



# 2004 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. Because of the considerable turnover in the policymakers, key policies should be confirmed by Board and Council on an annual basis.
- **Driving factors.** No new driving factors emerged in 2004. The four existing driving factors are population, regulations, age, and competition. Population growth exceeded projection for the second year in a row (3.4% actual vs 2.5% projection) but conservation has kept peak day and demand suppressed. Construction schedules have been delayed accordingly. The link between population growth and demand growth will be reviewed in 2005. The Preble's mouse habitat lawsuit against USFWS has been stayed until a delisting decision is reached. No other regulatory issues have appeared. Maintenance and replacement of aging infrastructure continue.
- **Changes to options available to meet water demands.** No identified opportunities for additional water supplies have been lost or foregone, although attempts to gain additional gravel pit storage and additional water supplies as envisioned by the Water Master Plan have not been fruitful. The drought emergency of 2004 was handled with aggressive water restrictions and enforcement, without instituting inclining block rates like most Colorado communities. The result was, Greeley reduced summer water consumption 26% below water use in 2000, with an acceptable damage to landscape. Note, in the last four years Greeley added almost 3,000 accounts, an increase of 14%.
- **Review of integrated strategies.** Several Master Plan Integrated Strategies are changing. Bellvue residuals handling is under construction but will cost twice as much as expected, as will finished water storage planned for 2012. Cost of Boyd winterizing has been cut in half. The next phase of the Bellvue transmission main has been delayed to accommodate ROW negotiations and the Fort Collins routing study has begun. 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 revised and updated water master plan. A summary of work completed in 2004 and work planned for 2005 is attached. Note that growth projections play no role in scheduling of work this year.

## 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 dryland 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 these key policies were adopted by the Water and Sewer Board and City Council. In practice, Policy Four (conservation during drought) has resulted in variable water restrictions and enforcement depending on weather and customer response. The policy has been successful, as demonstrated by indoor water use dropping 7% since 2000 at the same time overall annual plant production dropped 13% between 2000 and 2004.

Decisions for the Board: given the experience of the last three drought years,

- With an adequate water supply, should water restrictions return to even-odd or should 3-day per week restrictions be maintained?
- Should the minimum level of conservation expected by the Master Plan during drought be increased from 10% to 20%?

Note that if Greeley requires increased efficiency of its water system during non-drought years, the ability to reduce consumption during drought conditions will diminish. This is called a "hardening of demand" and will result in more wide spread and severe damage to landscaping when a drought occurs which exceeds the design.

Greeley drought policy now considers the storage levels of regional water supplies, i.e. the Colorado-Big Thompson Project. C-BT Project yields affect the amount of water that must be pulled from other Greeley storage during a multi-year drought. This policy formalizes Greeley's attempt over the last few years to incrementally decrease the level of service to Greeley citizens as drought conditions worsen. This incremental approach is useful in that no one is sure when a drought will end until it is in fact over.

## 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

Nothing has occurred in 2004 that would suggest that the projected population growth rate of 2.5% to 2020 as identified in the *Comprehensive Plan* is too high. If anything this may be slightly conservative. Some 810 water taps were added in 2004, an increase of 3.4% from 2003. Greeley has not reduced the size of its long-range growth boundaries and the basic premise that Greeley must plan for growth to 2050 and beyond is still valid. Demand forecasting is such an important issue, the 2000 Water Demand Study will be updated in 2005.

## Increasingly Limited Raw Water Opportunities

Although the severity of the current drought lessened in 2004, 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. Reportedly, Thornton plans to begin taking their Water Supply and Storage Company water beginning in 2006, consequently drying up 2,000 acres a year.

Although Greeley did not finalize any of the raw water options identified in the Master Plan in 2004, (except the 25<sup>th</sup> Avenue gravel pits), Greeley Water staff continue to negotiate for water rights that fit well within the City's water portfolio and storage projects that increase the efficiency of Greeley's water system. Agreements regarding one or more of the potential raw water options currently under negotiations will likely be finalized in 2005.

