



# 2007 Water Master Plan Annual Review

**SUMMARY** As required by the Water Master Plan, Greeley staff has performed an annual review of the following key areas of the Plan:

- **Key policies.** Policy No. 1 “Growth shall pay its own way without unduly affecting existing ratepayers” may no longer be possible if the City wishes to secure its water future. Greeley’s growth rate has slowed, the raw water market price has increased substantially, and water acquisition competition has increased. For their own long-term benefit, the current rate payers may have to act now to secure an adequate water supply for the next fifty years.
- **Driving factors.** The four existing driving factors are population, regulations, age, and competition. Population growth dropped below projections for the third year, although long-term projections of population growth remain firm. Implementation of the Enhanced Surface Water Treatment Rule and Stage 2 Disinfection Byproducts Rule have been successful but have increased operations costs. Although the plant and water system continue to age, upgrades to Bellvue and Boyd filter plants continue as does renovation of the distribution system. For many years the Cache La Poudre Basin was geographically far enough to limit attempts by the Denver Metro area to acquire water. In 2007, that appeared to be changing. Likely driven by the \$30,000 / acre-feet being paid by the City of Aurora for new water supplies, both piping and exchanging water from the Poudre down to Denver appears more cost-effective. In addition to larger municipalities, private equity investors are seriously considering purchasing water in the Poudre basin to later sell to the highest bidder. Greeley has long benefited from having diverse, relatively cheap water supplies available as it grows; it is becoming clear that those water supplies may no longer be available in as little as 10 years.
- **Changes to options available to meet water demands.** Greeley purchased 8.125 shares of Water Supply and Storage Company (WSSC) in 2007. The City now owns 16.625 shares and is nearly complete with its 20 share acquisition target.
- **Review of integrated strategies.** Several Master Plan Integrated Strategies have been implemented including a new pipeline to Bellvue, upgrading filter plants, utilizing existing supplies for non-potable or augmentation, and gravel pit acquisition. With final improvements to the Bellvue WTP in 2008, the filter plant should be rated for 32 MGD. Construction on the Bellvue Pipeline has completed 14.1 miles of the total 30 miles.

When completed in 2012 the entire pipeline will provide an additional 50 MGD capacity to flow by gravity from Bellvue to Greeley (total of 70 MGD). Permitting for Milton Seaman Reservoir expansion has entered the alternatives evaluation phase. Greeley continues to pursue all raw water options identified in the Master Plan.

## Key Policies

1. Growth shall pay its own way without unduly affecting existing ratepayers. Specifically:
  - a) Greeley will develop a "Future Water Account" of additional water supplies in advance of new growth. The near-term development of the additional supplies shall be limited to the projected growth expected to 2020 by Greeley's Comprehensive Growth Plan, or 6,000 acre-feet.
  - b) New dry land growth will pay cash-in-lieu of water rights as it occurs once new water supplies have been developed in the Future Water Account. Cash-in-lieu shall be priced at the full, actual cost of developing new water at a 50-year drought yield basis so as to completely replenish the water used from the Future Water Account.
  - c) System development charges (plant investment fees) for development shall be based on growth buying into the replacement cost of the existing asset base without deducting depreciation.
  - d) Waivers or reductions of raw water dedication or system development charges by City Council (e.g., for economic development incentives) shall be repaid by the General Fund to the Water Acquisition Fund.
2. Greeley will pursue agricultural water acquisitions from areas outside Greeley's growth boundaries.
3. Greeley will not enter into any additional open-ended outside service contracts.
4. During a severe drought, Greeley shall incrementally increase the severity of water restrictions as drought conditions intensify considering factors such as water storage within Greeley's system and regional water systems (i.e. C-BT System) Greeley is dependent upon for yield.
5. Greeley will develop non-potable systems where equal or less than the cost of potable sources, striving for 15 percent of new development to be served from non-potable sources.
6. Greeley will maintain a strong water conservation ethic and will invest in additional cost effective water conservation. The volume of savings from conservation will be analyzed periodically and Greeley shall only rely on this volume when those savings actually occur.
7. Construction of new treatment and transmission capacity shall begin when peak demands exceed 90 percent of existing capacity.
8. For the foreseeable future, Greeley will maintain the existing raw water safety factor of 7,300 acre-feet to protect against risks that may occur in meeting customer needs.

