
Tuesday, January 20, 2026, 6:00 PM

Council Chambers
One DesCombes Drive
Broomfield, CO 80020

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1. Concept Review

2. Study Session

2.A. Baseline Development Update

2.B. Water Supply Update

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Date Posted: January 14, 2026



City and County of Broomfield

City Council Study Session

B. Water Supply Update

Meeting	Agenda Group
Tuesday, January 20, 2026, 6:00 PM	Study Session Item: 2B.
Presented By	
Ken Rutt, Director of Water Utilities	

Community Goals

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Attachments

[Memo for Water Supply Update.pdf](#)

Summary

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Purpose

This memo provides an update on the City and County of Broomfield's (CCOB) long-term water supply strategy, which is designed to ensure a reliable and sustainable water supply for residents and businesses through the year 2050. The update details CCOB's diverse portfolio of water rights, proactive planning to address risks like climate change and Colorado River Compact challenges, and strategic infrastructure development, including the Chimney Hollow Reservoir Project and the necessary rehabilitation of the Great Western Reservoir. It also summarizes the current state of Broomfield's potable and non-potable water resources and outlines future water use projections, emphasizing the need for continued conservation and risk management in the face of climatic uncertainty.

Background - Overview

Broomfield is committed to securing a reliable and sustainable water supply for its residents and businesses, a cornerstone of responsible growth and community welfare. Over the past three decades, the City and County of Broomfield (CCOB) has strategically invested in a diverse portfolio of water rights and resources. This proactive approach projects a robust supply capable of supporting anticipated population and economic growth through the year 2050, provided we experience average climatic conditions and drought severity consistent with historical data. It is important to note, however, that exceptionally severe or prolonged droughts, exceeding historical precedents, would necessitate the implementation of mandatory outdoor water use restrictions for all customer classes to preserve the community's core supply.

Proactive Planning: Addressing Unlikely but Plausible Risks

While Broomfield's water portfolio is strong, our planning philosophy encompasses continuous assessment of future trends, including potential climate shifts and interstate regulatory dynamics. Staff have identified several "low probability, high impact" future conditions that, while unlikely, are plausible and lie outside of Broomfield's direct control. These risks demand an adaptive and flexible water management strategy:

1. Colorado River Compact Challenges: The possibility of unfavorable legal rulings concerning a Colorado River "Compact Call," which could curtail water use in the Upper Basin states, including Colorado, remains a significant, though distant, risk.
2. Interstate Settlement Impacts: A negotiated or federally-imposed interstate settlement regarding Colorado River operations, particularly concerning shortage allocations, could impact Broomfield's ability to fully utilize its entitlements from that system.
3. Unprecedented Climate Extremes: Future droughts that are substantially more severe in duration or intensity than those experienced in the past could place additional stress on regional and local water resources.

Strategic Infrastructure and Storage Development

To guarantee an adequate and reliable supply for future growth and to enhance system resiliency, the completion of regional storage and the development of essential local storage are paramount.

- **Chimney Hollow Reservoir: A Key Regional Asset** - Broomfield is a participant in the Chimney Hollow Reservoir Project, a critical regional storage solution, which is nearing completion. This facility is essential for securing our future water needs. During the construction phase, project

participants, led by Northern Water, discovered mineralized uranium deposits in the rock and soil used in portions of the reservoir's construction. Technical staff and project engineers have devised and implemented feasible mitigation solutions to address this issue. These comprehensive mitigation efforts are anticipated to maintain uranium levels in Broomfield's treated drinking water well below the regulatory limits. Currently, Broomfield's treated water consistently shows undetectable levels of uranium.

- **Local Storage for Peak Demand Management** - The ongoing growth of Broomfield means that peak summer water demands will increasingly challenge the capacity of existing water delivery pipelines. To effectively meet these future peak summer demands and ensure system reliability, the development of additional local storage capacity is crucial. The recent completion of the Siena Reservoir connection to the City's water treatment plant, a project which included a new pump station and pipeline infrastructure, represents a significant step. This enhancement is projected to bolster the City's supply and is expected to defer the necessity for the proposed Broomfield Reservoir project until approximately 2037. The Broomfield Reservoir remains a vital component of the long-term water storage strategy to address demands beyond that timeframe.
- **The Great Western Reservoir (GWR)** - This reservoir is a foundational asset for Broomfield, particularly for securing adequate supply for the City's non-potable reuse water system, which is critical for irrigation and other non-drinking water uses. However, several components of the GWR dam structure have reached or exceeded their useful design life. As mandated by Colorado Dam Safety regulations, a comprehensive rehabilitation or replacement plan must be executed to ensure the dam's continued safety and operational integrity.

Staff is currently conducting in-depth engineering, hydrological, and financial studies to evaluate the most prudent course of action for GWR. The following options are currently under consideration:

1. **Full Dam Replacement:** This option involves the complete reconstruction of the dam, designed to meet all current safety and operational standards. The estimated cost for this comprehensive project is \$48 million.
2. **Partial Dam Replacement/Major Rehabilitation:** This option focuses on replacing or significantly rehabilitating the most critical components of the dam. The estimated cost for this targeted approach is \$36 million.
3. **Decommissioning GWR:** This alternative involves the safe decommissioning of the reservoir, with an estimated cost of \$14 million. Should this option be pursued, staff must then secure alternative water sources to sustain the reuse system; the costs and long-term viability of securing an equivalent alternative supply are still undergoing detailed study.

Staff is committed to transparently presenting the comprehensive results of these ongoing studies, along with a firm recommendation for the preferred option, to the City Council by the end of 2026. This decision will be vital for the future security of Broomfield's reuse water system and compliance with dam safety requirements.

Potable Water Resources

Broomfield's potable and reuse water systems utilize a diverse array of sources. The primary potable water supply is comprised of treated water purchased from Denver Water and raw water from the Colorado-Big Thompson (C-BT) and Windy Gap Projects, both operated by the Northern Colorado Water Conservancy District (Northern). This raw water originates in the Colorado River headwaters near Granby. It is transported via a tunnel under Rocky Mountain National Park to Carter Lake, and subsequently delivered to Broomfield's Water Treatment Facility through the Southern Water Supply Project Pipeline (also known as the Carter Lake Pipeline).

Colorado-Big Thompson (C-BT) Project

Broomfield owns 13,698 units of C-BT water. The annual yield from the C-BT system fluctuates based on a quota set by the Northern Board each year. This quota is determined by factors including storage conditions, projected snowpack runoff, and agricultural demand. Typically, a quota of 0.7 acre-feet per share provides Broomfield with 9,589 acre-feet annually. Additionally, a right to carry over 2,739 acre-feet of C-BT water from one year to the next serves as a crucial reserve during drought periods.

For reference, an acre-foot of water is equivalent to 325,851 gallons. One acre-foot is enough water for 2-3 typical single family homes for a year.

Windy Gap Project

Broomfield holds 56 units of Windy Gap water (out of a total of 480), equating to about 11% of the project's yield. Prior to the completion of Chimney Hollow Reservoir, the actual water yield from Windy Gap is highly inconsistent and frequently zero. This variability is due to Windy Gap being a relatively junior water right on the Colorado River Basin, often subject to curtailment during periods of below-average snowpack and runoff. Furthermore, its reliance on excess capacity, particularly storage in Lake Granby within the C-BT system, means that in wet years when Lake Granby is full, there is no available storage space for Windy Gap water. Chimney Hollow Reservoir is being built to address this issue by providing dedicated storage capacity. Once fully operational, the combined typical supply from Windy Gap and Chimney Hollow is expected to be approximately 5,000 acre-feet per year. This projection is lower than initial historical planning estimates, as a portion of the capacity in Chimney Hollow is intended to be reserved annually as a backup supply for drought resilience.

Denver Water Supply

A perpetual agreement allows Broomfield to purchase up to 6,500 acre-feet of treated water from Denver Water annually. The contract mandates a "take-or-pay" amount of 4,700 acre-feet per year. While Denver Water provides a highly reliable supply, it is comparatively more expensive than treating C-BT and Windy Gap water. To manage costs, Broomfield typically takes delivery of the minimum contract amount, approximately 4,700 acre-feet per year. This supply is delivered through a master meter near Midway Boulevard and Zuni Street and is blended into the distribution system with Broomfield's self-treated water.

