



2006 Water Master Plan Annual Review

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

- **Key policies.** No policy changes are recommended this year.
- **Driving factors.** No new driving factors emerged in 2006. The four existing driving factors are population, regulations, age, and competition. Population growth dropped below projections for the second time (1.4% actual vs. 2.5% projected). Normal water restrictions (3 days per week throughout the summer) during an adequate water year resulted in a record peak day demand in June of 53.2 mgd. This was the second year in a row the peak was within 10% of delivery capacity and design of the next 10 mgd plant expansion is underway. The Water Demand Study now in development will define the link between population growth and increasing water demand. Along with the rest of the country, Greeley is facing additional regulatory programs, primarily the Enhanced Surface Water Treatment Rule and the Stage 2 Disinfection Byproducts Rule.
- **Changes to options available to meet water demands.** Greeley closed on the purchase of 8.5 shares in the Water Supply and Storage Company (WSSC) and placed an additional 1.125 shares under contract in 2006. Although Staff is still receiving sale offers, the City has ceased new negotiations with WSSC shareholders until reaching an agreement with WSSC to define the terms that Greeley could change its shares to municipal use.
- **Review of integrated strategies.** Several Master Plan Integrated Strategies have been implemented. A third of the new Bellvue transmission main, including the Farmer's segment, has been installed and was in service in May 2006. The Mulberry segment contract was awarded in 2006 for construction in 2007 and design of the Railroad segment is underway. Bellvue WTP Laboratory upgrades were started in 2006 and will be completed in 2007. Design of rehabilitation for the Boyd WTP pump station was started in 2006 for construction in 2007. Permitting for Milton Seaman Reservoir expansion has begun. Greeley continues to pursue all raw water options identified in the Master Plan.

- **Update of Greeley's Capital Improvements Plan (CIP).** Greeley's CIP is revised annually to implement the updated water master plan. A summary of work completed in 2006 and work planned for 2007 is attached.

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.

Relatively little has changed since the Water and Sewer Board and City Council adopted these key policies. Due to the present economic slow down, the development community is suggesting lower fees throughout the city would make building more competitive, which would be contrary to Policy One (growth pay its own way). In practice, Policy Four (conservation during drought) has resulted in variable water restrictions and enforcement depending on weather and customer response. The Board declared an adequate water year in 2006, so restrictions on outside watering were set to the normal 3 days per week for the whole irrigation season. Policy Seven (construction of new capacity) was triggered in 2005 when the peak day in July reached 93% of delivery capacity. Expansion design is now underway.

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

Some 353 water taps were added in 2006. Although this is half the growth of 2000-2004, the average population growth rate of 3.0% from 2001 to 2006 suggests that the projected population growth rate of 2.5% to 2020 as identified in the *Comprehensive Plan* is still reasonable.

Increasingly Limited Raw Water Opportunities

Although the severity of the current drought continued to lessen in 2006, along the front-range the public awareness of the need for additional water supplies continues high. Denver suburbs have become acutely aware of the need to develop additional water supplies and are beginning to evaluate water sources within Weld County. Thornton intends to begin taking a portion of their Water Supply and Storage Company (WSSC) water, exchanging the water to Thornton via gravel pits, and consequently drying up a about 2,000 acres a year for the next several years. Additionally, the 7 Ranches and the Northern Integrated Supply Project (NISP) continue to threaten the future availability of key water supplies. In 2006 Greeley did sign contracts for some of the raw water options identified in the Master Plan, although the price seems to be escalating. Details are in the Raw Water section below.

No new to non-treatable non-potable supplies were developed in 2006.

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. Much of

this area lies within the Roosevelt National Forest, the use of which is heavily regulated. Both the drinking water and wastewater treatment ends of the system are also heavily regulated.