## Driving Factors

Four driving factors were identified by the *Water Master Plan*.

- Population and Economic Growth
- Increasingly Limited Raw Water Opportunities
- State and Federal Regulations
- Aging Infrastructure

Listed below are updates regarding each of the areas described above:

### Population and Economic Growth

Growth has slowed significantly and is expected to stay slow for several more years. Some 187 water taps were added in 2007 compared to 713 taps sold in 2003. However, the average population growth rate from 2001 to 2007 was 2.7%, suggesting that the projected population growth rate of 2.5% to 2020 as identified in the *Comprehensive Plan* is still reasonable. The Halligan-Seaman Water Management Project has projected a more modest 2.25% for the next forty years.

### Increasingly Limited Raw Water Opportunities

Although the severity of the current drought continued to lessen in 2007, along the front-range the public awareness of the need for additional water supplies remains high. Denver suburbs have become acutely aware of the need to develop additional water supplies and are beginning to evaluate water sources within the Poudre basin. Thornton intends to begin taking a portion of their Water Supply and Storage Company (WSSC) water, a private equity firm floated a prospectus in an attempt to corner the market on Colorado-Big Thompson units, other private investors are negotiating purchases with ditch companies, and the Northern Integrated Supply Project (NISP) is due to release its draft Environmental Impact Statement (EIS) this spring.

### State and Federal Regulations

Greeley, like all municipalities, faces ever increasing regulatory burdens. Greeley's water system spans an enormous geographic area, stretching over 60 miles from its western-most raw water collection facilities to its Water Pollution Control Facility ("WPCF") in the east. From the Roosevelt National Forest to the Poudre River, both the drinking water and wastewater treatment ends of the system are heavily regulated.

Greeley is currently in the NEPA permitting process for expansion of Milton Seaman Reservoir. The expansion, if allowed, will require both an occupancy permit from the United States Forest Service and a permit from the United States Army Corps of Engineers under Section 404 of the Clean Water Act. The permitting process is complicated by the designation under the Endangered Species Act of "Critical Habitat" for the Preble's Meadow Jumping Mouse in the area of expected reservoir inundation. Greeley's challenge of the designation of Critical Habitat for the Preble's has been stayed pending evaluation of the listing status of the mouse. Greeley is also participating in the remand of the Forest Service permit for WSSC's Long Draw reservoir so as to maintain the viability of Greeley's Joint Operations Plan (JOP).

The United States Environmental Protection Agency has promulgated its Long Term 2 Enhanced Surface Water Treatment Rule and the "companion" regulation, the Stage 2

Disinfection Byproduct Rule. These rules imposed new burdens on Greeley's drinking water operations to balance more effective treatment for microbial pathogens of high concern (such as cryptosporidium, which caused an outbreak in Milwaukee in 1993 that sickened over 400,000 people) with reduction of disinfection byproducts (linked to cancer and undesirable effects on growth and reproduction).

The State of Colorado has adopted new water quality criteria for ammonia that will significantly lower the effluent limits for those who discharge into warm water aquatic habitat streams such as Greeley's WPCF. On going studies are determining what plant upgrades will be required to meet the new standards when Greeley's WPCF discharge permit is renewed in 2011.

## Aging Infrastructure

Greeley continues to work diligently to replace or repair aging infrastructure. In particular, Greeley is improving the reliability and adding capacity to the Bellvue treatment and transmission system, identified as the most vulnerable portion of Greeley's water system within the 2003 *Water Master Plan*.