FRICO Marshall System (Community Ditch)

In 2024, Broomfield secured a change case in Water Court permitting the municipal use of its shares in the FRICO Marshall System, also known as the Community Ditch. Water from the Marshall shares is planned for increasing incorporation into the potable supply over the next few years. It will be delivered via Community Ditch to Siena Reservoir and subsequently pumped to Glasser Reservoir. A summary of Broomfield's potable and non-potable water resources is provided in Table 1 at the end of this memo.

Non-Potable Water Resources

The primary source is highly treated wastewater effluent, which originates from our use of Windy Gap water. This reuse water is pumped into Great Western Reservoir (GWR) during the winter months. During the irrigation season, water is drawn from GWR, and additional water is pumped directly from the wastewater recovery facility into the reuse distribution system.

A significant secondary source is raw water from Broomfield's shares in the Church Ditch system. This raw water is pumped into GWR during the spring and summer.

Finally, Broomfield has a special agreement with Northern Water that allows the reuse of effluent derived from C-BT water. This agreement necessitates that Broomfield replace the associated return flows on the South Platte River. Broomfield utilizes several water rights for this replacement, including a storage right for Heit Pit (detailed further in this document).

Benefits and Scope of the Reuse System:

The non-potable system currently supplies approximately 2,500 acre-feet per year. This supply is used to irrigate 940 acres of city parks and roughly 1,500 acres of non-city-owned landscapes in areas like Arista, Flatirons Mall, Legacy High School, Anthem, and Interlocken.

This reuse system is highly beneficial, as it allows Broomfield to maximize its water supplies through multiple uses. Crucially, it reduces the demand on treated domestic drinking water that would otherwise be required for irrigation purposes.

A comprehensive summary of Broomfield's potable and non-potable water resources is provided in Table 1 at the conclusion of this memo.

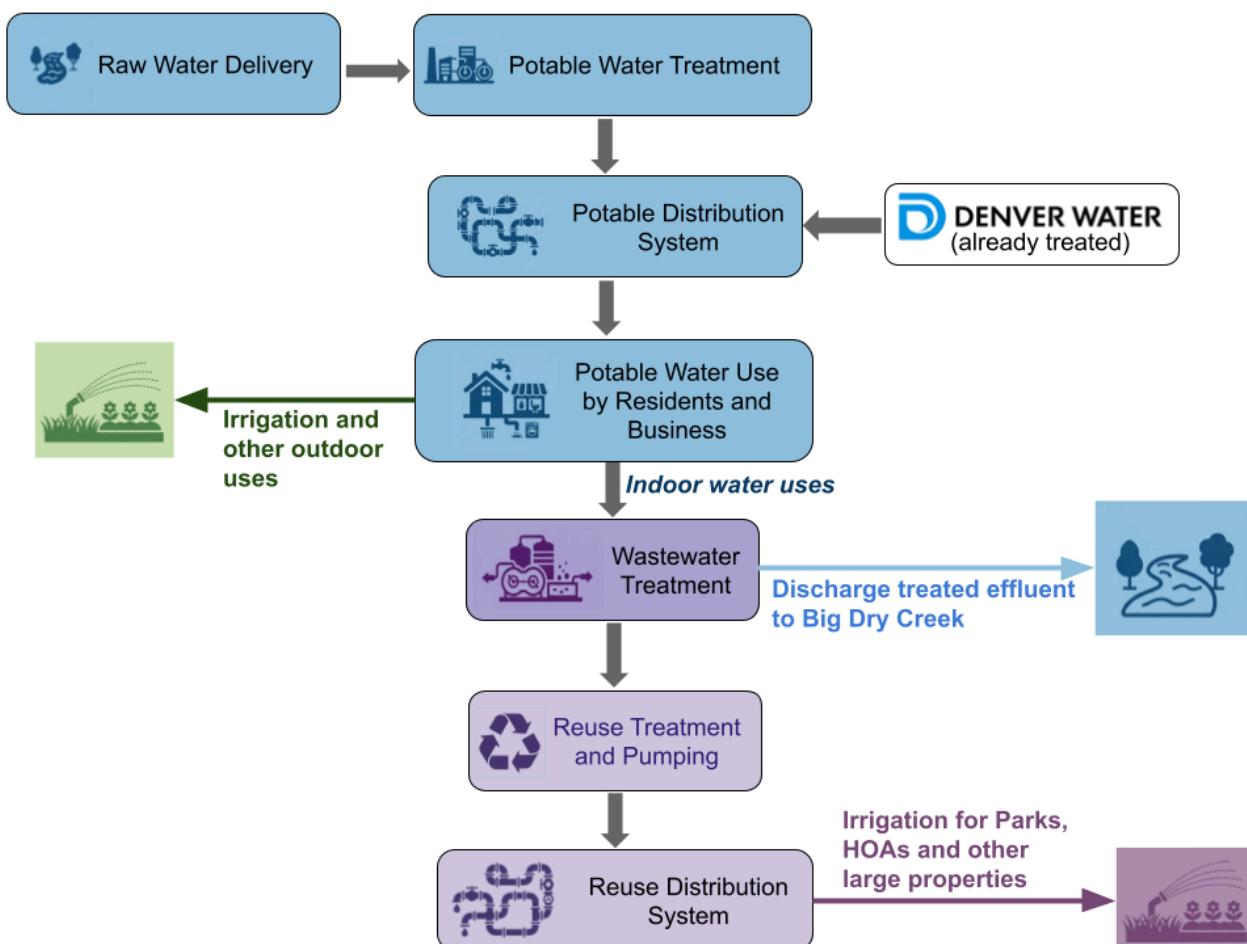


Figure 1: Overview of Broomfield's potable and reuse water system. Potable water use generates wastewater, some of which Broomfield can legally reuse under Colorado water law.

Potable Water Supply Planning

A traditional method for water supply planning involves estimating the "firm yield" of a system. Firm yield represents the maximum amount of water a supply system can reliably and consistently deliver, even during drought conditions. This estimation is typically done through modeling, relying on the assumption of a stable climate and hydrologic system where past measured conditions accurately predict future conditions.

Historically, Broomfield has used this approach, assuming the calculated firm yield indicates the maximum water demand the system can meet in the future.

However, relying on past firm yield data to predict future firm yield is problematic due to the current understanding of climate change. Recent observations, measurements, and climate science modeling indicate that weather patterns and hydrology are changing and are highly likely to continue doing so. While climate science suggests Colorado river systems are more likely to become drier, the exact extent of this change is highly uncertain. This significant uncertainty reduces the usefulness of firm yield as a primary planning concept.

While Broomfield still estimates the firm yield of its water resources portfolio, the city has also adopted a new approach to evaluate and manage future risks by considering multiple possible scenarios. Broomfield's planning now incorporates observed conditions from the 2002-2004 drought, potential drought risks under climate change, and future management risks related to the Colorado River.

