

CHAPTER 3 – PROFILE EXISTING WATER SYSTEM

Physical Characteristics of the Existing Water System

Figure 3.1 shows the location of the City and its major water facilities.

Potable Water System

The City of Fort Lupton serves approximately 7,200 people over an area of six square miles. The City receives its CBT and Windy Gap water from Carter Lake through a 20-inch pipeline that flows south from the Town of Platteville. Water from the CBT system is treated in the City's WTP. Once treated, the water is delivered to both the Town of Hudson and the City of Fort Lupton. Fort Lupton residents are fed potable water via a 3-MG storage tank and subsequently two 1-MG water tanks (a.k.a the Tank Farm) located on College Avenue, just west of Aims Community College. The water is distributed from this Tank Farm to the City's customers. In 2006, the WTP had an average-day demand of 1.3 MGD and a maximum-day demand of 2.9 MGD.

Non-Potable Water System

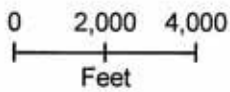
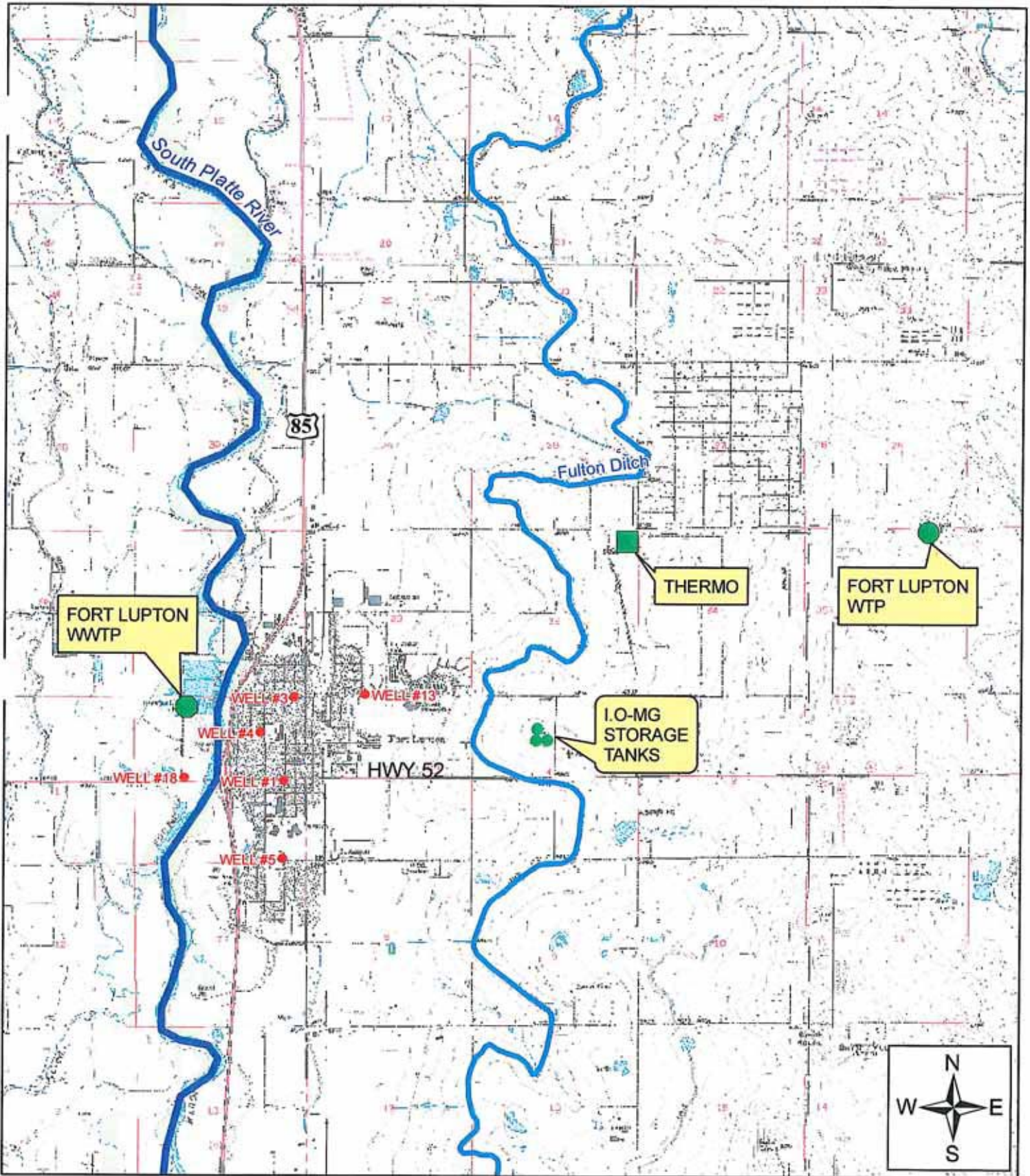
The City currently uses five alluvial wells connected through a manifold system to fill the third 1-MG tank at the tank farm with well water. Water from this 1-MG tank is used for two separate and distinct purposes: 1) to irrigate portions of the golf course and City open spaces and 2) to deliver water to the Thermo Power Plant and CGH.

