage and the addition of irrigation piping surge protection and storage (via pressure tank) are also included in project scope. The design phase is anticipated to begin in 2025 with construction beginning in 2026 at an estimated cost of $5 million.

FUTURE PROJECTS

PHASE 3

In 2012, the CDPHE Water Quality Control Division ("WQCD") proposed a new standard for nitrogen and phosphorus levels in certain lakes and reservoirs. See pages 36-38. If adopted as written, the standard would have applied to the District's required protection of Barr Lake's water quality. However, in April 2023, the Colorado Water Quality Control Commission held a rulemaking hearing to consider the final adoption of this regulation and elected to defer the requirement until 2027.

WQCD has signaled that they will work with the District to develop a site-specific standard as opposed to requiring infrastructure for reverse osmosis treatment, which was initially anticipated to be the obligation. As the standard is still imminent, the District will have to continue to plan for this large capital cost. However, as we are no longer bound to reverse osmosis treatment, the cost of Phase 3 will decrease dramatically.

GROUNDWATER TREATMENT PLANTS AND WELLS

GROUNDWATER TREATMENT PLANTS

The groundwater system is designed to meet two main goals: (1) supply indoor demand during the winter season while the JBWTP is offline in the event of required maintenance, repair, and/or construction projects, and (2) provide drought protection during times of limited surface water availability. See page 43 for the locations of the Groundwater Treatment Plants.

No major capital projects are scheduled at this time.

WELLS

The District currently utilizes 33 potable and five alluvial wells to serve the community in its daily operations. See pages 44-45. The long-range plan for wells is an on-going conversation between the Water

Resources, Operations, and Engineering groups. Any decisions made will be included in subsequent CIP reports. Capital projects of note include:

WELL A-1R

This project is to replace Arapahoe Well A-1 which was constructed in 1981 and is due for replacement; it is the last Arapahoe well operated by the District to be replaced. The existing well, which will be converted to a monitoring well, is located on a small residential lot and more space is needed for the replacement. In 2013, a site for the replacement was identified in adjacent open space and easements have been granted by the Highlands Ranch Metro District. At this is a new location, underground vaults, piping, equipment, and power supply brought in by Xcel Energy will be required. The project is estimated to be complete in October 2024 at an approximate cost of $2.7 million.

WELL D-20A

Located in the Highlands Ranch Community Association's Open Space Conservation Area, the site is located next to an existing well line and in close proximity to available power lines. Due to the JBWTP Phase 1A improvements, staff began evaluating opportunities (in addition to the already planned re-drill of A-1R) to increase well production capacity. It was determined that an additional Denver well, rather than another re-drill, is the best opportunity for the District to increase production capacity. The project is anticipated to be completed in 2024 at an estimated cost of $2.4 million.

WELL REDRILLS

Redrills create storage space for water within a well. They can improve well performance and will help create additional water yield. There are three planned redrills in the 10-year plan at an estimated cost of $8.5 million.

DISTRIBUTION SYSTEM

OVERVIEW

The distribution system is designed to deliver the required flow, storage, and minimum pressures as required for average daily demand, MDD, peak hourly demand, and fire flows for build-out conditions. The transmission and distribution system is designed as a looped system for maximum system reliability. The ultimate goal is to have two distribution tanks per zone, however only two zones currently meet this goal. The pump stations are designed with an N+1 philosophy (i.e. there are sufficient pumps to meet MMD plus one additional pump for redundancy) to ensure reliability of the system.

The District currently utilizes 14 pump stations and eight distribution tanks that are spread throughout the District. See page 46 for pump station locations.

CAPITAL PROJECTS

MCLELLAN A PUMP STATION

McLellan A was constructed in the early 1980s to provide raw water to the surface water plant. McLellan A is vital to the system in that it supports the production of the required flow needed to meet overall system demand. Project components include the replacement of: (1) pumps, (2) the existing power feed, (3) the motor control center, (4) the backup generator, and (5) inlet and discharge piping. Additionally, upgrades are further necessary to meet current design criteria. The District has budgeted $2 million in 2027 for this project.

ZONE 4A PUMP STATION

Zone 4A Pump Station was constructed in the early 1980s and is one of the two main stations that provide potable water to Zone 4. Without this station, the District is unable to distribute enough water to Zone 4, 5, and 6 to meet system demand from the JBWTP. Project elements include the replacement of: (1) the existing power feed, (2) the motor control center, (3) the backup generator, (4) suction and discharge valves, and (5) pumps. Additionally, upgrades are further necessary to meet current design criteria. The district has budgeted $2 million in 2032.

CLINE DELAYED RETURN FLOW

The Cline Ranch delayed return flow facility was constructed between 1999-2001. Since then, it has been determined that the District is not realizing all allowable annual yield due to current facility capacity. See pages 24-25. This project would construct an additional return flow facility to capture the remaining allowable acre feet. Design of the facility is currently planned to begin in 2025 and construction to begin in 2027. The CIP currently has a budget of $1.7 million for the project.

LONG-RANGE PLAN

In 2019 the District worked with B&C to conduct a Field Asset Replacement Planning Model. This report analyzed both water distribution and wastewater collection system refurbishment and replacement needs. While large replacement projects are not currently required, as the distribution system ages over the next several decades capital replacement costs will increase.

COLLECTION SYSTEM

OVERVIEW

The District's lift stations are strategically located within the wastewater conveyance system. Lift stations, typically located in low points, receive flows conveyed from the gravity sewer collection system. The lift station then collects and pumps the wastewater flows uphill, through a pressurized force main, to a discharge point where the flows transition back to a gravity conveyance transmission main.

The District currently has six lift stations in operation throughout the service area. See page 47 for lift station locations.

MAJOR CAPITAL PROJECTS

The District has identified deficiencies at two of its largest lift stations: Big Dry Creek and Willow Creek.

BIG DRY LIFT STATION UPGRADE

Constructed in the mid-1980s, the lift station needs an upgrade to be able to meet current design criteria and to replace aging infrastructure. Project elements include:

- Upgrade of the existing power feed and the motor control center.
- Replacement of the backup generator.
- Additional process equipment is needed to minimize wet-well cleaning and grease buildup.
- An emergency storage system to meet current CDPHE design criteria.

The project is estimated to begin design in 2026 with a request for bids going out in 2027 for a completion date in 2028. The current estimated cost is $10.5 million.

WILLOW CREEK LIFT STATION UPGRADE

Constructed in the mid-1980s, the lift station needs an upgrade to be able to meet current design criteria and to replace aging infrastructure. Project elements include:

- Upgrade of the existing power feed and the motor control center.
- Replacement of the backup generator.
- Replacement of control building.
- To combat odor, potential replacement of the chemical feed system.
- Additional process equipment is needed to minimize wet-well cleaning and grease buildup.
- An emergency storage system to meet current CDPHE design criteria.

The project is estimated to begin design in 2027 with a request for bids going out in 2028 for a completion date in 2029. The current estimated cost is $7.5 million.

SCADA

OVERVIEW

The Supervisory Control and Data Acquisition **(**SCADA) system provides information and controls for the entirety of the system. SCADA is comprised of instruments, transmitters, Programable Logic Controllers (PLC), radios, network devices, servers, and other components needed to automate and monitor all aspects of the water and wastewater system. All SCADA functions for field assets, such as lift stations and

pump stations, are conveyed to the JBWTP control room along with the SCADA functions for the JBWTP itself. SCADA functions for the MGWWTP are conveyed to the MGWWTP Control Room.

LONG-RANGE PLAN

The SCADA system is critical to the District's mission and must function continuously for the District to provide reliable water and wastewater service to the community. The current system is aging, and critical components are no longer supported by most manufacturers. A SCADA Master Plan is needed to determine an overarching philosophy for how the system will function into the future. This plan will detail:

- Level of service goals and uptime requirements
- Standardization
- Mode and media communication type per site
- Telemetry structure
- Bandwidth requirements

The CIP has identified $300,000 in 2024, $300,000 in 2025, and $1.5 million in 2026 for planning and implementation, which will be prioritized on a site-by-site basis.

ADMINISTRATIVE FACILITIES

OVERVIEW

The District is committed to the health and safety of employees which, in certain cases, may require a modification or upgrade to one of the many facilities the District utilizes to house staff.

MAJOR CAPITAL PROJECTS

Currently the District has proposed in the CIP the expansion of the operations building at the MGWWTP, modifications to two buildings at the JBWTP, and the construction of a new Collection and Distribution ("C&D") building at the JBWTP. These plans take into consideration not only aging infrastructure but also space needs for staff.

Identified facility needs for the MGWWTP operations building include 11 offices, a "bull pen" for lab staff and SCADA technicians, and a reception area. An expanded and dedicated server room (will require HVAC improvements) and a dedicated room housing documents either in use or required for record retention.

Identified facility needs at the JBWTP include a transformation of the current layout of the Filter Building to accommodate seven offices, and a "bull pen" for administrative staff in the Administration building. Further, a replacement of the C&D building to accommodate five offices and a "bull pen" area for field, meters, C&D, and GIS staff.

The CIP currently estimates the project to take place in 2028 at a cost of $20 million.

WATER ACQUISITION

SUMMARY

The District must consistently have a sharp focus on its water resources. As capital water acquisition is limited and costly, it's important that the CIP addresses the District's water resources, how the District manages its financial resources through water supply agreements, and the steps the District takes in conserving current water supply for future reliability.

The District found it important to provide qualitative information related to the District's water supply agreements since these agreements, if amended or cancelled, have the potential of impacting the District's financial needs for water acquisition, which may then reduce financial resources available for capital projects.

WATER SUPPLY OVERVIEW

To bring enough surface water into the system to meet the current MDD, the District uses a combination of our owned water rights and agreements with other water providers.

The District currently owns the following water supply rights, Acre Feet (AF) average since 2000:

- Five senior – 1,060 AF
- Four junior – 3,180 AF
- Two rights outside of the priority system – 4,070 AF

The District is currently entered into the following contracts, AF average since 2000:

- Senior – 5,490 AF
- Junior – 1,260 AF
- Outside priority system – 2,000 AF

The District also currently has storage rights in four water storage reservoirs (see page 48) with the following capacities:

- South Platte - 6,400 AF
- Chatfield - 6,922 AF
- McLellan - 3,885 AF
- Tingle - 205 AF

Combined, they provide approximately 17,400 AF of water storage space.