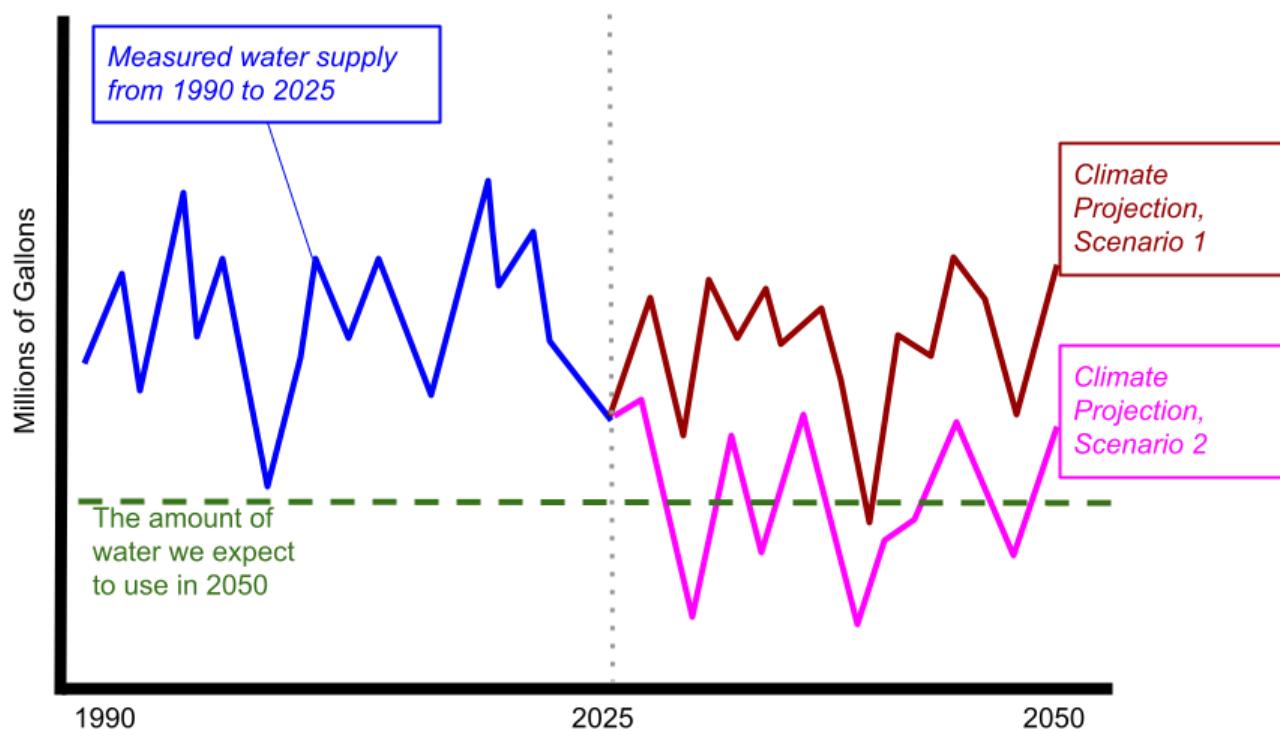


Figure 1: This is a general illustration of the problem climate change poses for water supply planning. The blue represents actual measured supply from a water system from

1990 to 2025. The red and the pink represent two plausible future patterns of supply that are based on climate modeling. Both of them have lower reliable supply than the past measurements due to expected drier conditions, but the pink is much more severe. The dotted green line represents the total amount of water we expect to use in 2050. If the past measurements shown in blue were a good predictor of future supply, we could conclude that the system is adequate to meet future water use because the blue never drops below the green dotted line.

The red chart drops below the green dotted line once, while the pink chart does so multiple times. With the scenario represented in red, we would expect a low likelihood of only small shortages. The scenario in pink, however, suggests the possibility for repeated, very severe shortages. While climate science is improving, it is still impossible to accurately predict how a local or regional water system will be impacted. In other words, it is prudent to plan and prepare for both the red and the pink scenarios as very plausible future conditions.

Future Potable Water Use

Broomfield's Planning and Economic Vitality department is responsible for continually developing and updating projections for the city's future growth.

Key Growth Projections (Current to 2050):

- Population: The current estimated population of 82,000 is projected to increase to 118,900 by 2050. The majority of this growth is anticipated in multi-family housing (apartments and condos), with only minor growth in single-family homes.
- Commercial Space: Commercial space is projected to grow substantially, from approximately 19 million square feet today to over 30 million square feet by 2050.

These projections for population, housing, and commercial development serve as the basis for forecasting Broomfield's future water demand. Future water use is calculated by multiplying projected per capita water use in both single-family and multi-family categories by the corresponding future population. A similar method, based on water use per square foot, is applied to commercial space. The most recent water use projection is shown in Figure 2 and is updated at least annually.

Projection Uncertainty and Historical Context:

While the projection is considered a reasonable estimate, it does carry considerable uncertainty. Factors that could lead to higher or lower water use in the future are summarized in the table below.

It is important to note that the current projections are significantly lower than those made in 2018, which anticipated water use to exceed 17,000 acre-feet by 2024. In contrast, current total potable water use averages about 13,100 acre-feet. This reduction in both actual and projected water use is attributed to several factors, including successful conservation programs, a slower growth rate than was projected in 2018, and new water use requirements enacted by the Council in 2024.

Factors that could make future average and/or peak demand <u>higher</u> than the forecast	Factors that could make future average and/or peak demand <u>lower</u> than the forecast
Hotter, drier or longer summers increases outdoor irrigation compared to historical patterns	The new landscape ordinance reduces outdoor water use by a large margin in all new development (we're working on this)
Residential or commercial growth accelerates substantially beyond what Economic Vitality currently projects	Hotter, drier or longer summers leads to more turf replacement (people give up on turf)
Multi-family housing development does not increase as much as Economic Vitality currently projects	Conservation (subsidized and separate from subsidies) accelerates substantially more than past trends

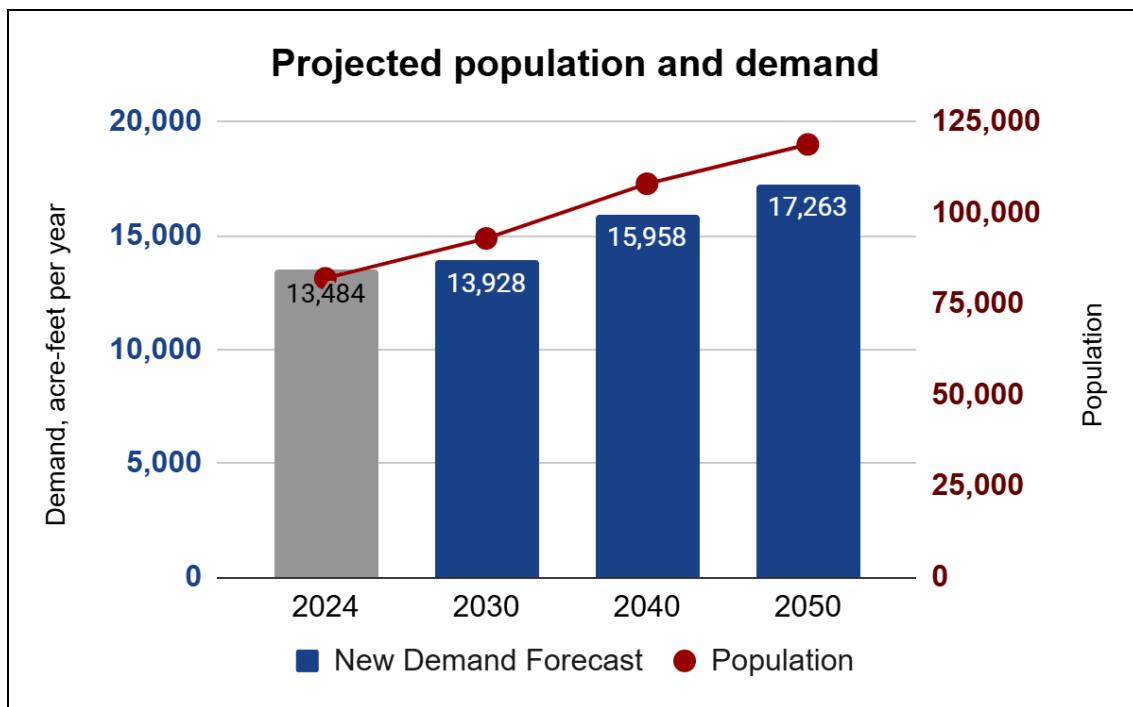


Figure 2: Projected population and water use through 2050

Future Supply in Non-Drought Conditions

Staff anticipates having sufficient water supply to meet projected water use through 2050 under typical conditions, excluding drought. Figure 3 illustrates the estimated future water use, including a 10% safety buffer, compared to the estimated trend of future water supply during average years.

The estimate for average year water supply is based on the following assumptions:

- C-BT Quota: A minimum annual delivery of 9,589 acre-feet, based on a C-BT quota of 0.7 acre-feet per share (a quota met or exceeded in 70% of years since 1957).
- Windy Gap (incl. Chimney Hollow): Delivery of approximately 5,000 acre-feet. This supply is intended to help maintain an 8,000-10,000 acre-foot drought reserve in Chimney Hollow. During the initial

filling period, Broomfield will accept smaller deliveries to expedite the development of this back-up drought storage.

- Denver Water: Delivery of 4,700 acre-feet of treated water.
- C-BT Carryover: 2,739 acre-feet of C-BT water carried over from the previous year.
- Marshall Shares: Up to 367 acre-feet; this amount will be less in the first 2-3 years of operating the decree while procedures are being refined.