The two portfolio shifts identified in the Water Master Plan have made significant progress. The Windy Gap Firming Project has purchased the reservoir site at Chimney Hollow and expects a draft EIS in June 2005. Greeley has sold eight Windy Gap units, five to Evans contingent on Windy Gap permitting and three to Fort Lupton to close in March. Another 12 units are under negotiation. When all 20 units are sold, the revenue will pay for the firming project storage for Greeley's remaining 20 units.

With regard to non-treatable non-potable supplies, 300 acre-feet of augmentation water have been perpetually leased to Weld County and another six acre-feet leased to Highlands Nursery. The revenue will be used to purchase the drinking water supplies identified in the Master Plan. No purchase has been completed, so the actual cost of water gained by the portfolio shift has not been determined.

## State and Federal Regulations

The US Fish and Wildlife Service protection of critical habitat for the Preble's Meadow Jumping Mouse (Preble's Mouse) is still the federal regulation creating the most uncertainty for Greeley's water system. Protection of the Preble's Mouse has delayed the repair of Bellvue raw ponds and may affect Greeley's future expansion of Bellvue as well as the enlargement of Milton Seaman Reservoir, now beginning federal permitting as the Halligan-Seaman Water Management Project. The area between Milton Seaman and Halligan Reservoirs on the North Fork of the Poudre River has been designated as critical habitat for the Preble's Mouse. Soon after the critical habitat designation, Greeley sued the USFWS in Federal Court challenging the legality of the entire rule, with particular emphasis on the area above Milton Seaman Reservoir. In April 2004, Greeley agreed to stay the suit until the USFWS could make a determination as to whether to delist the mouse based on new evidence developed by the Denver Museum of Nature and Science. If the Preble's is delisted, the associated critical habitat designation will be removed, which would eliminate the uncertainty created by the mouse on Greeley's operations. If the mouse is not delisted, Greeley plans to reinstate the lawsuit challenging the validity of the critical habitat designation above Milton Seaman Reservoir.

Greeley, along with the State of Colorado, Water Supply and Storage, and (briefly) the U.S. Forest Service, appealed the U.S. District Court's ruling that the Forest Service permitting of Long Draw Reservoir was incorrect and should be remanded. As this bypass flow issue is of

concern to Greeley's existing water rights, additional studies of the effects of the Joint Operations Plan on the Poudre River will continue.

## 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 \$3 million renovation to the residuals handling system, a \$1.2 million renovation to the flocculation-sedimentation basins (adding new plate settlers, new sludge vacuums, and correcting hydraulics), replacing filter gallery piping and installing SCADA systems with our own crews.
- 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 first 2.5 miles of the 60-inch pipeline is complete, including three railroad and one highway borings. The next seven miles has been designed and 80% of the ROW obtained. The engineering study to select the pipeline route through Fort Collins has been awarded.

## 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 2005 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*. Based upon additional engineering and investigations as well as the postponement of projects due to changing growth projections, five revisions to the current Master Plan CIP are underway. Although some of the changes below increase the overall projected budget, the timing has been delayed by two to eight years. Depending on actual demand, some projects may be postponed indefinitely.

1. **Bellvue Residuals Handling** - The October 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 thickener, pumps, and drying beds, adequate for the present plant capacity, is now under construction at a cost of \$3 million. The next phase of plant expansion, taking plant capacity to 35 mgd, is estimated to cost \$2 million. Scheduled for 2011, actual timing will depend on growth of peak demand.