Additionally, the District has rights to withdraw annually approximately 17,860 AF of groundwater in various aquifers (collectively known as the Denver Basin):

- Arapahoe (rights secured in 1980) – 6,460 AF

- Laramie-Fox Hills (rights secured in 1980) – 4,290 AF
- Denver (rights secured in 1984 and 1988) – 7,110 AF

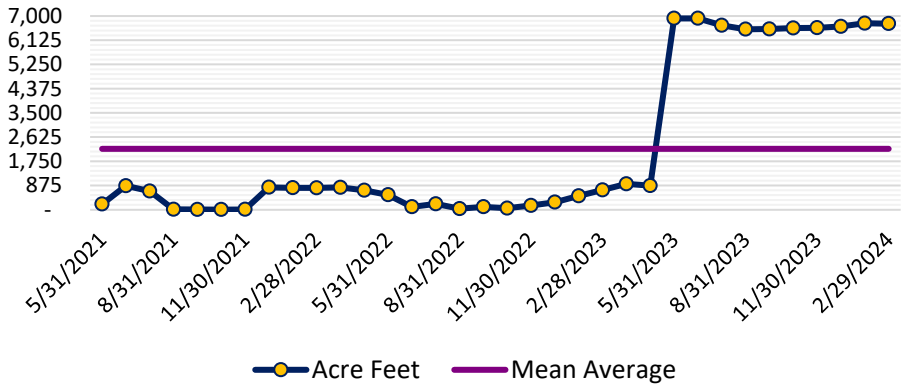
The quality of groundwater requires treatment to satisfy the applicable state and federal regulations for potable water. Twenty-nine of the District's 33 potable wells produce economically viable groundwater. They are connected to the two groundwater treatment plants (see page 43) which have a total production capacity of 8 MGD. The District also has nine drilled, economically viable wells not connected to the GWTPs:

- One connected to the JBWTP forebay for eventual treatment.
- The second used exclusively for privately-owned golf course, outdoor irrigation only.
- Four wells required to have on-site water quality treatment before use.
- The remaining three wells release to a nearby drainage conveyance which takes the water to McLellan Reservoir for eventual treatment through the JBWTP.

By having access to both surface water and groundwater, the District is able to employ a "conjunctive use" - the simultaneous development of renewable surface water and nonrenewable groundwater - approach to water supply management. Utilizing this method has given the District essential time needed to develop a water supply plan (preferably renewable surface water) that reliably supports build-out demand. Build-out is estimated to be a total of 47,150, ¾-inch equivalent taps. The 41-year historical water use has averaged 0.3894 AF per ¾-inch equivalent therefore build-out water demand is rounded to a value of 20,000 AF of raw water needs per year.

CHATFIELD STORAGE

The District's participation in the Chatfield Reservoir Storage and Reallocation Project was driven by the desire to obtain surface water storage in an on-channel reservoir near our facilities. To date, the District's contribution to the project is approximately $60 million. Through the project, the District was able to increase surface water storage space by 6,922 AF, which is the anticipated yield in a wet year. The challenges of the project are the variability of yields, possible water quality problems, and continuing costs to fulfill mitigation obligations. The graph below represents the amount of water, in AF, the District has stored since start-up:

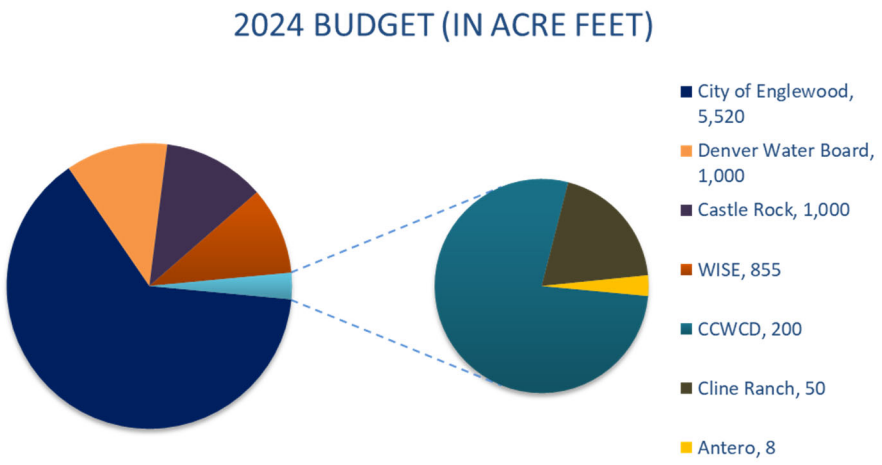


The large increase in May of 2023 is related to the unusual amount of rain the region saw during that time. Through this, the District was able to capture enough water to fill Chatfield water storage to the maximum capacity of 6,922 AF. As 2023 continued to see unexpected rainfall, the District has been able to keep a significant amount of water stored in Chatfield and utilize legacy sources of surface water.

WATER SUPPLY AGREEMENTS

The District remains diligent in finding creative ways to supply water (outside of solely owned sources) to support our customers financially and reliably. As such, the District has entered into multiple water supply agreements as a security mechanism against periodic times when surface and groundwater supply is low and not sufficient to meet the MDD.

Detailing these agreements in the CIP is important as any change in the conditions of the agreements (or cancellation of) could have a noteworthy impact on the District's long-term capital funding for water acquisition. In 2023, the District budgeted a total cost of $6.1 million for an anticipated yield of 8,633 AF from all water supply agreements:



While the cost of these agreements is meaningful, these agreements are vital to offset the cost of capital water acquisition, the associated ongoing maintenance and repair costs, and the scarcity of water supply.

WATER INFRASTRUCTURE AND SUPPLY EFFICIENCY (WISE)

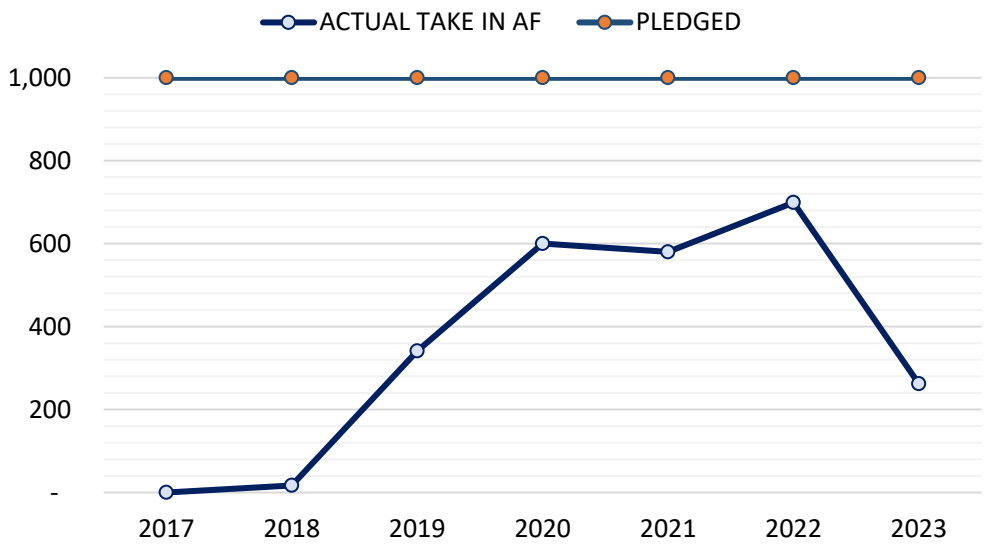
The WISE partnership is a regional project between Denver Water, Aurora Water and 10 members of the South Metro Water Supply Authority (Authority) which serve water to communities in Arapahoe and Douglas counties. The primary goal of the program is to reduce the region's reliance on nonrenewable groundwater. The District's membership in the program was formed pursuant to the Authority's Formation and Organizational Agreement dated December 31, 2013. See page 50 for a map of WISE pipelines and participants.

The WISE partnership works by recapturing water used by Denver Water and Aurora Water customers which is re-treated and shared, when available, with Authority partners. WISE currently provides Authority partners with 1,000 to 2,000 acre-feet annually. Starting in mid-2025, WISE will provide members with a minimum of 100,000 acre-feet of water every decade for an average of 10,000 acre-feet per year, with 10% of total supply (on average 1,000 acre-feet per year) dedicated to the District. Members are responsible for developing their own infrastructure necessary to take delivery of WISE water and are responsible for maintenance of such infrastructure.

The driving forces for the District's participation in WISE are summarized as:

- To obtain additional surface water supplies at up to 1,000AF per year, based on availably of water in the WISE system.
- To further diversify water sources thus reducing water acquisition costs.
- To obtain an additional avenue where treated water can be delivered to the District's system for redundancy.
- To support a regional water supply development project.

As of December 31, 2023, the District has contributed $10.5 million in shared capital costs, $1.4 million in operational dues, and $5.3 million in water costs. Additionally, the District spent $587,000 of direct capital costs for the construction of the WISE interconnect (see page 49). Each year the District must continue providing resources for on-going capital costs to the system as well as the operation of the system. In the next 10 years, the District will have a financial obligation for the construction of the DIA connection and other salinity management capital projects. While the exact amount is still unknown, the District anticipates total cost will be approximately $15-$20 million.



CITY OF ENGLEWOOD ("Englewood")

ENGLEWOOD WATER SUPPLY AND FACILITIES AGREEMENT (WSFA)

This is a lease for raw water and the use of excess capacities in water storage and delivery facilities. The effective date of the lease was January 2003 for an initial 20-year term, however the District has sole discretion to extend the initial term for up to a total of four additional 20-year periods. The second 20-year period began in 2022.

There are separate annual lease payments for excess capacity use at McLellan Reservoir, City Ditch, and Nevada Ditch. Annual payments for water or facilities are adjusted annually using a CPI basis for adjustments, or the parties may alternatively use an "appraisal basis of adjustment" once every five years. In 2023, Englewood exercised their right to an appraisal of water provided to the District from 2021 through 2023. This resulted in a $2 million payment from the District to Englewood for the water provided during that period. The contract also includes water delivery from Ranch Creek (up to 700 AF delivered only in May and June) and storage capacity in McLellan Reservoir (up to 900 AF).