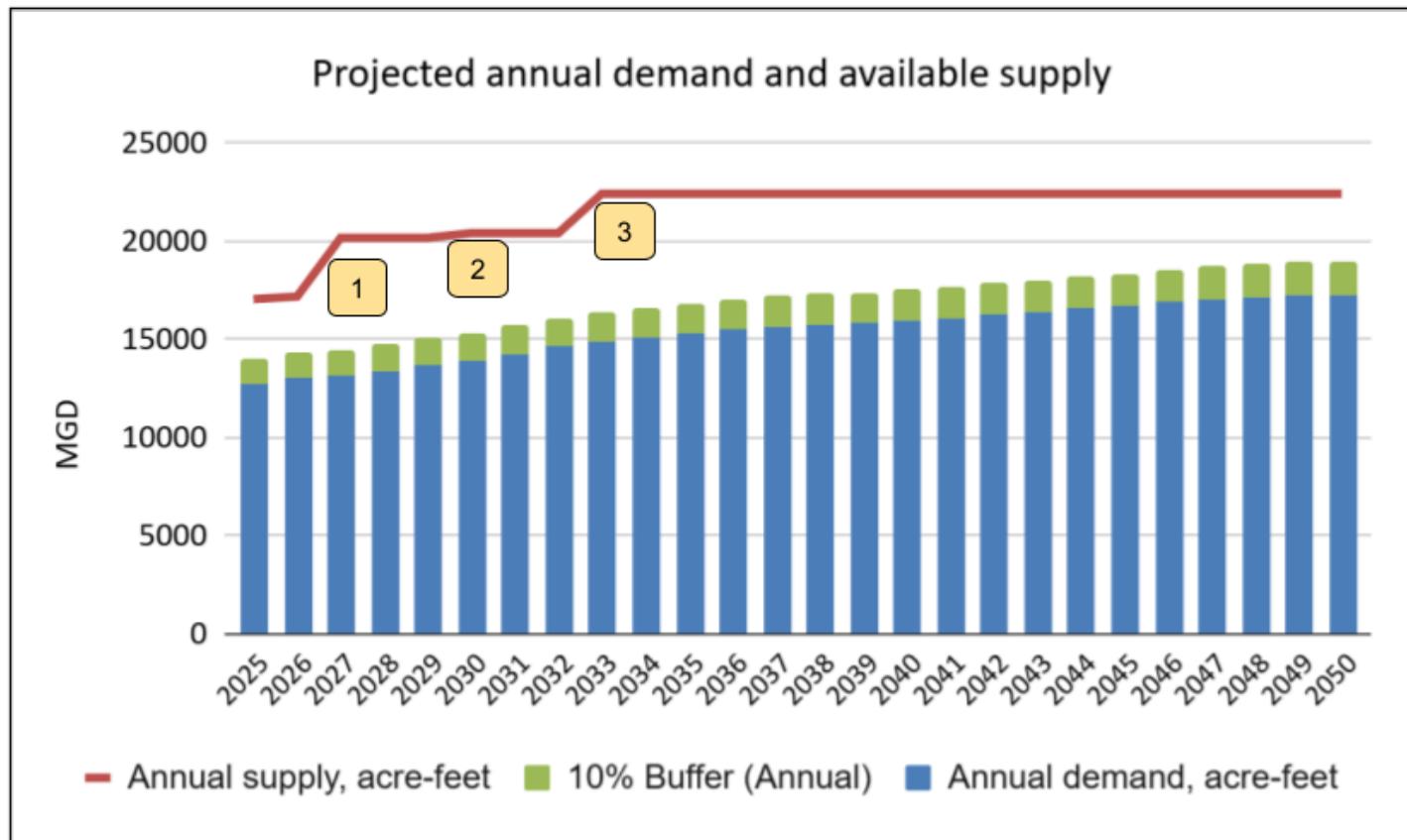


Figure 3: Projected water use and supply in average (non-drought) conditions through 2050. Increases in future supply: (1) Chimney Hollow begins filling by 2027 and increases annual reliable supply from Windy Gap water rights; (2) small increases from FRICO Marshall shares as that source is fully integrated into annual operations; and (3) Chimney Hollow sufficiently full to begin taking delivery of an additional 2,000 acre-feet each year.

Future Supply in Severe Droughts

The 2002-2004 Drought: A Planning Standard

The severe drought from 2002 to 2004 significantly reduced the supply from all of Broomfield's water sources, with reductions potentially lasting two to three years or more. While past events may not perfectly predict future risks, the actual conditions of the 2002-2004 drought serve as a crucial scenario for long-term water supply planning. This specific sequence of events will not repeat, but the reliable water supply data from those years makes it an essential planning benchmark.

The following assumptions estimate the water supply for a three-year drought scenario based on the 2002-2004 conditions:

- **C-BT Supply:** We use the actual quotas set by the Board for 2002 (0.7 acre-feet per share), 2003 (0.5), and 2004 (0.6). This results in estimated C-BT supplies of 9,589 acre-feet in Year 1, 7,867 acre-feet in Year 2, and 8,728 acre-feet in Year 3. Although 2002 was the worst year of the drought, the Board set a normal quota (0.7) to meet high agricultural irrigation demand. Quotas were reduced in 2003 and 2004 to allow system storage recovery.
- **Denver Water Contract:** The contract permits curtailing deliveries during severe droughts, specifically a 30% reduction when the Denver Water Board declares a drought, with provisions for greater reductions if necessary. A 30% reduction was implemented in 2002 and 2003. We assume this 30% curtailment would be applied again under similar 2002-2004 conditions, providing 3,290 acre-feet of treated water annually (instead of the normal 4,700 acre-feet) throughout the drought.
- **C-BT Carry-Over:** Carry-over is projected at the full allowed amount of 2,739 acre-feet for Years 1 and 2. However, due to the low C-BT quota and supply in Year 2, Broomfield would use a larger portion of its allocation, leading to a reduced carry-over of 2,100 acre-feet for Year 3.
- **Marshall System Supply:** Supply from the Marshall system is expected to be lower during severe droughts. Available data suggests minimal supply in Year 1, closer to normal in Year 2, and reduced again in Year 3. We assume no supply in Years 1 and 3, and an average amount (367 acre-feet) in Year 2.
- **Windy Gap/Chimney Hollow Reservoir:** Water stored in Chimney Hollow Reservoir from the Windy Gap project will provide crucial backup storage to offset shortages from other sources during droughts. Broomfield plans to maintain at least 10,000 acre-feet in Chimney Hollow during non-drought conditions to ensure additional supply for several drought years, drawing on this backup storage as needed.

Even during a severe drought similar to 2002-2004, Broomfield's water sources are projected to provide ample supply to meet estimated 2050 water use. This scenario would likely prompt staff to recommend that the Council issue a Drought Declaration, which would trigger mandatory water use restrictions. Figure 4 illustrates the estimated 2050 water use (including a 10% buffer but excluding restriction-based reductions) and the expected available supply for each year of the 2002-2004 drought scenario.

