“When the well is dry, we know the worth of water.”

BENJAMIN FRANKLIN
Scope of Briefing

- Background
- Operations – Raw Water
- Future Planning – Supply/Demand
Greeley’s Economic History

- Union Colony founded 1870 as agricultural utopia
  - Irrigation ditches dug 1870
  - Potatoes were first major crop
  - Sugar factory built 1902: by 1920 Colorado produced 25% of nation’s sugar
  - Lamb feeding began winter of 1884-1885
  - Monfort packing plant brought cattle to feed lots

- Greeley is Weld County seat

- University of Northern Colorado and Aims C.C.

- Kodak and State Farm in late 1960s

- Regional Northern Colorado Medical Center

- Oil and Gas industry

- Railroads: UP, Burlington Northern, Great Western
Greeley’s Economy:

- **Agricultural/ Energy related businesses**
  - Direct farm production of corn, hay, beets, wheat, and high value crops such as onions
  - Weld County #8 in country,
  - #1 in CO in 2007, and 25% of Colorado total
  - Leprino cheese plant 800,000 lb/day of mozzarella cheese for pizza!
    - Takes a lot of dairy cows, feed, vets, equipment
  - Corporate HQ for JBS-Swift
  - Energy Sector
Greeley’s Water Supply
Today and Tomorrow

- Four river basins
- Two Filter Plants
- Two transmission systems
Water from Four Basins

- **Poudre River Basin**
  - Direct flow river rights (1860’s)
  - Ditch Number 3 (1870) 3/8 + 20% of 5/8 GIC
  - Six high mountain reservoirs (1947)

- **Upper Colorado River Basin**
  - Colorado-Big Thompson Project (22,000 units) (C-BT)
  - Windy Gap Project (44 units, 10% of project)

- **Big Thompson River Basin**
  - Greeley Loveland Irrigation System (50% of company)
    » Boyd Lake, Lake Loveland, Seven Lakes

- **Laramie River Basin**
  - Laramie-Poudre Tunnel (Windsor Reservoir&Canal Co)
  - Bob Creek
Four river basins – Two filter plants – Two transmission mains

- Boyd WTP
- Bellvue WTP
- Greeley
- Colorado
- Big Thompson
- Cache la Poudre
- Laramie

Storage:
- Big Thompson: 10%
- C-BT and Windy Gap: 37%
- Poudre: 26%
Water Rights – Redundancy

- When your direct flow rights are called out, you have to use your stored water.

- Greeley has about 9 months water supply in storage, enough to supply today’s population during a 6-year long, 50-year drought.

- For 3 months starting in June – Greeley was without direct flow rights

- Due to drought conditions and Post Fire Effects – Adequate Water Year?
First New Transmission Main in 50 years Is Half Complete

- 152 miles of Transmission mains
- 460 miles of Distribution Mains
- 2 Filter Plants
- Four River Basins
Water Treatment

Bellvue Filter Plant
Original 1907
Latest Upgrade 2009
32 mgd

Greeley’s winter Demand = 14 mgd
Summer = 54 mgd
Boyd Lake Filter Plant
Original 1964  Latest Upgrade 2005  38 mgd
Planning for the Future

Supply and Demand Problem

Natural Environment
Greeley’s 2060 Comprehensive Plan

- The 2060 Plan was adopted in 2009

- Update of “2020 Comp Plan” approved 2000
  - Reviewed key community indicators, trends, projections to assess growth and development

- Adopted unanimously by Council with community testimony of support and no objection
Greeley Water is a service provider for the City’s planned growth.
Driving Factors of Water Master Plan

- **Age** – Major parts of Greeley’s water system are 50 to 70 years old.
- **Growth /Demand** – Population will over double in 50 years.
- **Regulations** – higher federal water quality standards: crypto, TOC, ……
- **Competition** – Regional growth limits water availability and pipeline construction.
Water Master Plan is Comprehensive and Long-Term

- Four years in the making, developed by staff and Board with consultant’s assistance and community input.
- Adopted by Council and Board.
- Provides capital improvements plan for near-term (10-15 years) and water supply options for long-term (20-40 years).
- Provides water supply and funding concept beyond 2020: regional storage and future water account.
Before the Water

Water is scarce.

Supply Side Planning
Drought
A regular occurrence in a semi-arid environment.

On the Demand Side
Comprehensive Conservation Program

- Fully metered since 1996
- Leak detection: less than 5% system losses
- Continual watering restrictions since 1907
- Free irrigation & commercial audits, rain sensors
  - JBS-Swift industrial conservation audit completed
  - Parks irrigation control system upgraded
- Rebates for high-efficiency washers and toilets
  - 11th Avenue toilet replacement program
- Required soil amendments; grants for xeric
- Water Budget Pilot Program
- Continual Education (e.g. water festival, mailers)
Desired Environment
A question of values
The Water and Sewer Department is a division of the City of Greeley. The Department is an enterprise fund, self supported by only water and sewer fees. It is shown in a different color simply to distinguish it.
End
2050 demand (61,000 ac-ft per year) 
Assumes Greeley buys 60% of L&W system to meet annual demand without additional storage.

Water lost without storage

- 13,000 ac-ft in May
- 22,000 ac-ft in June
Greeley Has Annual Surplus Water In Average and Wet Years

Water Rights Yield

- Big Thompson
- C-BT WG
- Poudre

Wet Year can be 3x need

“Firm Yield” 33,900 ac-ft

Store part of surplus until needed

Typical Water Demand 2010

Annual Yield (acre-feet)

- Wet Year
- Avg Year
- Last Year of Drought

Reservoirs

Storage