If certain levels of water are consistently offered over multiple years, the additional water is considered to be in higher priced categories which incentivizes Englewood to deliver their excess water to the District.

ENGLEWOOD RANCH CREEK AGREEMENT (RCA)

Beginning July 1977, this agreement is for unlimited 20-year terms continued at the District's sole discretion unless Englewood determines that it "needs the water herein leased" and terminates the agreement; the agreement was last renewed in July, 2018. Payments are made in a lump sum on April 1 of each year, independent of the yield realized.

The contract gives the District a percentage of the yields of two water rights and a percentage of the storage space in McLellan Reservoir:

- 50% of the operational capacity in McLellan Reservoir: approx. 2,970 AF
- 50% of the yield of McLellan 1948 water right.
- 60% of the yield of the "basic deliveries" of RCA water rights.

The water delivered from Ranch Creek is further divided into two categories:

- Basic deliveries: a total of up to 1,620 AF per year; single-use water can be delivered at the District's request.
- Paid deliveries: a total of up to 700 AF per year; reusable water is available for delivery from May 1 to June 30.

There is a risk of low to no yield from each source and there could be years when no water is delivered.

DENVER WATER

This is the most reliable water supply agreement in the District's portfolio. Entered into in 1994, this is a perpetual agreement with no set term nor is there a termination provision. The contract allows for a supply of up to 1,000 AF per year with "dry year" yields averaging 964 AF. The District requests a month in advance when (and where) it would like to take water deliveries, but with the provision that no more than 50% of the total can be taken between May 1 to September 30 nor more than a maximum of 250 AF in any single month. The supplied water cannot be injected into the deep underground aquifers. There is also an emergency interconnect provision for treated water during episodes of water system failures.

CENTER OF COLORADO WATER CONSERVANCY DISTRICT (CCWCD)

2003 AGREEMENT

Entered into for an initial term of 50 years and one 50-year renewal option, the District and CCWCD lease water yields from the Bargas Ranch in South Park. The water rights are owned by CCWCD however the District has the first right of refusal if they decide to sell.

There is a total of 700 AF available of which CCWCD is allotted no more than 200 AF. In the earlier years of the contract, CCWCD did not require their full 200 AF and, in turn, leased to the District the remainder of what they did not use. However, in more recent years, CCWCD has required more of their 200 AF. As such, yields to the District have decreased and it is anticipated that, in the future, will receive closer to the allowable 500 AF per year.

2008 CONTRACT: JAMES TINGLE RESERVOIR OWNERSHIP AND OPERATION AGREEMENT

This agreement addresses the ownership and maintenance of Tingle Reservoir and Sessions Ditch. Tingle Reservoir was built to provide delayed return flows of 165 AF per year to the nearby Michigan Creek. However, Tingle Reservoir was built at a larger size (400 AF) therefore CCWCD and the District have split the excess volume of 235 AF, with 30 AF allotted to CCWCD and 205 AF to the District. The Sessions Ditch is split in the same proportion.

CASTLE PINES NORTH METROPOLITAN DISTRICT (CPN) IGA

Entered into in 2010, this wheeling agreement allows CPN to wheel its water from the South Platte River through the JBWTP (and the District's distribution system) to a point of connection from October 1 through April 30 of the following year. Fifteen percent of the water wheeled by CPN is allotted to the District. This is a 50-year term with three consecutive 10-year term renewals, by mutual agreement.

CLINE RANCH

This water right agreement has provided an average historic yield of 338 AF per year with an estimated dry year yield of 207 AF. The District owns 90% of the yield and has been leasing the other 10% from the Cline family, however the District hopes to eventually acquire the other 10 percent. The yield is limited to

the April - October irrigation season and the water is reusable. The yield could be increased an estimated 150 AF per year with the development of additional return flow capability from contemplated upgrades to existing facilities. See page 15.

LONG-RANGE PLANS

SUMMARY

As mentioned before, the District depends on a combination of surface water and groundwater to provide reliable service to our customers which, in most years, is more than sufficient to meet annual demand. The District has conducted internal planning to provide a framework for the District's water use to meet long-term reliability and sustainability goals, keeping in mind the financial resources available to support the Water Acquisition CIP.

Through analyzing 40 years of water delivery to District customers, staff found that surface water vulnerabilities include, but are not limited to:

- The reliance on leased water.
- The lack of ownership and/or control over 3rd party providers' water facilities
- The financial resources available for capital acquisition.
- Regulatory requirements for reservoir water quality treatment.

While the acquisition of additional reservoir space isn't the backbone of the long-range plan, if the acquisition of addition surface water supplies can most cost-effectively be achieved by acquiring additional storage space, the District will take into consideration when annually reviewing the CIP.

Long-range planning is vital to understating the future financial resources needed to support the CIP, especially recognizing that we are not yet at build-out and will have a larger population to support in the coming years. The District is committed to protecting its water resources and has put into action programs that will assist in reducing the financial impact of water acquisition, as discussed below.

WATER CONSERVATION

Conservation efforts include, but are not limited to:

- Wasteful use of water is prohibited at all times within the service area. Examples of wasteful water use include excess water flowing into gutters from irrigation or unrepaired leaks that lead to excess water use. Outdoor watering is prohibited between 10 a.m. and 6 p.m. from May 1 to September 30.
- Hand watering of landscape materials is allowed at any time. Hand watering is defined as the application of irrigation from a hose held in the hand with a shut off device; or a water-conserving method such as drip irrigation, deep root watering devices, or a watering can. Car washing with a hose is allowed at any time, however the hose must be equipped with a shut off device.

- All non-residential irrigation systems are required to have a functioning rain sensor.

These rules are enforced by the Water Efficiency Coordinator and water conservation interns during the summer months. There will be times when drought response actions, such as limiting outdoor watering to specific days of the week, will be needed in addition to the standard water efficiency efforts listed above. Restrictions are used to assist in the return of normal water-supply and storage levels and will be implemented in accordance with the District's Drought Response Plan (see below).

The District provides technical assistance and financial incentives to encourage water conservation and efficiency among residential and non-residential customers, which include:

- A turf replacement rebate for the removal of any high-water use plant material replaced with low water use plant material. Non-residential customers may receive rebates at the discretion of the Water Efficiency Coordinator. Residential customers may receive a rebate for up to 1,000 square feet of landscaping at the following rates:
  - $2.50 per sq.ft. for ColoradoScape
  - $1.50 per sq.ft. for low water use turf grass
- Residential smart controller rebate of up to $75
- Residential rain sensor rebate of up to $35
- Residential high-efficiency nozzle retrofit rebate of $4 per nozzle
- Residential drip irrigation equipment rebate of $50 per zone
- Residential soil test rebate of up to $25
- Non-residential irrigation equipment rebates are available at the discretion of the Water Efficiency Coordinator, with approval by the District's General Manager
- Financial assistance for green industry professionals working within the service area seeking water efficient irrigation and sustainable landscape certifications

The District also has long standing partnerships with two conservation driven organizations, Resource Central and Irrigation Analysis. In collaboration with Resource Central, the District provides discounted low-water garden kits and free irrigation system assessments to residential customers. Irrigation audits for large, non-residential properties are performed by Irrigation Analysis, which the District provides free of charge to customers.

DROUGHT RESPONSE PLAN

The District has adopted a comprehensive Drought Response Plan (DRP), initially adopted by the Board in 2021 and revised in March 2023. The goal of a coordinated Drought Response Plan is to maintain the health, safety and economic vitality of the community's water resources. It is designed to maximize available water supplies and reduce water use during times of water shortage caused by drought.

In order of priority, the DRP's goals are as follows:

- Provide sufficient water supply to maintain the health, safety and economic vitality of the community and meet indoor water demand for all customers with priority for hospitals, health clinics, residences, schools, government offices and businesses.
- Provide sufficient water supplies for the maintenance of heavily used irrigated landscapes and facilities to the extent achievable depending upon the drought severity.
- Provide sufficient water supplies for the maintenance of irrigated residential property and parks to the extent achievable depending upon the drought severity.
- Provide sufficient water supplies for the maintenance of irrigated common areas such as government property within the community to the extent achievable depending upon the drought severity.
- Provide sufficient water supplies for the maintenance of irrigated commercial property to the extent achievable depending upon the drought severity.

The District has adopted the following indicators to guide decisions on implementation of drought response measures:

		DROUGHT STAGES			
QUANTITATIVE:	Normal	Watch	Stage 1	Stage 2	Stage 3
Storage Reservoirs % Full[1]	>45%	40% - 45%	30% - 40%	25% - 30%	<25%
Downstream Reservoirs % Full[2]	>50%	30% - 50%	20% - 30%	<20%	
South Platte Watershed Snowpack[3]	100%	90%	80%	70%	<70%
South Platte Watershed Cumulative Percipitation[4]	>100%	90%	80%	70%	<70%
South Platte River Streamflow % of Average	100%	90%	80%	70%	<70%
Accumulated Area Precipitation as % of Normal	90%	80%	60%	<60%	
District Water Demand % above Projection	N/A	<5%	5% - 8%	8% - 12%	<12%

QUALITATIVE:

Historical Call	1900 to 1948	1880 to 1900	1870 to 1880	Before 1870	
U.S. Drought Monitor[5]	None	Moderate	Severe	Severe or Worse	Extreme or Exceptional
South Platte River Considerations[6]	At or Above Average	Slightly Below Avg.	Below Avg.	Considerably Below Avg.	
Weather Forecasts[7]	Normal	Drier/Hotter	Dry and Hot	Very Dry and Hot	
Soil Moisture Descriptions[8]	Normal	Slightly Dry	Dry	Very Dry	Extremely Dry

[1]At end of April 30, May 31, June 30, and July 31
[2]Percent full of total volume
[3]Percent of 30-year median
[4]Percent of 30-year average
[5]Characterization of conditions
[6]At South Platte Station streamflow forecast
[7]Temperature and precipitation (varying timeframes)
[8]Provided by National Resources Conservation Service

FUTURE WATER ACQUISITION ALTERNATIVES

The District has gradually developed a proven conjunctive use approach to providing reliable water service to its customers over the past 40 years. The system has strengths and vulnerabilities, but this approach has met the District's obligation of providing safe and reliable water supply. Looking into the future, the District is mindful that the requirement to find additional water supply avenues is very likely. As such, staff are always looking ahead for opportunities that may exist to ensure water supply requirements are reliability available. See page 31 for the current Water Acquisition Plan.