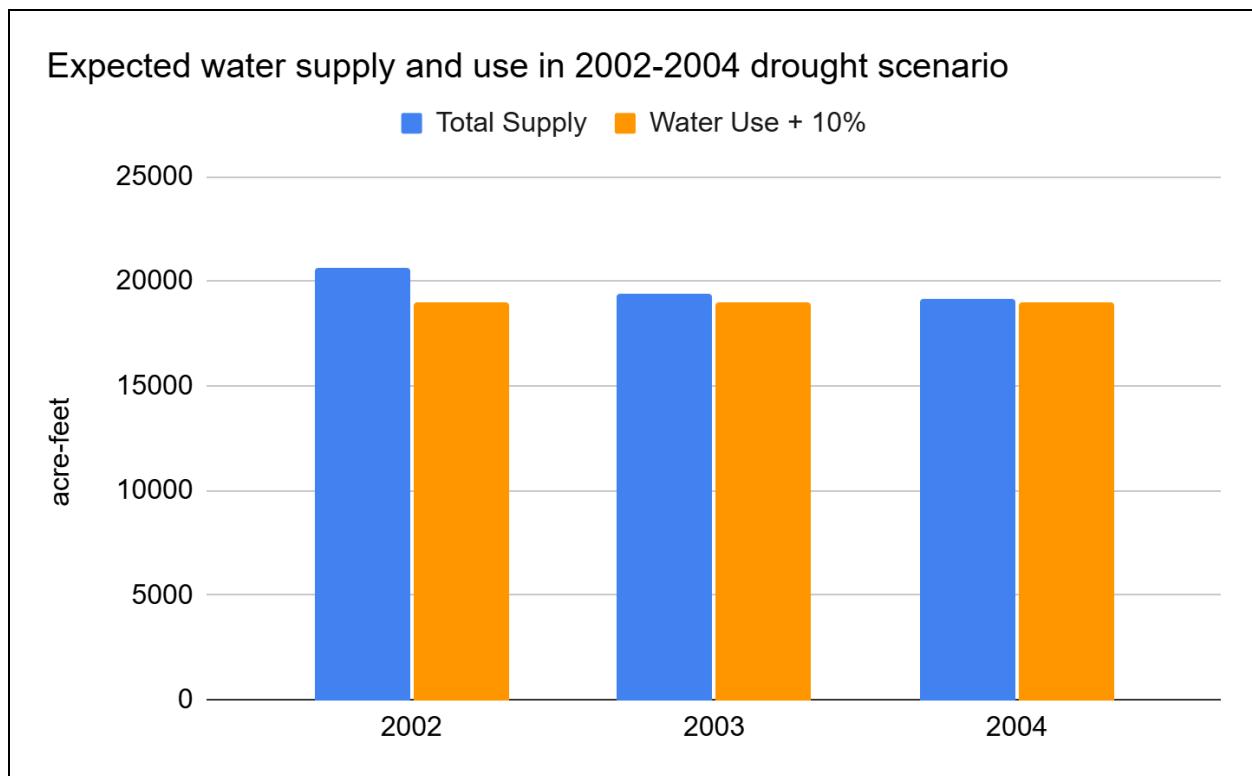


Figure 4: Broomfield has ample supply to meet projected future water use in severe droughts.

Increased Drought Severity Under Climate Change

Climate change is projected to make droughts in Colorado more frequent and severe, though the precise extent of this impact remains uncertain. The State Water Plan utilized two climate change scenarios—"Hot and Dry" and "In between"—to assess future conditions. The "Hot and Dry" scenario, which assumes substantially lower runoff and water availability than historical conditions, is particularly concerning. Analysis based on this scenario suggests a potential water supply shortage of 390,600 acre-feet across the South Platte River Basin by 2050, representing 31% of the region's expected demand. Annual flow on the South Platte River could drop by over 40%, while the Upper Colorado River could see an average flow reduction of 12%. This 12% decline in Colorado River flow would likely diminish the reliable water supply available from the Windy Gap and Chimney Hollow systems.

Broomfield uses the CWCB's "Hot and Dry" scenario, where data is available, to evaluate the potential effects of a climate-change drought. This evaluation incorporates the severity of the 2002-2004 drought but projects even harsher conditions. While expected water supply in such a scenario is highly uncertain, the following points provide estimates of potential impacts:

- **C-BT Supply:** A consulting firm with expertise in Northern Water's models modeled likely C-BT quotas during climate change droughts. Their results suggest quotas would be set at 0.9 in Year 1, a historically low 0.2 in Year 2 (compared to the previous minimum of 0.5), and 0.9 in Year 3. This would translate to a supply of 11,310 acre-feet in Years 1 and 3, but only 5,284 acre-feet in Year 2.
- **Denver Water Deliveries:** Since this climate change drought would be more severe than the 2002-2004 event, Denver Water is expected to curtail deliveries to Broomfield more significantly than in the past. We assume a curtailment of up to 50% under these conditions, reducing Broomfield's normal delivery of 4,700 acre-feet to 2,350 acre-feet in the worst year.
- **C-BT Carry-Over:** Broomfield would likely enter a climate change drought event with the full allowed carry-over of 2,739 acre-feet. However, the anticipated extremely low C-BT quota and

supply in Year 2 would force Broomfield to use a greater portion of its allocation, leaving less to carry over into Year 3. It is probable that Broomfield would have zero C-BT carry-over by the end of such a multi-year drought.

- **Marshall System Supply:** Supply from the Marshall system is expected to be significantly reduced, potentially reaching zero, during a climate change drought.
- **Windy Gap and Chimney Hollow:** Chimney Hollow Reservoir is designed to store Windy Gap water as a backup source for shortages during droughts. However, the State Water Plan modeling indicates that a 12% reduction in Colorado River flows in the Hot-and-Dry scenario would mean the relatively junior Windy Gap water right would be in priority much less frequently. This would reduce the amount of available backup storage. Specific modeling for Windy Gap and Chimney Hollow under climate change is currently unavailable, limiting our ability to accurately assess the impact on Broomfield's supply from this system.

Risk Assessment and Future Planning

The potential for a C-BT quota and annual supply far lower than any previously experienced creates a substantial risk for Broomfield. If the Windy Gap system manages to continue supplying sufficient water to maintain backup storage in Chimney Hollow Reservoir, Broomfield might have enough stored water to navigate a drought of this severity. However, the projected 12% drop in Colorado River flow raises the possibility of a significant reduction in supply from Windy Gap and Chimney Hollow. Without specific data on how these conditions will affect the Windy Gap and Chimney Hollow Reservoir operations, it is challenging to estimate the full impact, but there is a clear potential for substantial shortages that would necessitate severe mandatory water use restrictions.

Broomfield is committed to continually evaluating available data on climate change impacts. The development of a new water supply master plan will incorporate additional, up-to-date information on climate change and its potential consequences. Furthermore, discussions have begun with Northern Water staff to evaluate Chimney Hollow operations specifically for droughts more severe than those encountered in the past.

The Risk to Broomfield's Water Supply from Colorado River Management

Colorado River management poses a risk to Broomfield and all Colorado water users, stemming from two major areas: the original 1922 Colorado River Compact and more recent agreements addressing ongoing water shortages.

The Challenges of the 1922 Compact: The Colorado River Compact allocated the river's supply between the Upper Basin States (Colorado, New Mexico, Utah, and Wyoming) and the Lower Basin States (Arizona, California, and Nevada). The Upper Basin was allotted 7.5 million acre-feet annually, while the Lower Basin was allotted 8.5 million acre-feet.

This allocation now faces two critical problems:

1. The river's flow has frequently been insufficient to meet these allocations, especially since 2000.
2. The Lower Basin States have consistently used more than their allocated amount.

These issues have led to severe declines in the water storage of Lakes Mead and Powell, the nation's largest reservoirs (refer to Figure 6).

Negotiating a New Operating Agreement: Due to reduced supply and declining reservoir levels, the basin states have negotiated operational agreements designed to allocate shortages and prevent critically low levels in Lakes Powell and Mead. The current agreement expires next year, and negotiations for a new one

are underway. Importantly, neither the existing nor the proposed agreements change the original Compact's water allocations.

The next agreement could impact Broomfield if Colorado and the other Upper Basin States agree to significant reductions in water use during shortage years. The Upper Basin's long-standing position is that the Lower Basin's overuse is the core problem, and solutions should focus on curtailing their use. Conversely, the Lower Basin has proposed mandatory curtailment for the Upper Basin. The states have missed several deadlines, with the final Federal deadline set for February 14, 2026.

The Threat of a "Compact Call"

If the states fail to reach a new agreement and cannot stabilize storage in Lakes Mead and Powell, the Lower Basin States might seek to enforce the requirements of the Compact, known as a "compact call."

A fundamental disagreement exists on the Compact's legal interpretation:

- Lower Basin View: The Compact is a firm water supply guarantee from the Upper Basin.
- Upper Basin View: The Compact is a limit on the Upper Basin's consumption to protect the Lower Basin, but it does not guarantee a fixed quantity against natural flow variability.

This disagreement determines which basin must bear the burden of current and future shortages. If the Lower Basin's interpretation is pursued, it would almost certainly result in complex and lengthy litigation, as the courts' interpretation is unclear.

Monitoring and Future Updates

Staff is actively monitoring the interstate negotiations and alternative plans. Once an agreement is reached, staff will gather information from state agencies and Northern Water on the impacts to Colorado and Broomfield's water sources. Council should expect a detailed update on the Colorado River situation by the fall of 2026.