For example, Greeley is currently in the permitting process for its expansion of Milton Seaman Reservoir. The expansion, if allowed, will require among other things, 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 will require an Environmental Impact Statement under the National Environmental Policy Act, and will be complicated by the designation under the Endangered Species Act of "Critical Habitat" for the Preble's Meadow Jumping Mouse in the area of expected inundation. Greeley has challenged the designation of Critical Habitat for the Preble's in federal court. The litigation is currently 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 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 are vast and complicated and will impose new burdens on Greeley's drinking water operations. They are intended 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 (which some studies have linked to cancer and undesirable effects on growth and reproduction).

The State of Colorado is finalizing new water quality criteria for ammonia that will significantly lower the effluent limits for those who discharge into warm water aquatic habitat streams. Greeley's WPCF discharges into Segment 12 of the Cache la Poudre River, which has such a warm water aquatic habitat designation. The WPCF effluent makes up the majority of the average Poudre flow at the point of discharge so it can have a significant influence on water quality. Moreover, the plant has no dedicated ammonia removal components. It is possible that the WPCF may require upgrades to meet the new standards.

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 *Water Master Plan*.

- Bellvue Treatment: Upgrades to the filter plant have begun with a \$4 million renovation to the residuals handling system, which is in service and operating as planned; a \$1.2 million renovation to the flocculation-sedimentation basins (adding new plate settlers, new sludge vacuums, and correcting hydraulics), which is in service and operating better than expected; and replacement of 6 of the 18 filter effluent pipe systems by our own crews. A construction project, after the peak water use period this summer, will complete hydraulic improvements; increasing the Bellvue plant's output capacity by 10 MGD, to 33 MGD. The project to add toe drains to the two large raw water ponds to improve their embankment's factor of safety has not been constructed due to the Department of Fish and Wildlife delay in issuing an 'Incidental Take' permit for Preble's mice which could be disturbed during construction. We anticipate acquiring the permit in 2007 and constructing the project.

- 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 Bellvue. The 7-mile Farmer's segment of the new 60-inch pipeline is complete and was put into service in May 2006. Greeley now has 10 of the 30 miles of new transmission line from the Bellvue WTP in service. The Mulberry Segment, is currently under construction. When complete, about one-half of the pipeline will be ready for service by the end of 2007.

Changes to Options Available to Meet New Demands

Water Conservation – Water Budget Program

Greeley staff continues to evaluate the weekly water use within six subdivisions to determine how a Water Budget Program would affect actual water customers. Results of the study will be presented to the Water and Sewer Board and City Council later in 2007 if staffing permits.

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 five items represent the major changes and updates on the most important aspects of treatment and transmission.

1. **Bellvue Residuals Handling** - The 2003 Water Master Plan anticipated a \$1.4 million improvement to the plant's existing sludge handling system. During feasibility design, it became clear that the existing slow sand filters would be entirely inadequate to handle the sludge volumes created by the new federal regulations. Construction of a new system, including equalization tank, solids thickener, pumps, and drying beds, adequate for the present plant capacity was recently completed at a cost of \$4 million and is satisfactorily addressing the plant's residuals.
2. **Bellvue WTP – 10mgd upgrade** - Due to the 18% increase in the 2005 peak day demand over the 2004 peak day demand, design of a 10mgd upgrade to the plant that is under way. The expansion is anticipated to be operational by the end of 2007. This upgrade will give the plant in excess of a 10% safety factor with regard to capacity.
3. **Bellvue Transmission Line Program** – This 30 mile 60-inch potable water transmission line was originally scheduled for completion in 2015 but has been accelerated to be complete in 2012. To date 10 miles are in the ground and the next contract for 5 more miles the Mulberry segment in Fort Collins is under construction and scheduled for completion in 2007. When completed in 2012 the entire pipeline will allow an additional 50 mgd (71 mgd total) to flow by gravity to Greeley from Bellvue.
4. **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 2007.

5. **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. The project is intended to provide drought protection for existing and future water demands, more efficiency in managing existing and future water rights, operational redundancy, and some environmental benefits. Federal permitting for the project was initiated with the U.S. Army Corps of Engineers (COE) in late 2005. The HSWMP partners have solicited public comments, established a Purpose and Need for the project that has been accepted by the COE, and are starting to evaluate alternatives to the reservoir enlargements as required by COE regulations.