2024-2034 CAPITAL IMPROVEMENT PLAN DETAILED PROJECT LIST

Amounts are shown in anticipated year of appropriation

	APPROPRIATIONS PRIOR TO 2024	2024	2025	2026	2027	2028	2029	2030-2034
VEHICLES & EQUIPMENT								
Vehicles	N/A	$ 100,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 1,375,000
WTP Equipment	N/A	-	100,000	100,000	100,000	100,000	100,000	500,000
WWTP Equipment	N/A	-	50,000	50,000	50,000	50,000	50,000	250,000
Field Equipment	N/A	-	100,000	100,000	100,000	100,000	100,000	500,000
Well Equipment	N/A	500,000	500,000	500,000	500,000	500,000	500,000	2,500,000
Hydro Jet Trailer	-	185,000	-	-	-	-	-	-
Boom Lift - WWTP	-	90,000	-	-	-	-	-	-
Emergency Standby Pump	-	150,000	-	-	-	-	-	-
Dump Truck	-	-	200,000	-	-	-	-	-
Lab- Gas Chromatigraph - MS	-	-	-	250,000	-	-	-	-
Subtotal Vehicles & Equipment	-	1,025,000	1,200,000	1,250,000	1,000,000	1,000,000	1,000,000	5,125,000
WATER TREATMENT PLANT								
Phase 1B	6,176,562	56,843,444	-	-	-	-	-	-
Phase 1.5: Filters Pilot	-	-	2,000,000	-	-	-	-	-
Phase 2	-	-	5,000,000	60,000,000	-	-	-	-
Phase 3	-	-	-	-	3,000,000	35,000,000	-	-
Zone 1 Pump Replacement	-	200,000	-	-	-	-	-	-
Building Renovations	-	-	-	-	-	20,000,000	-	
Subtotal Water Treatment Plant	6,176,562	57,043,444	7,000,000	60,000,000	3,000,000	55,000,000	-	-
WASTEWATER TREATMENT PLANT								
Grit System Equipment	-	500,000	-	-	-	-	-	-
MGWWTP Phase II- Reg 85	86,546,287	100,000	-	-	-	-	-	-
Wastewater Reuse Facility	-	500,000	4,500,000	-	-	-	-	-
Marcy Gulch Stream Flume	-	-	1,000,000	-	-	-	-	-
Subtotal Wastewater Treatment Plant	86,546,287	1,100,000	5,500,000	-	-	-	-	-
GWTP AND WELL REDRILLS								
Well Redrill Denver Field	-	-	2,500,000	-		-	3,000,000	-
GWTP #1 Filter Valve Replacement	-	-	750,000	-	-	-	-	-
Well Redrill Arapahoe Field	-	-	-	-	2,500,000	-	-	3,000,000
GWTP #2 Filter Media	-	-	-	-	-	-	-	-
GWTP #1 Filter Media	-	-	-	-	-	-	-	-
GWTP #2 Sewer Line outfall	-	-	-	-	-	-	-	-
Subtotal GWTP and Well Redrills	-	-	3,250,000	-	2,500,000	-	3,000,000	3,000,000
PUMP STATIONS/ DISTRIBUTION/ WATER STORAGE								
Cline Headgate Renovation	90,000	250,000	-	-	-	-	-	-
Cathodic Protection Assessment	-	350,000	300,000	-	-	-	-	-
Distribution System Master Plan	-	400,000	-	-	-	-	-	-
McLellan B 3rd Pump Install	-	250,000	1,000,000	-	-	-	-	-
De-Strat Compressor for McLellan	-	100,000	-	-	-	-	-	-
Cline Delayed Return Flow Facility	-	-	200,000	-	1,500,000	-	-	-

PUMP STATIONS/ DISTRIBUTION/ WATER STORAGE (CON'T)								
Zone 5 Surge Anticipator Valve	-	-	85,000	-	-	-	-	-
McLellan A Pump Station	-	-	-	-	2,000,000	-	-	-
Zone 4A pump station (2032)	-	-	-	-	-	-	-	2,000,000
Zone 6 Surge Anticipator Valve	-	-	-	-	-	-	-	100,000
Subtotal Pump Stations/ Distribution/Water Storage	- 90,000	1,350,000	1,585,000	-	3,500,000	-	-	2,100,000
LIFT STATIONS / COLLECTION								
Marina Lift Station	-	100,000	-	-	-	-	-	-
Collections System Master Plan	-	500,000	-	-	-	-	-	-
Big Dry Lift Station Upgrades	-	-	-	1,500,000	9,000,000	-	-	-
Willow Creek Lift Station	-	-	-	-	1,000,000	6,500,000	-	-
Subtotal Lift Stations / Collection	-	600,000	-	1,500,000	10,000,000	6,500,000	-	-
SCADA								
SCADA Cellular vs Radio Path	-	300,000	300,000	1,500,000	-	-	-	-
DISTRICT OFFICE BUILDING								
Elevator Upgrade	-	150,000	-	-	-	-	-	-
TOTAL VEHICLES, EQUIPMENT, AND CAPITAL PROJECTS	**$ 92,812,849**	**$ 61,568,444**	**$ 18,835,000**	**$ 64,250,000**	**$ 20,000,000**	**$ 62,500,000**	**$ 4,000,000**	**$ 10,225,000**
WATER ACQUISITION IDENTIFIED PROJECTS								
Chatfield Storage Annual Assessments	N/A	$ 622,980	$ 557,600	$ 519,150	$ 484,540	$ 449,930	$ 418,435	TBD
WISE Capital Improvement	-	1,875,000	-	2,160,000	-	-	-	-
City Ditch Pump Station	-	-	500,000	-	-	-	-	-
Develop South Platte Wellfield No. 1	-	50,000	-	-	-	-	-	5,000,000
TOTAL IDENTIFIED PROJECTS	**$ -**	**$ 2,547,980**	**$ 1,057,600**	**$ 2,679,150**	**$ 484,540**	**$ 449,930**	**$ 418,435**	**$ 5,000,000**
WATER ACQUISITION FUTURE ALTERNATIVES*								
Acquisition of surface or groundwater, if available	N/A	$ -	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ -	$ -
Acquire 500 AF/yr yield from direct potable reuse	N/A	-	-	-	-	-	5,000,000	-
Secure ownership in Last Chance Ditch	N/A	-	-	-	1,000,000	-	-	-
Water Quality Improvements at McLellan	N/A	-	-	200,000	200,000	-	-	-
Water Quality Improvements at South Platte	N/A	-	-	100,000	-	200,000	-	-
Negotiate removal of Thornton thresholds to acquire 100 AF/yr of new yield	N/A	-	100,000	-	-	-	-	-
TOTAL FUTURE ALTERNATIVES	**$ -**	**$ -**	**$ 5,100,000**	**$ 5,300,000**	**$ 6,200,000**	**$ 5,200,000**	**$ 5,000,000**	**$ -**

***These projects are currently not identified for funding in the Capital Improvement Plan**

REGULATORY CONSIDERATIONS

GUIDING REGULATIONS

Public water and wastewater systems are legally bound to regulatory requirements and standards that may be imposed by various levels of government and the District is no exception. The current and proposed regulations and standards driving major components of our CIP are:

- PFAS Maximum Contaminant Level (MCL) in Drinking Water.
- Chloride discharge permit limits at MGWWTP.
- Wintertime temperature discharge permit limits at MGWWTP.
- Regulations 85 and 31: Nitrogen and phosphorus permit limits at MGWWTP.

PFAS MAXIMUM CONTAMINANT LEVELS IN DRINKING WATER

Represented by thousands of distinct chemicals, Per- and Poly-Fluoroalkyl Substances (PFAS) are a human-made family of compounds that, as a group, are effective in water, grease, and stain resistance and have the unique ability to resist high and low temperatures; they are primarily used in manufacturing. They are long-lasting in the environment and break down very slowly.

In recent years, the use of PFAS has come under scrutiny for their negative impacts to the health of the humans, animals, and the environment. For example, PFAS can be found in human and animal blood, fish, certain food products, drinking water, and biosolids that result from the treatment of wastewater. Although the chemicals are found in many consumer products (making it a challenge to assess the overall damage to health and the environment), scientific studies have found that exposure to some PFAS may have harmful health impacts.

In April 2024, the US Environmental Protection Agency (EPA) established the maximum contaminant levels permissible in water delivered for consumption as follows:

- Perfluorooctanoic acid (PFOA) – 4 parts per trillion (ppt)
- Perfluorooctanesulfonic acid (PFOS) – 4 ppt
- Perfluorohexanesulfonic acid (PFHxs) – 10 ppt
- Perfluorononanoic acid (PFNA) – 10 ppt
- HFPO-DA (commonly known as GenX chemicals) – 10 ppt
- Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS – hazard index of 1 (unitless)

The EPA has granted a five-year runway to establish the processes needed to meet compliance. The District is awaiting guidance from CDPHE on how they will implement these new standards into Colorado's Primary Drinking Water Regulation 11.

Currently, staff are working to refine the District's water treatment processes to better understand and improve PFAS removal. The District already uses powder activated carbon (PAC) at the JBWTP, which may become a critical treatment chemical as we understand how it removes PFAS compounds. The District's laboratory staff have tested treated drinking water and believe the District can remove PFOA and PFOS under 4 ppt. The District has not detected PFHxS, PFNA, GenX, PFHxS, or PFBS in treated drinking water.

In 2024, the District added to the CIP a filter pilot program (anticipated for 2025) to test media configurations that would improve removal of PFAS from the drinking water system. If successful, staff would swap the existing media (consisting of sand and anthracite) with granular activated carbon (GAC), which would take place between the Phase 1B and Phase 2 projects at the JBWTP.