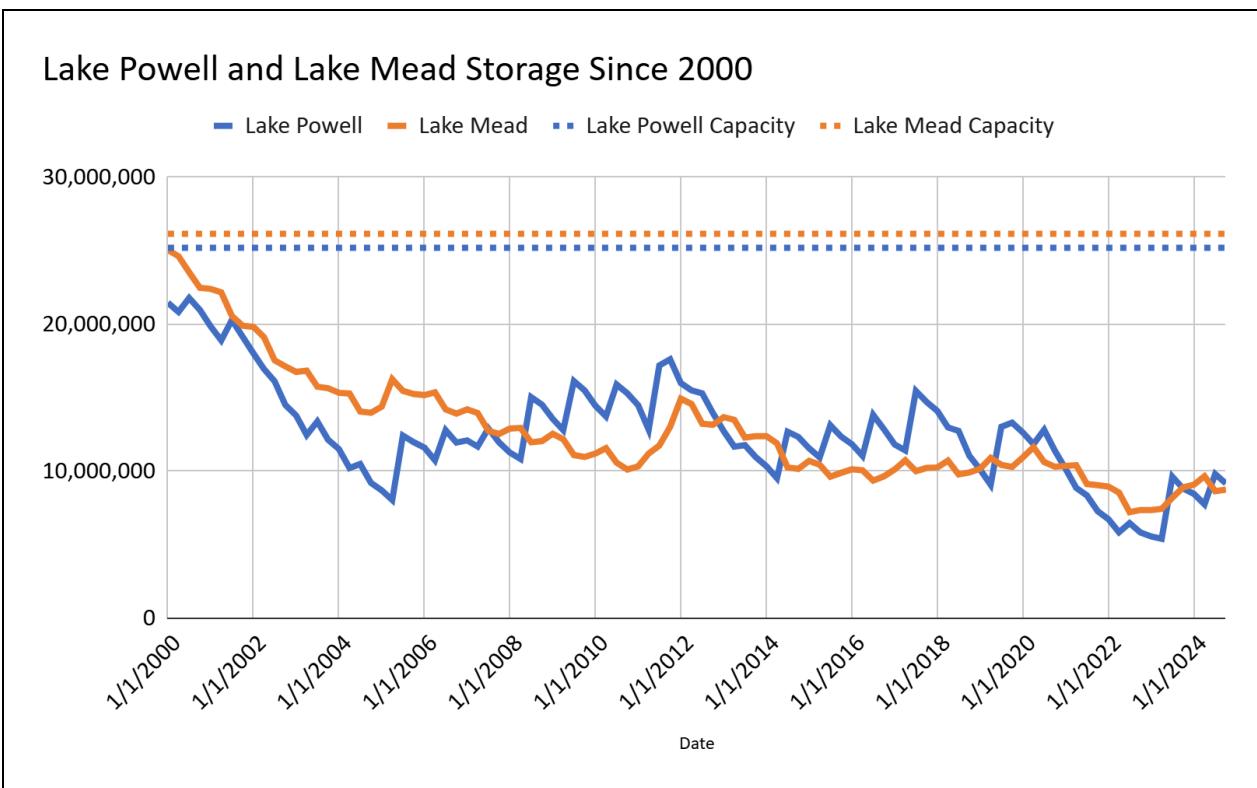


Figure 6: Declining storage in Lakes Mead and Powell since 2000. The decline has been driven by reduced snowpack and runoff, as well as over-use by the lower basin states.

Broomfield's Drought Response Plan

Broomfield adopted and implemented a revised [drought response plan](#) in 2023, aligning with guidance from the Colorado Water Conservation Board. This plan introduces a new method for monitoring drought conditions and developing recommendations for declaring specific drought stages (as outlined in the table below).

To support this, on June 11, 2024, City Council passed Ordinance No. 2219, which amended [Chapter 13-36](#) of the Broomfield Municipal Code. This update revised the mandatory water use restrictions that apply during Council-declared Drought Stages I, II, and III, which require reductions in lawn irrigation and other outdoor water uses. Key details for each drought stage are summarized in the following table.-----New Non-Drought Water Use Requirements

Ordinance 2219 also established new requirements for limiting lawn irrigation even when drought conditions are not declared. These non-drought requirements mandate that lawns be irrigated a maximum of three times per week, and only during the hours of 6 p.m. and 10 a.m.

Staff credit these new rules, which encourage efficient lawn irrigation best practices, as instrumental in achieving a water use reduction of over 10% in 2025. Staff plan to propose further updates to these requirements for Council consideration in early 2026.

Stage	Water use reduction target		General characteristics
	Summer outdoor water use	Annual total water use	
Drought Watch	5%	2.5%	Declared by staff Voluntary water use reductions
Drought Condition I - Moderate Drought	30%	16%	Requires City Council approval Mandatory water use restrictions on all customers Lawn irrigation restricted to two days per week Target 33% reduction for large non-residential customers, including parks
Drought Condition II - Severe Drought	50%	30%	Requires City Council approval Increased mandatory water use restrictions on all customers Lawn irrigation restricted to one day per week Target 50% reduction for large non-residential customers, including parks
Drought Condition III - Drought Emergency	50 to 75%, or more as needed	30% to 45% or more if needed	Requires City Council approval Increased mandatory water use restrictions on all customers Lawn irrigation is prohibited for most customers Target at least 75% reduction for parks and schools, limiting irrigation to actively used athletic fields Target at least 75% cut for golf courses, limiting irrigation to tees and greens

Addressing Summer Peak Demands: The Need for the Proposed Broomfield Reservoir

While Broomfield anticipates having sufficient water rights, reservoirs, and pipelines to meet year-round water supply needs for projected growth through 2050, the city faces a growing challenge in meeting peak water demand during the summer months.

The combined delivery capacity of Broomfield's main pipelines—the Southern Water Supply Pipeline (from Carter Lake and Chimney Hollow Reservoir) and Conduit 81 (from Denver)—is approximately 25 million gallons per day (MGD). Broomfield's peak summer water use has already exceeded this capacity multiple times.

Current Mitigation and Future Insufficiency:

- Currently, the city relies on local storage in Glasser and Siena Reservoirs to keep the water treatment plant running when demand surpasses pipeline delivery capacity.
- However, with continued growth, the combined storage of Glasser and Siena will become inadequate for meeting sustained summer peak demands. Should these local reservoirs be depleted, Broomfield will be unable to meet its summer water needs.

The Broomfield Reservoir Solution:

The proposed Broomfield Reservoir, a long-planned storage facility located southwest of the intersection of Lowell and Sheridan (see map), is designed to address this critical gap. Its primary purpose is to provide the necessary additional local storage to ensure the water treatment plant can continue to meet future summer peak demands when pipeline capacity is exceeded.

Timeline and Status:

- The reservoir has been part of the CCOB's long-term water plan since the early 2000s.
- Construction was originally postponed over 15 years ago due to the 2008-2009 recession.
- The completion of the Siena Reservoir pump station and pipeline in 2025 has provided a temporary reprieve, delaying the need for the Broomfield Reservoir by five to seven years.
- Staff currently projects that the Broomfield Reservoir must be constructed and operational by approximately 2037 to reliably meet future summer water demands.
- Initial steps, including the environmental assessment, began in 2025.



Figure 7: Site for the proposed Broomfield Reservoir near Sheridan and Northwest Parkways

Reuse Water Supply Planning

Future Reuse Demand

Consistent with the 2018 Non-Potable Master Plan, Broomfield is limiting the addition of new connections to the reuse system. Future growth in reuse water usage is primarily anticipated from the ongoing development of Baseline and the connection of Red Leaf. Currently, the reuse system utilizes an average of approximately 2,500 acre-feet of water annually. Upon the full build-out of Baseline, the connection of Red Leaf, and Interlocken maximizing its agreed-upon allocation, the annual water use on the reuse system is projected to increase to 3,311 acre-feet.

Future Reuse Water Supply and Great Western Reservoir

Broomfield's current water sources and storage for the reuse system are projected to be sufficient, with an expected capacity of over 3,600 acre-feet per year under normal conditions. However, the future stability of the reuse water supply is heavily tied to upcoming decisions regarding the Great Western Reservoir (GWR).

Structural Issues at Great Western Reservoir

The dam forming Great Western Reservoir has critical structural deficiencies that the Colorado State Dam Safety Program has rated as "conditionally satisfactory." The state mandates that Broomfield continue making progress toward designing and implementing necessary repairs.

GWR faces three primary issues:

1. Failing Toe Drains: Installed in 1966, these standard features in earthen dams collect and direct seepage to prevent structural damage. Inspections show significant sediment and mineralization buildup, restricting flow. Monitoring indicates elevated water levels within the dam embankment, confirming the toe drain system is not functioning correctly.
2. Failing Outlet Pipe: Inspections suggest the main outlet pipe's joints are separating and its weko seals are bulging.
3. Structural Weaknesses: The main embankment has structural weaknesses stemming from expansions and repairs conducted in the 1950s.