The City has a sixth well, located on the west side of the river, that is used to irrigate Pearson Park and for minor water uses within the WWTP. This well operates separately from the five wells on the manifold.

The Fulton Ditch flows north through the City. Currently, the City uses its Fulton water to irrigate the golf course and cemetery. The City's Fulton water is also routed back to the South Platte River for augmentation of the City's well use.

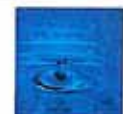
Water Distribution System

Fort Lupton currently has approximately 47 miles of water distribution mains as shown in Table 3.1. These mains run from the WTP down to and throughout the City. In terms of factors that affect the long-term reliability and adequacy of the piping system, the mains can be broken down into two very broad categories – lines constructed prior to the mid-1970's and lines installed subsequent to the mid-1970's. The older lines have shown significant problems with tuberculation or deposition of minerals from the pre-1997 well water system. In practice, these



**CITY OF FORT LUPTON
MAJOR WATER FACILITIES**

FIGURE 3.1



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lines will eventually need to be replaced to re-capture the capacity of the distribution system.

Table 3.1 – Water Line Information

Pipeline Size (in)	Pipeline Length (ft)	Pipeline Length (mi)
30	1,338	0.25
24	6,689	1.27
21	2,348	0.44
20	30,379	5.75
18	7,866	1.49
15	237	0.04
12	23,892	4.52
10	11,346	2.15
8	78,997	14.96
6	48,389	9.16
4	35,491	6.72
Total	246,972	46.78

Sewer System

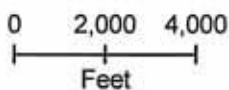
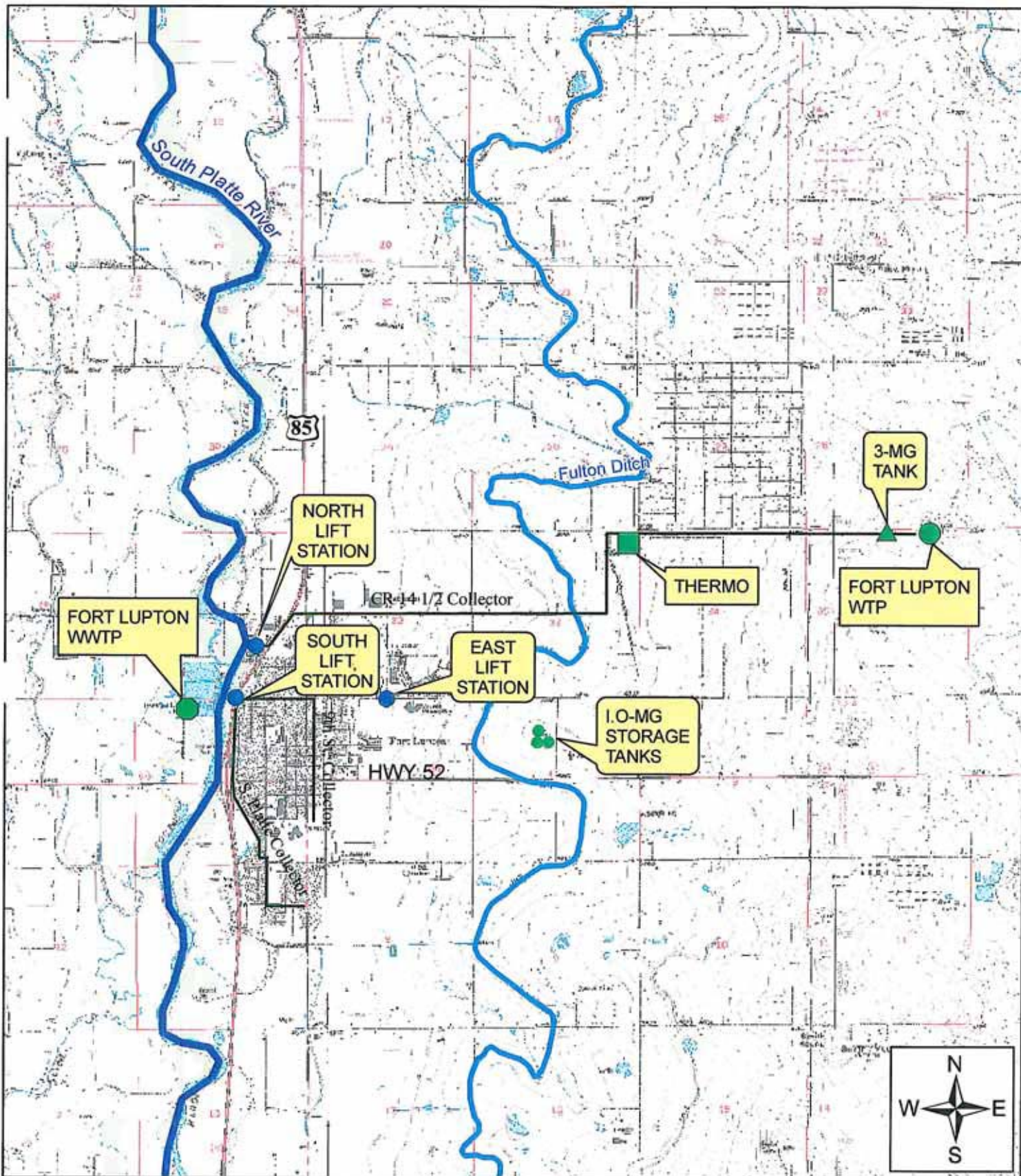
Figure 3.2 shows the City’s main collector sewer lines, lift stations and wastewater treatment plant.