CHLORIDE DISCHARGE PERMIT LIMITS AT MGWWTP

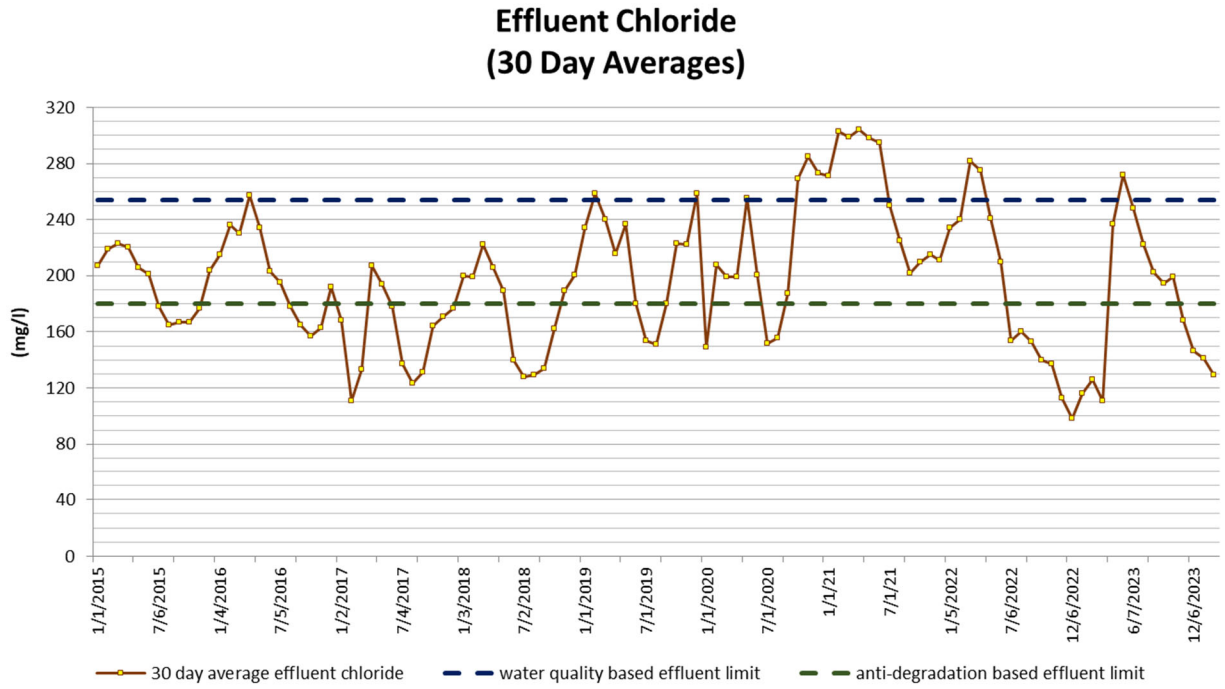
The District's discharge permit for the MGWWTP expired Dec. 31, 2020. Since that time, the discharge permit has been under administrative extension with CDPHE's Water Quality Control Division (WQCD); the expired permit remains in full force and effect. At this time, it is unknown when WQCD will issue a new discharge permit, however we predict it will be issued in the next 1-5 years.

The chloride permit limitations are based on already established standards in the District's receiving stream (Marcy Gulch), but the South Platte River, which Marcy Gulch flows in to, has a more stringent chloride standard called the Anti-Degradation based standard. This requires chloride limits of approximately 180 mg/L. Previously, the District did not have to comply with this standard, however the requirement will be included in the new discharge permit. Based on many years of data, the District determined that it would be exceptionally difficult for the District to meet this permit limitation for chloride in the South Platte River. A "compliance schedule" would be included in the new discharge permit which would allow approximately 1-5 years for the District to come into compliance.

Before the discharge permit expired, staff submitted an "alternatives analysis" to WQCD. The alternatives analysis examined substitute permit limitations for chloride that are considered economically, environmentally and technologically reasonable. If the WQCD accepts the District's alternatives analysis, the permit limitation would be closer to 250 mg/L, which the District is more likely to dependably meet using existing treatment processes.

If WQCD does not accept the District's alternatives analysis, there are two treatment technologies which treat for chloride; reverse osmosis and electrodialysis. In 2017, Brown and Caldwell provided a Class Five estimate, the highest level cost estimate, to review the financial impact to the District. The capital costs varied between $72 million to $121 million and operating costs increased between $7 million to $12 million. The capital cost estimate did not include the cost of injection wells, where the brine from the reverse osmosis or electrodialysis reversal process would need to be disposed.

The graph below shows the measured amount of chloride in Marcy Gulch and the South Platte River as of December 6, 2023:



WINTERTIME TEMPERATURE DISCHARGE PERMIT LIMITS AT MGWWTP

These limitations are governed by the same discharge permit renewal discussed under the Chloride Permit Limit section.

When WQCD issues the new discharge permit, it will include a “wintertime temperature” (December to February) limitation. These limits are based on aquatic life standards in Marcy Gulch and the South Platte River receiving streams. In other words, the permit requires protections against the lethal and sub-lethal effects (e.g. effects on metabolism, growth and reproduction) to aquatic life due to elevated instream temperature.

Since 2009, the District has been allowed to operate under a “temporary modification” for temperature during the winter months which stipulated that the District is still required to monitor temperature at our outfall, but we are not required to meet numerical temperature limitations at this time.

The temporary modification requires the District to steadily make progress towards meeting the limits and the District is required to provide yearly updates to the Colorado Water Quality Control Commission regarding the following topics:

- In-stream temperature monitoring results in Marcy Gulch.
- Temperature sample results in the aeration basins and secondary clarifiers at the MGWWTP.

- Participation in the WQCD's 10 Year Water Quality Roadmap workgroup meetings and Technical Advisory Committee.
- Work completed in conjunction with the WQCD to perform a Warm Water Tier II laboratory fish study.
- Collection of fish and macroinvertebrate population data in Marcy Gulch and the South Platte River.
- Data regarding whether, after the MGWWTP Phase 2 project liquid stream upgrades, there is any amount of cooling that goes on throughout the MGWWTP in the wintertime.

In 2018, the WQCD released a guidance document titled, "Methods for Evaluating the Feasibility of Domestic Wastewater Cooling Technology Alternatives." This document is intended to assist in evaluating the technological, economic, and environmental feasibility of different temperature treatment options and, ultimately, determine whether a feasible option exists for a discharger to comply with the permit limits.

In 2021, the District retained consulting engineer B&C to evaluate whether any of the treatment technologies laid out in the guidance were feasible for the District to implement at the MGWWTP. Based on the eight treatment technologies identified, B&C concluded that two treatment options, cooling towers and mechanical chillers, had the potential to be technologically feasible. However, there are barriers to implementation which included (1) water rights concerns, (2) siting considerations, (3) operator control, and (4) the potential need for chemical or redundancy to control fouling. Further, the District's staff is particularly concerned with where to put the treatment technology (siting considerations) as we are running out of usable area at the MGWWTP.

In 2021, the class 5 estimate for cooling towers was $5.15 million to $13.33 million in capital costs and $101,000 in operation and maintenance costs and, for mechanical cooling, estimated capital was $13.331 million to $53.32 million and $1.15 million in operation and maintenance costs. In 2023, we again retained B&C to further investigate the implementation barriers and give a narrower cost estimate.

When the new permit is issued, it is unlikely the District will be granted further temporary modification as the EPA does not support such a measure and, although Colorado is one of the few states that does allow it, the District was one of the last utilities to be granted an extension. A compliance schedule will be laid out in the new permit which could give the District anywhere from 1-10 years to install the technology needed for compliance.

NITROGEN AND PHOSPHORUS (AKA NUTRIENTS) PERMIT LIMITS AT THE MGWWTP – REGULATIONS 85 AND 31

CDPHE is working to limit certain nutrients in state waters. Excessive loading of nutrients, such as nitrogen and phosphorus, can harm aquatic life and lead to development of toxic algae or harmful algal blooms (also known as cyanobacteria).

In 2012, the Water Quality Control Commission ("Commission") adopted the Nutrient Management Control Regulation (Regulation 85) as an initial step toward reducing nutrients in Colorado waters. The

purpose of Regulation 85 was to allow for a phased implementation of technology-based effluent limits for total phosphorus (TP) and total inorganic nitrogen (TIN) for domestic wastewater treatment plants. This Regulation also established monitoring requirements for dischargers, including effluent monitoring and instream monitoring above and below the discharge location. The control regulation framework was geared toward reducing nutrients as well as characterizing nutrient sources and instream conditions to help inform future regulatory decisions. Under Regulation 85, existing domestic wastewater treatment plants (as of May 31, 2012) are required to meet the technology-based standards shown in the table below.

At the time of Regulation 85's adoption, the Commission also adopted section 31.17 in the Basic Standards (Regulation 31) that established interim values for surface water quality. The interim values represent numeric limits, and a phased implementation approach, that the available scientific information indicated would be protective of beneficial uses. These values are also shown in the table below. Note that the EPA did not approve all of the Regulation 31.17 numeric standards resulting in the proposal of a 10-year roadmap to re-evaluate the standards.

Table 1. Current and Future Nutrient Limits for Marcy Gulch WWTP

Regulation	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Comment
Regulation 85 Effluent Limits	1.0/2.5	15/20 [a]	Marcy Gulch WWTP permit limits beginning July 1, 2025 (as running annual median/running annual 95th percentile).
Barr Milton TMDL Phase I WLA	1.0	NA	Current Marcy Gulch WWTP target for TP under the TMDL.
Interim Regulation 31 Rivers and Streams (Warm)	0.17	2.01	Current interim nutrient values for streams until new standards are adopted in 2027.
Interim Regulation 31 Lakes and Reservoirs (Warm)	0.083	0.91	Current interim nutrient values for lakes and reservoirs until new standards are adopted in 2023.
Proposed Regulation 31 Lakes and Reservoirs (Warm)	0.04	0.61	Proposed lake and reservoir standards for statewide adoption in 2027, including Barr Lake.
Future Regulation 31 Rivers and Streams (Warm)	TBD	TBD	The Division will release draft criteria in 2025, with statewide adoption in 2027.
Future Barr Milton TMDL Phase II WLA	0.1	NA	Long-term WLA target, subject to change based on Phase I TMDL implementation.

CDPHE has proposed standards for lakes and reservoirs of .04 mg/L for TP, 0.61 mg/L for TIN. These proposed standards, if adopted, would be in Regulation 31 (Colorado's surface water regulation) and would also be adopted in each of the District's basins which are currently governed by Regulation 38.

In order to meet these ultra-low effluent nutrient limits, the District would have to install supplementary denitrification followed by microfiltration and reverse osmosis. After review of the requirements, it was estimated that the financial impact to the District could be as high as $280 million. Staff expects if these standards are adopted they would be included in the District's new discharge permit for compliance by the mid-2030s.