State and consulting engineers from Schnabel Inc. have concluded that while there is no immediate stability concern, repairing the failing toe drains and outlet pipe is necessary for the reservoir's safe, long-term operation. Broomfield has agreed with the State Engineer's Office to address these issues within the next 5-7 years.

Dam Repair Alternatives and Financial Implications

In May 2024, Council authorized an agreement with Schnabel, Inc. to investigate the structural problems and analyze repair options.

Based on this engineering work, Schnabel has identified three major alternatives—each requiring investments significantly exceeding \$30 million:

1. Selective Replacement of the Toe Drain and Outlet
2. Full Dam Replacement
3. Breach and Decommission the Dam

As of November 2025, Schnabel completed a report detailing these three options and conducted preliminary environmental sampling and risk assessment. Environmental Sampling Results

Schnabel, in collaboration with Smith Environmental and Engineering, collected 20 sediment and soil samples from within and around the reservoir. These samples were tested for radiological contamination.

The results indicated that radionuclide concentrations in the reservoir sediment and surrounding soil are consistent with historically recorded background levels attributed to atmospheric weapons tests. Preliminary risk modeling showed that potential radiation exposure for construction workers and nearby residents would be indistinguishable from typical background levels in Colorado. Further, more specific sampling and risk modeling will be conducted once an alternative for addressing the dam's issues is selected. Impacts of Decommissioning GWR on Reuse Supply

If Broomfield opts to rehabilitate GWR, the current capacity of the reuse system will be maintained. However, decommissioning GWR would substantially reduce the reuse system's capacity, necessitating the securing of alternative water sources.

Two alternative options for supplementing the reuse system include:

- Building out Heit Pit: This gravel pit north of Ft. Lupton, along the South Platte River, would allow Broomfield to increase the reuse of C-BT water effluent under an agreement with Northern Water. This involves pumping C-BT water into the reuse system and using releases from Heit Pit to replace



SOUTH TOE DRAIN BEFORE CLEANOUT



SOUTH TOE DRAIN AFTER CLEANOUT

the return flows that would have otherwise gone to the South Platte River. Heit Pit would be filled using Broomfield's existing water rights and ditch shares. Alternatively, the property and associated water rights, appraised at \$10.9 million in 2025, could be sold to help finance the GWR repairs.

- Supplementing with Potable Water: This option may require expanding the distribution system and water treatment plant capacity, and potentially developing Broomfield Reservoir more extensively than currently planned.

Integrated Water Supply Study

Given the significant costs and potential impacts of each GWR option, Broomfield is launching a study to systematically evaluate these alternatives. This effort will develop an integrated potable and reuse water supply model, which will be used to assess the GWR options and ultimately support the development of a comprehensive water supply master plan. Staff issued a request for proposals in September, and the selected firm is currently establishing an agreement. Recommendations from this study are expected to be presented to Council by early 2027.

The Becky Property

The 132-acre Becky Property, situated near Erie in Weld County southeast of the intersection of Highway 52 and E. County Line Road, was acquired by Broomfield along with 254 C-BT water units, one share of common stock of the New Consolidated Lower Boulder Ditch, and 0.66624 shares of the Base Line Land and Reservoir Company.

The primary objective of the purchase was the C-BT shares, with the property's gravel resources and subsequent water storage potential being secondary considerations.

Since the acquisition, the C-BT shares have been separated from the land and are used as part of Broomfield's annual water supply. The property is currently vacant, and staff has determined that it is no longer required for Broomfield's water storage needs.



Selling the property and the shares in Lower Boulder and Baseline could provide funding for the GWR rehabilitation or the Heit Pit build out.

In 2025, McCarty Land and Water appraised the Becky Property. Its value is estimated to be between \$1.8 million (as is) and \$3.7 million (contingent upon securing a gravel mining permit).

Future Water Planning

Broomfield's One Water Initiative

The Water Utilities Department launched its One Water Initiative in 2025 and plans to significantly expand these efforts in 2026 and beyond. This initiative represents a comprehensive and integrated approach to water management, recognizing all water—including drinking water, wastewater, stormwater, groundwater, and natural water bodies—as a unified, invaluable resource requiring collaborative stewardship. This paradigm shift will move Broomfield away from independently managed water systems toward integrated management, aiming to identify system-wide efficiencies and shared benefits.

An existing excellent example of this holistic strategy is Broomfield's wastewater reclamation system, which maximizes the value of our reusable water rights under Colorado law. This reuse system uses advanced treated wastewater effluent to irrigate nearly 2,500 acres of turf and gardens. The system's successful operation demands close coordination across various departments—Water Utilities and Parks—to manage water rights and effluent quantities, operate the treatment and distribution networks, maintain Great Western Reservoir, ensure water quality for regulatory compliance, and guarantee adequate supply during peak summer demand.

To guide this transition, Broomfield is collaborating with Carollo Engineers, a globally recognized leader in One Water practices. This partnership will involve assessing current operations and policies, identifying gaps against One Water best practices, and developing a detailed implementation plan for necessary improvements. Potential multi-benefit projects and programs include:

- Green Infrastructure: Developing green infrastructure within public facilities and streetscapes to reduce irrigation needs and slow stormwater runoff, thereby improving water quality in local streams and ponds.
- Local Groundwater Development: Implementing local groundwater development, potentially combined with recharge and recovery to enhance overall system costs controls.
- Reservoir Solar Installations: Investigating future impact of installing solar panels on or adjacent to local reservoirs (such as Glasser and Siena) to generate renewable energy and simultaneously decrease evaporation losses from stored water resources.



The staff anticipates finalizing the comprehensive One Water implementation plan by the end of 2027.

Update to the Water Efficiency Plan

Water Efficiency Plan Mandate and Broomfield's Compliance: Under state statute in Colorado, every water provider is legally required to develop and maintain a comprehensive water efficiency plan. This mandate serves as a cornerstone of statewide water conservation efforts, ensuring responsible and sustainable water management practices across all jurisdictions. A critical component of this requirement is the need for regular updates; specifically, water providers must review and revise their efficiency plans every seven years to align with evolving best practices, new technologies, and changing community needs.

CCOB is fully compliant with this state requirement. Broomfield's most recent update to its Water Efficiency Plan was completed in 2020. Based on the statutory seven-year cycle, the next mandatory update to this crucial document is required by April 2027.

Funding and Grant Opportunities: To support water providers in meeting these planning obligations, the Colorado Water Conservation Board (CWCB) administers grant opportunities. These grants are specifically designed to help fund the extensive research, public engagement, technical analysis, and documentation involved in developing and updating water efficiency plans. The CWCB prioritizes this type of essential planning work under the umbrella of the highly competitive Colorado Water Plan Grant program, which aims to achieve the goals of the statewide Colorado Water Plan.

In preparation for the required 2027 update, Water Utilities Department staff proactively sought financial assistance by submitting an application for a Colorado Water Plan Grant. This application was submitted on December 1, 2025. If Broomfield is successfully awarded the grant, the funding will be utilized to significantly support and enhance the entire planning process, covering costs associated with consultants, data collection, public outreach, and the technical development of the updated Water Efficiency Plan. Securing this funding is key to ensuring a robust and impactful update that maximizes water conservation benefits for the community.

Water Resources Master Plan

The comprehensive Water Resources Master Plan is slated for a significant update, building substantially upon the foundational work established in previous initiatives. This includes the strategic guidance of the 2018 Potable Water Master Plan and Development Strategy, the holistic approach of the One Water initiative, the specific goals of the water efficiency plan, and the critical evaluation of various Groundwater Recharge (GWR) options. This integrated approach ensures the updated Master Plan will encompass a unified and forward-looking strategy for the community's water future.

Central to this master plan update is the creation of a sophisticated new simulation model. This model is designed to be highly integrated, incorporating the complexities of both the potable water supply system and the reuse water supply system. The insights and predictive capabilities derived from this crucial model will directly inform and drive the development of the new Master Plan, which will be structured around the following essential and detailed components:

Key Components of the Water Resources Master Plan Update

- **Water Use Projections (Demand Forecasting):**

This component involves a rigorous analysis and forecasting of future water demand. Projections will be meticulously developed by examining current and anticipated shifts in demographics (population growth), commercial and industrial development patterns, and evolving customer water-use behaviors. Furthermore, a robust methodology will be established for the ongoing, systematic update of these projections to ensure the Master Plan remains responsive to changing conditions over time.