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 2007. The costs for the firming project will be paid using the revenue from the sale of 20 of Greeley's Windy Gap units. In 2005 Greeley sold three units to Fort Lupton. Twelve units were put under contract 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. In September 2005 the Windy Gap Firming Project Purpose and Need was published. The document declared the Firming participants need to; "... deliver a firm annual yield of approximately 30,000 AF of water by 2010 from the existing Windy Gap Project ... Firm water deliveries from the Windy Gap Project are needed to meet a portion of the existing and future demands of the Project Participants." The project is anticipated to be complete by 2013. The reason for the delayed completion date is because 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 Overland Trail Gravel Pits. When fully online (2022) the pits will increase operational flexibility and serve to maximize existing and newly acquired supplies. In 2006 the City began negotiations of the carriage contract to convey water into the Overland Trail Gravel Pits and developing an IGA with the City of Fort Collins that will detail sharing of storage. Phase 2 of the purchase commenced in 2006 and City staff are negotiating with adjacent landowners to acquire additional storage.
- Lower Poudre Gravel Lake Storage – Greeley completed construction of the Greeley Flatiron Pit (aka 25th Avenue Gravel Lake or the Poudre Ponds, a naming committee has been formed by the Parks Department) along with pump station and inlet / outlet facilities. The ponds met the State Engineer's requirements for lined storage in 2003. Mining of the site has been completed for the near future and current 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. 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 the pit was filled to capacity by October.

- Large Non-potable Development Projects – The City is investigating the feasibility of constructing several “Lower Equalizer” reservoirs on the Greeley Loveland and Boomerang Lateral ditches. These reservoirs would facilitate the shift of untreatable Poudre supplies to Big Thompson non-potable demands. Evans, University of Northern Colorado, Aims Community College, Sunset Memorial Garden, and the Greeley Country Club have indicated interest in participation in this project to acquire shoulder month supplies for non-potable irrigation systems. Screening level studies were completed in 2006 that narrowed the potential sites to two. Negotiations for land purchase options for these two options were initiated in 2006 and will be finalized in 2007.
- Blocks of Agricultural Water – The City closed on the purchase of 75 shares of Class B stock in the Windsor Reservoir and Canal Company in May. 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. Greeley and the two districts filed water court change cases in December 2006 to allow for municipal use of the shares.
- Shares in Agricultural Ditch Companies - Greeley purchased 8.5 shares in the Water Supply and Storage Company (WSSC) and placed an additional 1.125 shares under contract in 2006. Greeley proposed an agreement with the WSSC Board of Directors that would define the terms that Greeley could change its shares to municipal use. Greeley has also conducted a number of meetings with the Larimer and Weld Irrigation Company directors to research the Larimer and Weld companies and explore opportunities for mutual benefits.

Water Conservation

The citizens of Greeley have demonstrated their willingness to conserve significant water supplies when a water shortage is declared. In 2006, watering season started early because March weather was unseasonably warm and dry. The temperatures began to rise in spring with 90 degree days starting in May. June had 15 days in the 90's and even hit 100 in mid June. Due to an unusually hot, dry spring and summer, Greeley's max day was also in June. Annual demand in 2006 was 9.26 billion gallons; although water use is slowly increasing, it has not returned to pre-drought 2000 levels even with the addition of over 13,000 more people. Greeley's per capita water use continues to be higher than most other cities along the Front Range, and some environmental organizations have suggested the lack of inclining block rates is the reason why. Implementation of a Water Budget still appears to be a reasonable way to demonstrate, that although Greeley may have a comparably high per capita water use, that the City is making efficient use of its water supplies, and not wasting it. The Water Board voted to double the water conservation budget, noting that spending more money on conservation was cheaper and more justifiable than acquiring more water.