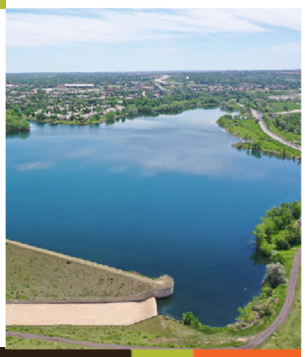
In October 2017, the Commission approved Policy 17-1, the Voluntary Incentive Program (VIP) for Early Nutrient Reductions. This policy incentivizes facilities to go above and beyond the current regulatory requirements in Regulation 85 to make additional reductions to effluent nutrient concentrations for TIN

and TP in exchange for extended compliance schedules for meeting the future nutrient standards. The District is participating in this program. After the Commission adopts new nutrient standards, the Division's Permits Section intends to renew or modify discharge permits for the facilities that participated in the VIP program, adding compliance schedules for TN and TP based on credits earned under the VIP program. The table below shows the credits the District has earned under this program:

VIP Complilance Schedule Credit Calculations for TIN and TP

	ANNUAL MEDIAN CONCENTRATIONS		INCENTIVE CREDITS EARNED	
	TIN	TP	TIN	TP
	mg/L	mg/L	Month	Month
2018	20.150	0.670	0	12.60
2019	19.680	0.770	0	9.20
2020	18.675	0.800	0	8.00
2021	19.420	0.760	0	9.60
2022	16.094	0.783	0	8.68
2023	16.830	2.810	0	0.00
TOTAL MONTHS			0	48.08
ELGIBLE MONTHS			0	48
ELGIBLE YEARS			0	4

APPENDIX



2024 ADOPTED WATER AND WASTEWATER RATES

Rates are established by the Board of Directors in order to fund the cost of providing water and wastewater service to the customers of the District. The primary function of the various rates are to support:

1. The operations cost of providing water supply, treatment and distribution,
2. The operations cost of providing wastewater collection and treatment,
3. The cost of providing periodic billing statements, maintaining meters and administrative costs,
4. Debt service payments,
5. The cost to fund a reserve for the repair and replacement of equipment, and
6. Accumulation of reserves for the acquisition of additional water supplies.

WATER BUDGET*	2023 METERED WATER CONSUMPTION (per 1,000 Gallons)				2024 METERED WATER CONSUMPTION (per 1,000 Gallons)			
	Residential		Non-Residential		Residential		Non-Residential	
	Summer	Winter (non-irrigation)	Indoor Only	Irrigation Only	Summer	Winter (non-irrigation)	Indoor Only	Irrigation Only
up to 100%	$ 4.52	$ 4.52	$ 4.18	$ 4.62	$ 4.79	$ 4.79	$ 4.43	$ 4.90
101% to 120%	$ 6.08	$ 6.08	$ 5.66	$ 6.20	$ 6.44	$ 6.44	$ 6.00	$ 6.57
121% to 140%	$ 9.23	$ 6.08	$ 5.66	$ 10.90	$ 9.78	$ 6.44	$ 6.00	$ 11.55
140% and over	$ 13.97	$ 10.06	$ 9.85	$ 18.50	$ 14.81	$ 10.66	$ 10.44	$ 19.61
	Drought Rates - Stage 1**				Drought Rates - Stage 1**			
up to 100%	$ 4.52	N/A	N/A	$ 4.62	$ 4.79	N/A	N/A	$ 4.90
101% to 120%	$ 7.60	N/A	N/A	$ 7.75	$ 8.06	N/A	N/A	$ 8.22
121% to 140%	$ 11.54	N/A	N/A	$ 13.63	$ 12.23	N/A	N/A	$ 14.44
140% and over	$ 13.97	N/A	N/A	$ 13.97	$ 18.51	N/A	N/A	$ 19.61
	Drought Rates - Stage 2**				Drought Rates - Stage 2**			
up to 100%	$ 4.52	N/A	N/A	$ 4.62	$ 4.79	N/A	N/A	$ 4.90
101% to 120%	$ 9.12	N/A	N/A	$ 9.30	$ 9.67	N/A	N/A	$ 9.86
121% to 140%	$ 13.85	N/A	N/A	$ 16.35	$ 14.68	N/A	N/A	$ 17.33
140% and over	$ 13.97	N/A	N/A	$ 18.50	$ 18.51	N/A	N/A	$ 19.61

2023 WATER SERVICE AVAILABILITY FEE		2024 WATER SERVICE AVAILABILITY FEE	
Residential - Single Family (bi-monthly)	$ 36.50	Residential - Single Family (bi-monthly)	$ 36.50
Residential - Multi Family (monthly)	$ 11.32	Residential - Multi Family (monthly)	$ 11.32
Nonresidential per 3/4" equivalent (monthly)	$ 18.25	Nonresidential per 3/4" equivalent (monthly)	$ 18.25

2023 WASTEWATER TREATMENT		2024 WASTEWATER TREATMENT	
Residential - Single Family* **		**Residential - Single Family*** **	
Fixed fee (bi-monthly)	$ 26.96	Fixed fee (bi-monthly)	$ 29.92
Minimum charge -Fixed fee plus		Minimum charge -Fixed fee plus	
3,000 gallons Use	$ 39.08	3,000 gallons Use	$ 43.48
Use - winter time average (per 1,000 gallons)	$ 4.04	Use - winter time average (per 1,000 gallons)	$ 4.52
Residential - Multi Family (per unit)* **		**Residential - Multi Family (per unit)*** **	
Fixed fee (monthly)	$ 13.48	Fixed fee (monthly)	$ 14.96
Minimum charge -Fixed fee plus		Minimum charge -Fixed fee plus	
1,500 gallons	$ 19.54	1,500 gallons	$ 21.74
Use - winter time average (per 1,000 gallons)	$ 4.04	Use - winter time average (per 1,000 gallons)	$ 4.52
Nonresidential		**Nonresidential**	
Fixed fee per 3/4" equiv. tap size (monthly)	$ 13.48	Fixed fee per 3/4" equiv. tap size (monthly)	$ 14.96
Rate * 80% water consumed (per 1,000 gallons)	$ 4.04	Rate * 80% water consumed (per 1,000 gallons)	$ 4.52

2023 INFRASTRUCTURE IMPROVEMENT FEE		2024 INFRASTRUCTURE IMPROVEMENT FEE	
Residential - Single Family (bi-monthly)	$ -	Residential - Single Family (bi-monthly)	$ 15.00
Residential - Multi Family (monthly)	$ -	Residential - Multi Family (monthly)	$ 7.50
Irrigation - Per Tap	$ -	Irrigation - Per Tap	$ 7.50
Nonresidential per 3/4" equivalent (monthly)	$ -	Nonresidential per 3/4" equivalent (monthly)	$ 7.50

* Water Budget per residential customer = 12,000 gallons bimonthly for indoor use + outdoor usage equivalent to 27" of irrigation annually on the irrigated area of the lot (irrigated area = 45% of gross lot size). Water budget for irrigation only customers = 27" annually of irrigation on actual irrigated area.

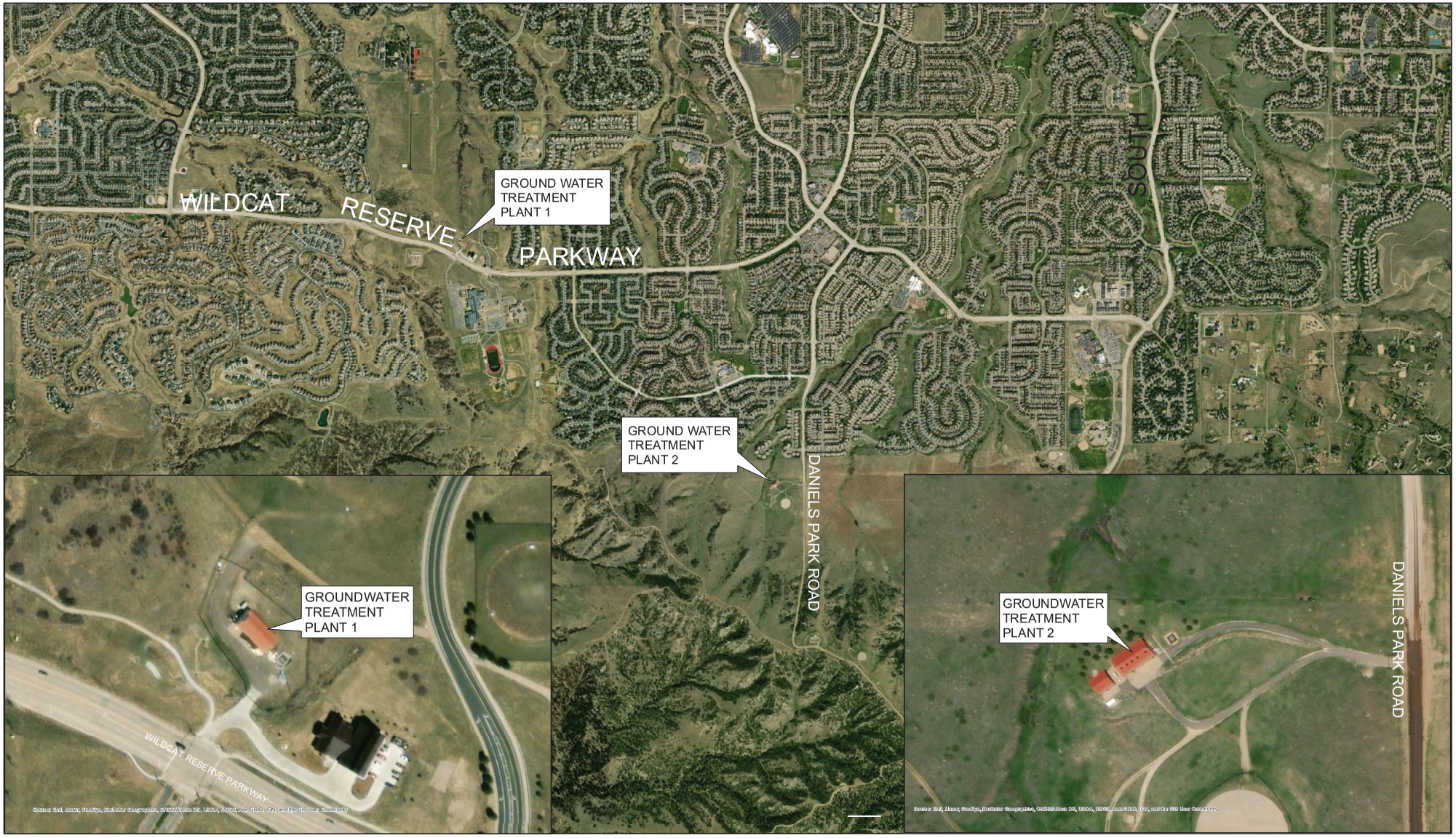
**Rates subject to change due to, but not limited to, water supply conditions such as drought and the provision of sufficient funds for the operation of the district.