- Bellvue Treatment: Construction in 2007 removed piping constrictions, updated controls, and renovated the laboratory in the plant. A final project in 2008 to improve the flocculation system is expected to allow CDPHE to rate the plant at 32 MGD, up from the existing 20MGD. Pipeline capacity will total 70 MGD when the new 60-inch transmission main is complete in 2011. An "Incidental Take" permit for Preble's mice was received for the project to add toe drains to the two large raw water ponds to improve the safety factor of their embankment. Construction will start in 2008 for completion in 2009, observing all environmental time constraints.
- Bellvue Transmission: Installation of the new transmission line will provide redundancy to Greeley's existing transmission lines, which are over fifty years old, as well as increase the delivery capacity from the Bellvue treated water system.
- Boyd Treatment: Evaluation of cracking and spalling of the south pump station floor/clearwell roof is being done to develop a long-term repair. Project is scheduled to be designed in 2008 and constructed in 2009.
- Distribution system renovation continues on schedule. For instance, two of the three 20-year old fabric covers on the 23<sup>rd</sup> Avenue reservoirs were replaced this year and the third is scheduled in the spring of 2008.

## Changes to Options Available to Meet New Demands

### Water Conservation

Water Conservation continues to receive attention with a budget increase of \$260,000 and the addition of 2 FTEs in 2007. The Water Conservation program completed 174 Residential Water Audits, 126 Indoor Commercial Audits, 51 Outdoor Commercial Audits, and provided 127 Toilet Rebates and 423 Washer Rebates. Staff expects the results to double in 2008.

# Review of Integrated Strategies

## Treatment and Transmission

Greeley continues to work diligently to improve the treatment and transmission portion of the integrated strategy outlined in the October 2003 *Water Master Plan*. The following three items represent the major changes and updates on the most important aspects of treatment and transmission.

1. **Bellvue WTP And Bellvue Transmission System** – A program of third stage flocculation improvements, chemical handling, and chemical feed will be complete in 2008. With these improvements, and prior improvements to hydraulic capacity and addition of plate settlers, the CDPHE will be requested to rate the WTP for 32 MGD. To date 14.1 miles of the total 30 mile long Bellvue Pipeline, are in service. When completed in 2012 the entire pipeline will provide an additional 50 MGD capacity (70 MGD capacity total) to flow by gravity from Bellvue to Greeley.
2. **Finished Water Storage** – The amount of finished water storage needed is a function of the system capacity. As the system grows, so does the need for in-town storage. The optimal sized and located finished water storage project(s) will be better understood after a computerized water distribution model is completed in 2008.
3. **Seaman Reservoir Expansion** – Although the Water Master Plan does not anticipate the need for an expanded Milton Seaman reservoir until after 2020, Fort Collins and Greeley have entered into a cooperative effort to obtain permits for a joint Halligan-Seaman Water Management Project (HSWMP). Two permits will be issued based on a single NEPA process to create a single EIS for the project. Fort Collins intends to expand Halligan reservoir by 2010; Greeley will not need an expanded Milton Seaman reservoir until after 2020. Halligan reservoir is expected to be enlarged by about 40,000 and Seaman by 48,000 acre-feet (53,000 ac-ft total). Federal permitting for the project was initiated with the U.S. Army Corps of Engineers (COE) in late 2005. The HSWMP partners have established a Purpose and Need for the project that has been accepted by the COE, and are evaluating alternatives to the reservoir enlargements as required by COE regulations. In late 2007, the HSWMP partners along with the COE initiated a collaborative planning process with environmental groups and other stakeholders to evaluate reservoir operations between Halligan and Seaman Reservoirs to determine if there were opportunities to enhance the flows in the North Fork and the mainstem Cache La Poudre River above the North Fork confluence without sacrificing the yield of the project. The first phase of the collaborative process, called Shared Vision Planning (SVP) was funded by the Western Governors' Council through the COE to see if there was a better way of permitting large water projects.

## Raw Water

Below is an update on the raw water projects identified in the *Water Master Plan*.