- **Water Conservation and Efficiency:**

A crucial element of sustainable water management, this section will project the quantifiable reductions in future water use that are directly attributable to planned and ongoing water conservation and efficiency efforts. This includes evaluating the impact of educational programs, incentive structures, and the implementation of advanced water-saving technologies across all customer sectors.

- **Capacity Assessment (Supply vs. Demand Analysis):**

A detailed engineering assessment will be conducted to evaluate the current and long-term capacity of the existing potable water and reuse water supply infrastructure. This projected capacity will then be rigorously benchmarked against the future water demand forecasts to identify any potential gaps or areas where capacity must be expanded to maintain reliable service.

- **Project Identification, Prioritization, and Timing:**

Based on the capacity assessment, this section will define the specific capital projects required to expand either the potable or reuse capacity. Examples of such essential projects include the potential expansion of existing water treatment plants or the development of new significant water infrastructure assets, such as the proposed Broomfield Reservoir. A detailed implementation schedule, including necessary timelines and milestones, will be established for each identified project.

- **Operational Optimization and System Efficiency:**

This involves developing comprehensive strategies aimed at maximizing the day-to-day efficiency and reliability of both the potable and reuse water supply systems. Optimization efforts will focus on system hydraulics, pumping efficiency, treatment process improvements, and the strategic management of raw water sources to ensure the highest quality of service at the lowest practical operational cost.

- **Drought Management and Resilience:**

A critical assessment will be undertaken to analyze the water system's vulnerability to various levels of drought severity. This component will establish and refine a comprehensive set of strategies, including tiered response levels and specific action plans, for effectively maintaining a secure and adequate water supply even during the most severe and prolonged drought conditions.

Staff is planning to formally commence work on the development of this new, comprehensive Master Plan in early 2026. The strategic goal is to complete the extensive planning process and present a comprehensive draft plan to the City Council for review and consideration by late summer-2027.

Prior Council or Other Entity Actions

On [May 16, 2023](#), City Council held a study session which introduced the updated Drought Response Plan and request for Council's direction on the associated code changes.

On [July 11, 2023](#), staff presented Ordinance No. 2219 Amending Certain Sections of Title 13 of the Broomfield Municipal Code Regarding Drought Water Use Restrictions. The ordinance was not carried forward to second reading.

On [February 20, 2024](#), City Council held a study session reintroducing the updated Drought Response Plan and request for Council's direction on the associated code changes.

On [April 23, 2024](#), staff presented Ordinance No. 2219 Amending Certain Sections of Title 13 of the Broomfield Municipal Code Regarding Drought Water Use Restrictions.

On [May 28, 2024](#), staff presented Ordinance No. 2219 Amending Certain Section of Title 13 of the Broomfield Municipal Code Regarding Drought Water Use Restrictions-2nd Reading

On [June 11, 2024](#), staff presented Ordinance No. 2219 Amending Certain Section of Title 13 of the Broomfield Municipal Code Regarding Drought Water Use Restrictions-3rd Reading

Boards and Commissions Prior Actions and Recommendations

N/A

Proposed Actions / Recommendations

N/A

Alternatives

N/A

Table 1: Broomfield major water sources, water rights, and major storage facilities

Source	System	How does it work?	How do we use it?	Typical annual yield
13,698 Units in Colorado-Big Thompson (CBT) Project • 5,089 Fixed Units • 8,609 Variable Units	• Primarily Potable • Effluent a future source for reuse	<ul style="list-style-type: none"> • Northern Water Board sets annual quota, determines acre-feet per unit • Originates in Lake Granby • Delivered from Carter Lake via pipeline to Glasser or Siena Reservoir 	<ul style="list-style-type: none"> • Primary potable supply • Used all year • Treated from storage in Glasser Reservoir • Carry over 2,739 acre-feet for drought resilience (see below) 	9,589 acre-feet at 70% quota
56 Windy Gap (WG) Units	Potable & Reuse (effluent is fully consumable)	<ul style="list-style-type: none"> • Operated by Northern Water • Relies on excess capacity in CBT system • When the 1967 water right is in priority and there is capacity in CBT, Northern pumps WG water and allocates proportionately • Special agreement allows for WG “in lieu” of CBT water 	<ul style="list-style-type: none"> • Primary potable supply • Used all year • Treated from storage in Glasser Reservoir • Resulting effluent is the primary source for the reuse system 	~ 1,100 acre-feet, varies widely from year to year, often no yield
Firmed WG Units with Chimney Hollow Reservoir	Potable & Reuse (effluent is fully consumable)	<ul style="list-style-type: none"> • Provides additional storage for WG water increasing yield in most years • Reservoir is complete; will fill pending uranium mitigation • Operated by Northern Water 	<ul style="list-style-type: none"> • Primary potable supply and drought back up • Resulting effluent is the primary source for the reuse system 	~5,000 acre-feet
Denver Water Contract	Potable	<ul style="list-style-type: none"> • Treated water delivered via pipeline interconnect • 4,700 acre-feet take or pay • 6,500 annual maximum 	<ul style="list-style-type: none"> • Primary potable supply • Used all year 	4,700 acre-feet

Source	System	How does it work?	How do we use it?	Typical annual yield
FRICO Marshall shares (157.14)	Potable, reuse, & ponds	<ul style="list-style-type: none"> Operated by FRICO Originates in Coal Creek and Boulder Creek Delivered via Community Ditch Changed to municipal use in 2024 	<ul style="list-style-type: none"> TBD; 2025 deliveries for pond level maintenance only 	362 acre-feet
Great Western Reservoir	Reuse	<ul style="list-style-type: none"> Effluent and raw storage for delivery to reuse 2,425 acre-feet of capacity 	<ul style="list-style-type: none"> Fill with WG effluent in winter; top off with ditch deliveries in spring Deliver to reuse during irrigation season 	~2,000 acre-feet (incl. effluent)
Church Ditch Inches (61)	Reuse	<ul style="list-style-type: none"> Operated by Church Ditch Water Authority Originates in Clear Creek Delivered via Church Ditch to Dry Creek Valley Ditch, then pumped into Great Western Reservoir 	<ul style="list-style-type: none"> Pumped into Great Western in spring and early summer and delivered to reuse customers We benefit from being the end of the ditch and get more water than is typical 	744 acre-feet, varies widely from year to year
Windy Gap Effluent	Reuse	<ul style="list-style-type: none"> Pumped from the wastewater plant into the reuse distribution system and/or to Great Western Amount of effluent varies based on WG potable production and monthly effluent factors 	<ul style="list-style-type: none"> Used to fill Great Western Nov to Mar Supplements deliveries from Great Western from Apr to Oct Also used for lease agreements 	~2,000 acre-feet
Leased effluent from Consolidated Mutual Water Company	Reuse	<ul style="list-style-type: none"> Perpetual agreement Delivered to S. Platte at Metro Wastewater facility Scheduled by month each year Allows for up to 500 acre-feet total per year 	<ul style="list-style-type: none"> Source for augmentation requirements and/or to replace CBT return flows when CBT effluent is reused 	Up to 500 acre-feet

Source	System	How does it work?	How do we use it?	Typical annual yield
Leased effluent from City of Aurora	Reuse	<ul style="list-style-type: none"> Traded for Brighton Ditch shares Delivered to S. Platte at Metro Wastewater facility Scheduled by month each year 	<ul style="list-style-type: none"> Source for augmentation requirements and/or to replace CBT return flows when CBT effluent is reused 	255 acre-feet
Big Dry Creek Junior Rights	Reuse	<ul style="list-style-type: none"> Direct flow and exchange rights Very junior (1977, 1998 and 2004) 	<ul style="list-style-type: none"> Occasionally pumped into reuse via paper exchange with Denver or CBT effluent 	Minimal
McKay Ditch	Reuse	<ul style="list-style-type: none"> Direct flow right on Coal Creek, diverted via McKay Ditch to Great Western 1905 priority, which is relatively junior for that stream 	<ul style="list-style-type: none"> Supplements storage in Great Western for delivery to reuse 	Minimal

Other water rights not used yet:

- Heit Pit Storage Right - will be used for replacing CBT return flows to allow for reuse of CBT effluent
- 0.5 Shares in Lupton Bottom Ditch - will be delivered for storage in Heit Pit
- 116 Shares in Lupton Meadows Ditch - will be delivered for storage in Heit Pit
- South Platte Tributary Wells - will be pumped for delivery to Heit Pit
- Little Dry Creek Junior Right - will be diverted for delivery to Heit Pit