***Fixed fee plus use during winter time average sets fee for the year

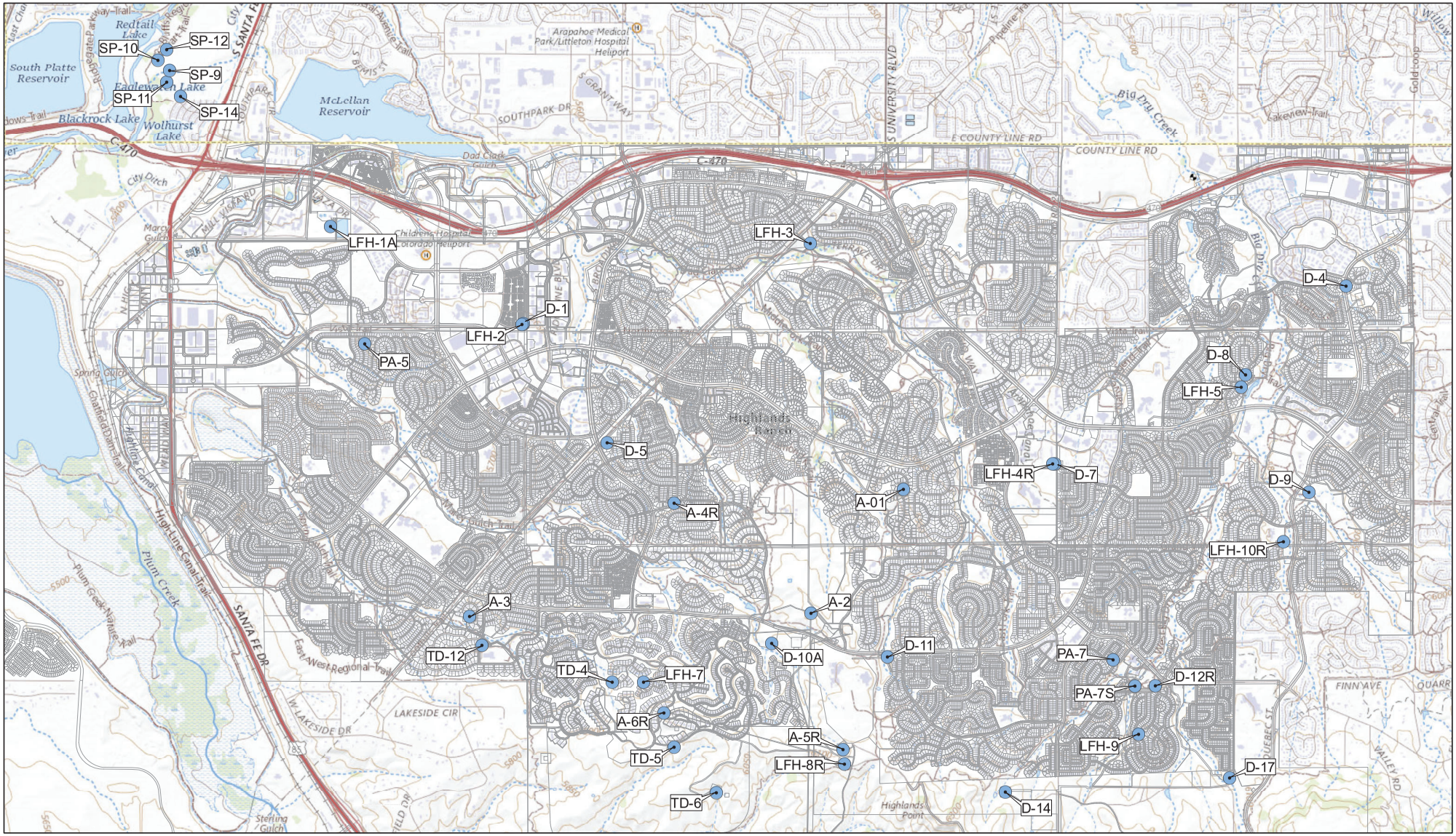
JOSEPH BLAKE WATER TREATMENT PLANT

MARCY GULCH WASTEWATER TREATMENT PLANT

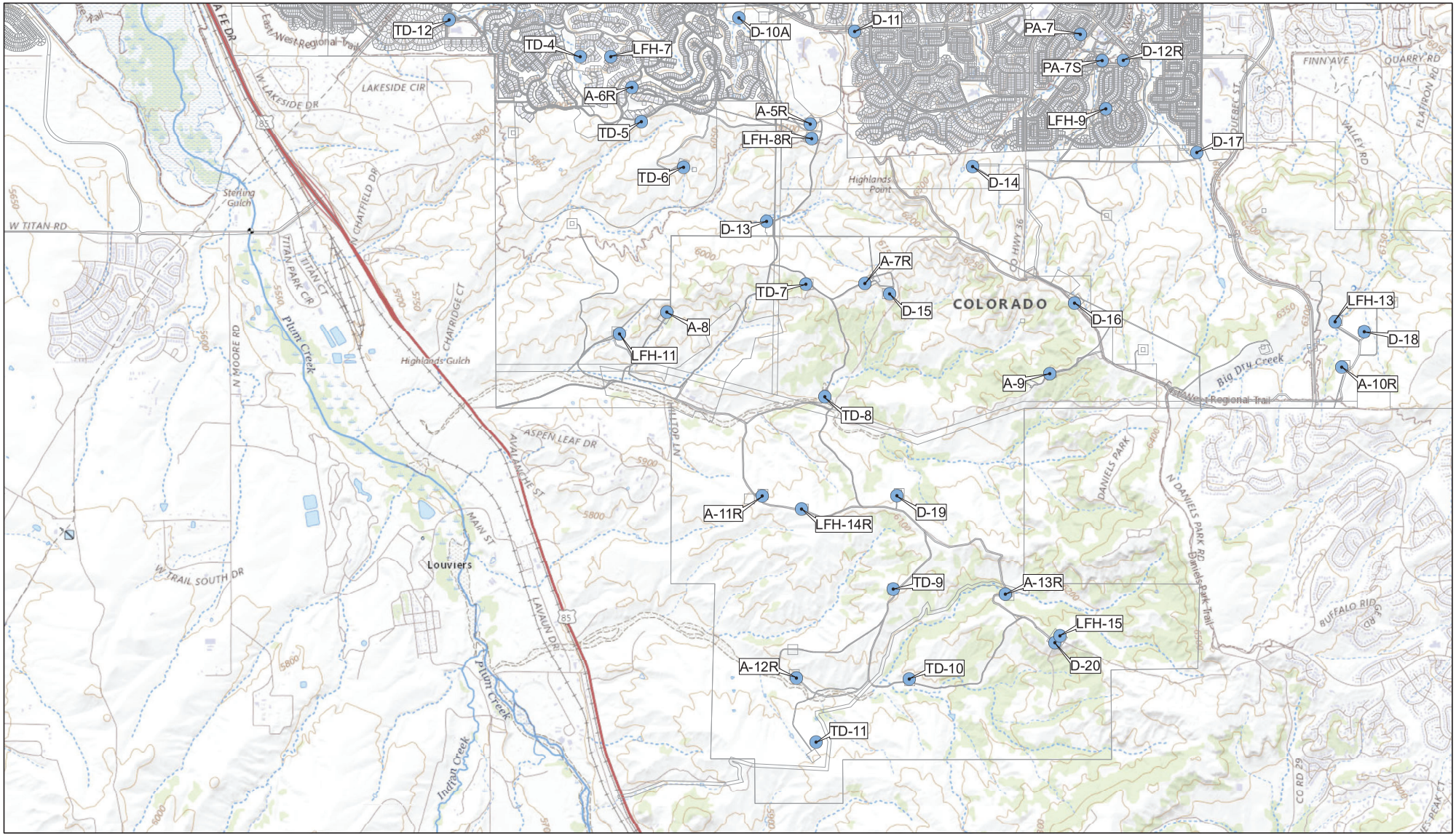
Ground Water Treatment Plants