- Windy Gap Firming Project - The Windy Gap Firming Project entered the Federal Permitting process in 2003 and expects a draft EIS in the summer of 2008. The costs for the firming project will be paid using the revenue from the sale of 20 of Greeley's 64 Windy Gap units. [In 2005 Greeley sold three units to Fort Lupton. Twelve units were

put under contact with the Little Thompson Water District, and another five units with the City of Evans. Both have scheduled closings on or before the reservoir permit issuance.] The project is anticipated to be complete by 2013, a delay of about three years. The draft EIS process has taken significantly longer than anticipated, primarily due to lagged turnaround by the Bureau of Reclamation on reviewing key data/reports.

- Upper Poudre Gravel Pit Storage – Greeley, along with the Tri-Districts, purchased the already mined Overland Trail Gravel Pits from LaFarge in 2006. When fully online (2022) the pits will increase operational flexibility and serve to maximize existing and newly acquired water supplies. In 2006 the City began negotiations of the carriage contract with the New Mercer and Larimer No.2 Ditch companies to convey water into the Overland Trail Gravel Pits. The City of Fort Collins has also requested an IGA to obtain a share of the storage capacity. These negotiations are presently stalled. Negotiations with adjacent landowners to acquire additional storage is underway.
- Lower Poudre Gravel Lake Storage – Greeley completed construction of the Greeley Poudre Ponds at Greeley (aka 25th Avenue Gravel Lake) along with pump station and inlet / outlet facilities. The ponds met the State Engineer’s requirements for lined storage in 2003. Storage at the site is approximately 1,500 ac-ft. As much as 1,000 ac-ft of additional capacity can be created at the site (for a total capacity of 2,500 ac-ft) with additional mining which does not appear cost-effective at this time. This project increases the efficiency of Greeley’s water system by allowing the retiming of untreatable supplies to meet non-potable demands. Improvements to the filling ditch (Boyd Freeman Ditch) were completed in 2006. The system is fully operational and 319 acre-feet of water was added in 2007.
- Large Non-potable Development Projects – Greeley is pursuing implementation of a reservoir project along the Greeley Loveland Irrigation Company (GLIC) canal titled the “Lower Equalizer Project”. Such a reservoir could be used to equalize canal flows during the irrigation season, leading to greater efficiencies and higher yields to the GLIC system as a whole. The reservoir could also be used to deliver flows into the lower, in-town portions of the GLIC canal to non-potable irrigation sites after the ditch is no longer running. In addition, this reservoir could be used to implement the “Dirt Pits” concept considered in the Non-Potable Master Plan. Excess untreatable supplies from the Poudre Basin (primarily the Greeley Wastewater Plant) could be exchanged up the South Platte and Big Thompson Rivers and pumped into the reservoir. This water could then be pumped into the GLIC canal, replacing treatable supplies that have historically been used for irrigation under the GLIC system. In 2007 Greeley evaluated the project feasibility and concluded that the critical success factors (water supply, water demand, exchange potential, and operational considerations) all suggest that Lower Equalizer would be an extremely efficient way to increase the firm yield of Greeley’s water system. Site analysis of four potential reservoir locations began in 2007.
- Blocks of Agricultural Water – In 2006 the City purchased 75 of the 150 Class B shares in the Windsor Reservoir and Canal Company. The City purchased these shares in concert with the North Weld County Water District and the Fort Collins-Loveland Water District (the districts acquired 37.5 shares each). The Class B shares represent all the rights and obligations of the Tunnel Water Company formerly owned by Windsor Reservoir and Canal Company. Until this water is needed by Greeley, it is being rented back to the Windsor Reservoir company.

- Shares in Agricultural Ditch Companies - Greeley purchased 8.125 shares of Water Supply and Storage Company (WSSC) in 2007. The City now owns 16.625 shares and is nearly complete with its 20 share acquisition target. In 2007 Greeley hired an engineer to assist in the Water Court change case of the City's WSSC shares.