2. **Bellvue Transmission Line Program** – Although scheduled for 2004, the seven-mile “Farmers Segment” has been delayed a year so as to negotiate ROW and to accommodate the pipeline design into new developments along the way. The delay has also seen a moderation in the price of steel. The line will be bid in mid 2005. Over the next six years, pipeline construction will gradually increase flow capacity to Greeley.
3. **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. Like filter plant capacity, finished water storage has been postponed to match the reduction in growth projections. Unfortunately, additional research into the cost of buried ground-storage tanks suggests that a cost of \$1.00 per gallon is more likely than the original estimate of \$0.50 per gallon.
4. **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. The project anticipates a single NEPA process to create a single EIS for two permits, one for Fort Collins to expand Halligan reservoir by 2010, the other for Greeley to expand Milton Seaman reservoir around 2020. Each reservoir would add about 40,000 acre-feet, creating new yield for growth, drought security, and may be used to improve aquatic habitat. The advantage and opportunity is for joint water management to enhance the fisheries of the Poudre North Fork between the two reservoirs and possibly the main stem. The Nature Conservancy, which owns property along the North Fork, along with other environmental groups, has expressed preliminary support for the project.
5. **Boyd WTP Winterizing** – The \$1.6 million budget shown in the Water Master Plan CIP was intended to enclose Boyd’s flocculation/ sedimentation basins, allowing the plant to operate in the winter months and providing back-up to Bellvue. Because the preliminary design cost estimate came in at \$4 million, basin enclosure was deleted. The likelihood of a Bellvue system failure lasting more than a few days is believed to be remote and Greeley has finished water storage sufficient for four or five days in the winter. In addition, Greeley has three finished water interconnections, with Loveland and North Weld and ELCO water districts, in case of a longer-term outage. Those existing interconnections can supply Greeley with about 17 mgd in the winter, which is today’s demand. In addition, the Boyd WTP today has the ability to start up in the winter within 24 hours, although extra effort is required to prevent freezing problems. The winterizing project was changed to enclose only the chemical storage tanks, at a cost of about \$750,000.

## 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 mid 2005. The Firming Project likely will not be operational until close to 2010. Greeley has sold eight Windy Gap

units and is negotiating to sell another 12 units to finance firming of 20 units in the Firming Project.

- Upper Poudre Gravel Pit Storage – Greeley continues to negotiate for the acquisition of gravel pit storage on the upper Poudre River near its Bellvue Water Treatment plant that would provide drought storage and additional flexibility to Greeley's water system. One storage option currently being negotiated could add approximately 2,500 ac-ft of storage to Greeley's water system over the next ten years.
- Lower Poudre Gravel Lake Storage – In 2003, Greeley finished lining the 25<sup>th</sup> Avenue gravel lake storage project and met the State Engineer's requirements for lined storage. The mining lease holder has declined to create additional storage at the site and another mining company is being sought. 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, improving the reliability of Greeley's non-potable water supplies so that potable supplies do not have to be released to meet non-potable demands in drought. Inlet and outlet works projects have been completed. The last stage, design of improvements to the filling ditch, has begun.
- Large Non-potable Development Projects – Although Raindance Ridge LLC rejected Greeley's last offer, the city continues to be interested in storage between the GLIC reservoirs and the city. Several other reservoir sites have been identified and feasibility studies are beginning. The Country Club has expressed interest in participating in such a reservoir to provide shoulder-month irrigation supplies.
- Blocks of Agricultural Water – Greeley continues to monitor the availability of blocks of agricultural water rights that fit well within its water system and will begin negotiations for rights as they become available.
- Shares in Agricultural Ditch Companies - Greeley is also monitoring the availability of individual ditch shares that would fit well into Greeley's water portfolio. Greeley is focusing on the acquisition of large blocks of ditch shares due to the cost/time involved in getting water court approval for municipal use of agricultural ditch shares.

## Water Conservation

The citizens of Greeley have demonstrated their willingness to conserve significant water supplies when asked. Whether the city-wide reduction in water consumption continues during periods of adequate water supplies remains to be seen. Greeley's per capita water use continues to be higher than most other cities along the Front Range and the lack of inclining block rates has been noted by environmental coalitions monitoring water projects.

Implementation of a Water Budget may be a reasonable way to demonstrate the City is making efficient use of its water supplies, an important step in obtaining the necessary permits to build the regional water project. Efficient outdoor water use will also reduce the City's peak water demands, further delaying the need for costly water treatment plant expansions.