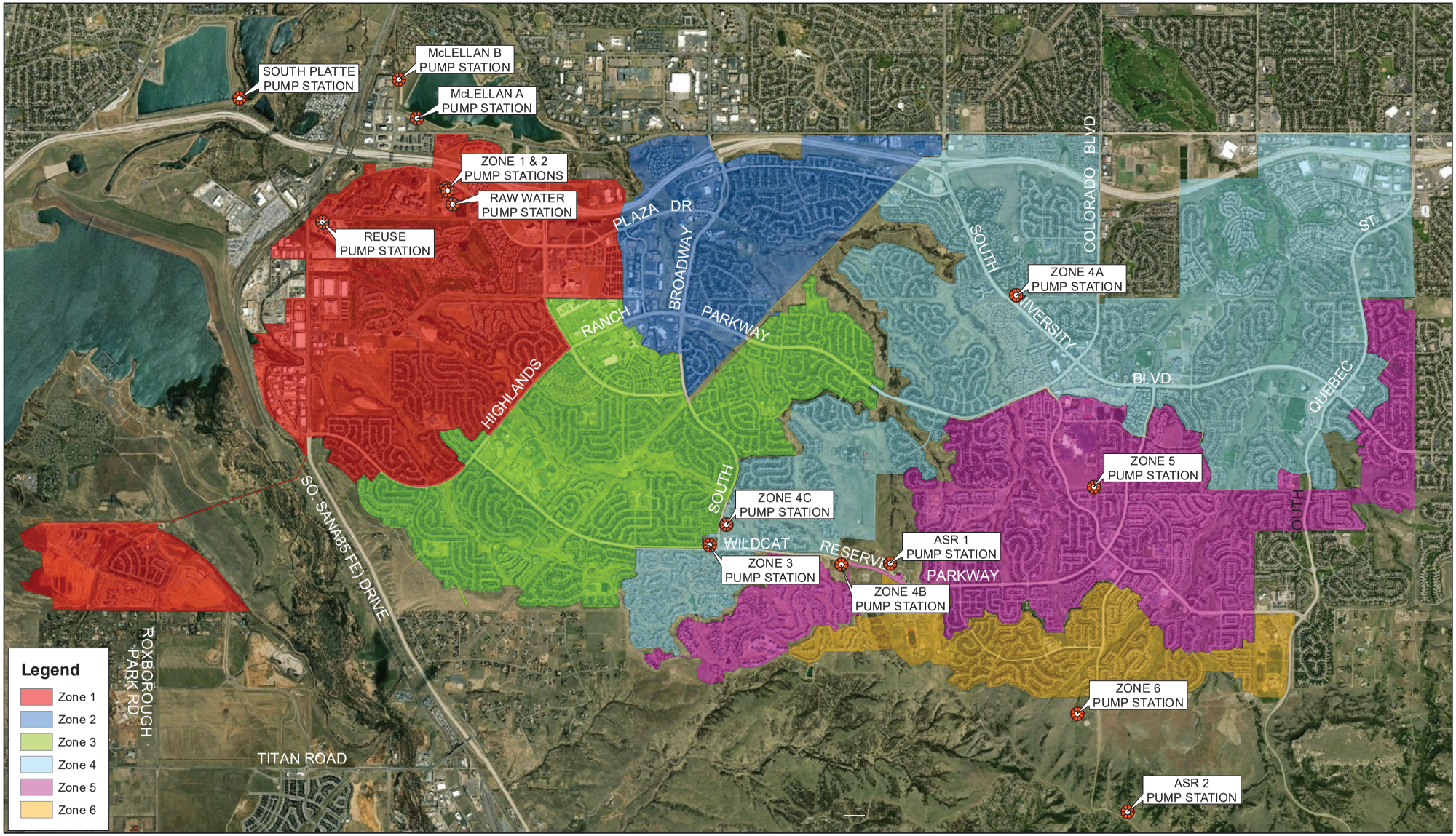
PRODUCTION WELLS
NORTH



PRODUCTION WELLS
SOUTH

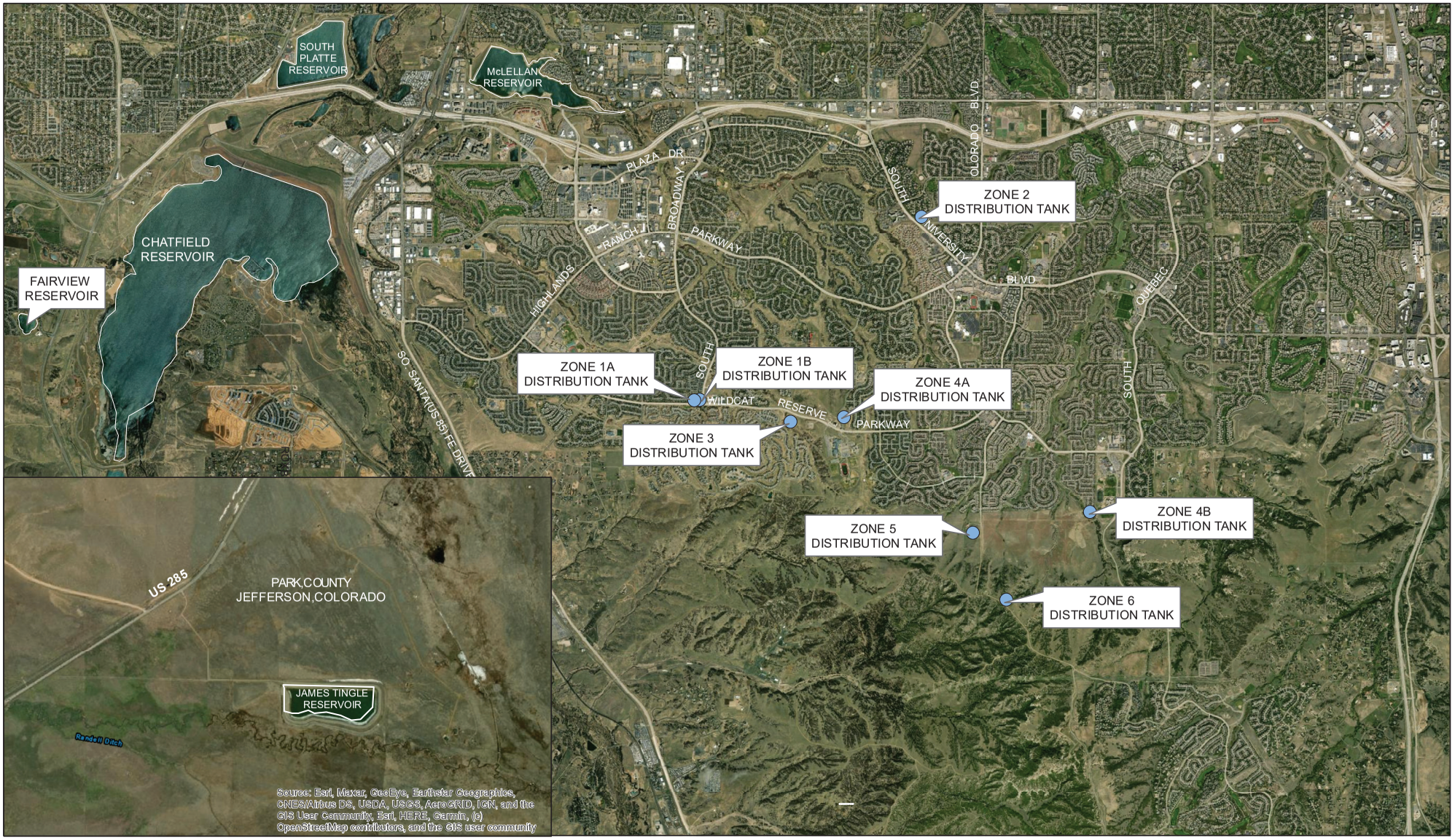


PUMP STATIONS

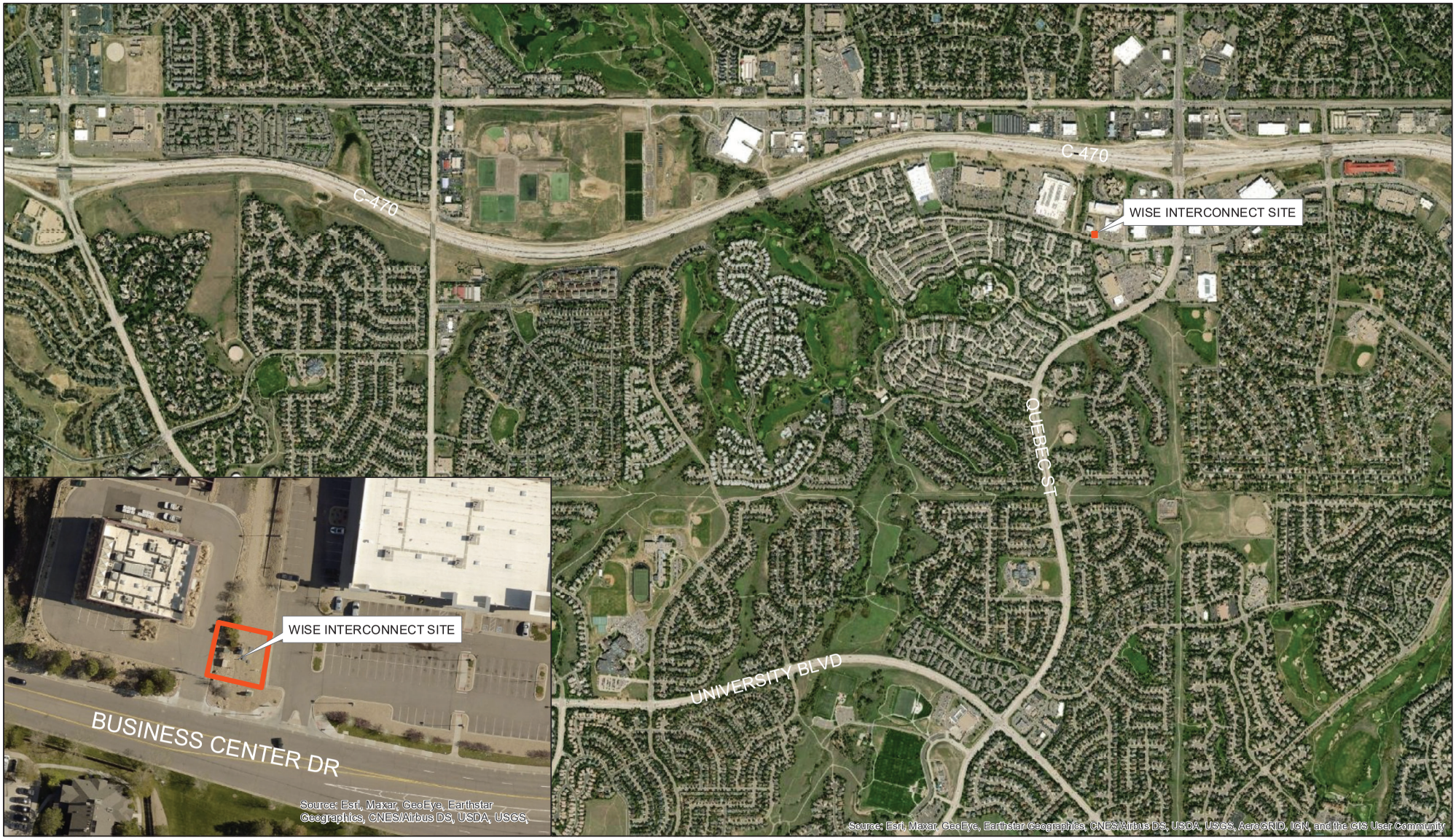


LIFT STATIONS

WATER STORAGE SITES



WISE INTERCONNECT SITE



WISE PARTICIPANTS