The City’s wastewater is collected by three sewer collectors. The CR 14 ½ collector collects water from the WTP, Thermo, CGH, the industrial property west of Hwy 85, and some minor residential use and delivers the wastewater to the north lift station. The CR 14 ½ collector flows along CR 14 ½ west under Hwy 85 to the north lift station. The east lift station is located on 9th Street at the northwest corner of the Coyote Creek Golf Course. This station pumps sewer from the Coyote Creek developments and delivers the wastewater to the CR 14 ½ collector which, in turn, delivers the wastewater to the north lift station before entering the WWTP.

The South Platte collector collects wastewater from the southern part of the City, between Hwy 85 and the Union Pacific Railroad. The sewer line flows along the eastern edge of Hwy 85 before entering the south lift station located at 9th Street and Hwy 85.

The 9th Street collector runs north along Harrison and west along 9th Street. This collector also discharges into the south lift station.

Both stations deliver wastewater under the South Platte River to the WWTP. The WWTP has a capacity of 2.3 MGD with current-day demand of 1.9 MGD. Although the sewer system does not directly relate to the Water Conservation Plan and goals, having



**CITY OF FORT LUPTON
MAJOR SEWER FACILITIES**

FIGURE 3.2



perspective will assist in the overall understanding of the City's water and wastewater utilities. In addition, all potable water savings inside homes and businesses will have a direct impact on the costs of operating the City's WWTP. Currently, the City is in negotiation to treat wastewater from a very large development outside of City limits. Part of the agreement would be a joint expansion of the City's WWTP facilities.

Sources of Water

Well Water

The six alluvial wells are summarized at follows:

Table 3.2 – Well Information

Well #	Well Permit #	Legal Description	Pumping Capacity (gpm)	Approximate Age (yrs)
1	19493-1/RF-151	NE1/4, SE1/4, Sec 6, T1N, R66W	1297	45
3	19493-3/RF-545	NE1/4, NE1/4, Sec 6, T1N, R66W	1096	38
4	12626-R	NW1/4, NE1/4, Sec 6, T1N, R66W	996	50
5	20026-R	SE1/4, SE1/4, Sec 6, T1N, R66W	1095	65
13	15273-R	SE1/4, SW1/4, Sec 32, T2N, R66W	996	60
18	6588-RF/34329-F	SE1/4, NW1/4, Sec 6, T1N, R66W	500	56

The wells are approximately 50 to 60 feet deep, except Well 18 located west of the river, which is 30 feet deep. The wells were originally drilled in the 50's and 60's and range from 38 to 65 years old. The wells are drilled into the South Platte alluvium. The groundwater level in this aquifer has remained relatively level for the last 25 years because of recharge from precipitation, irrigation and return flows from upstream municipalities. The water is available year-round and is a highly productive, reliable resource. One drawback to well water is the groundwater is high in total dissolved solids and nitrates. However, the major drawback is the use of the water requires augmentation. Well water is used for non-potable irrigation of the golf course, schools, parks and open space, and for deliveries to Thermo and CGH.

The City has been working diligently to calibrate its well and park meters, so accurate water use can be determined. In early 2005, the City finished a two-year meter replacement and calibration program. All wells are currently metered, and the meters are calibrated on an annual basis to ensure accuracy.

Surface Irrigation Water

The City has 217.9 shares of Fulton Ditch water. Each share of Fulton Ditch water delivers approximately 3.8 ac-ft and has an estimated historic consumptive use value of 1.75 ac-ft per share. The Fulton Ditch water is used for irrigation of the golf course and cemetery and is also used for augmentation of the City's wells. This water right is seasonal, delivering water from April to October in most years.

Mountain Water

The City uses both CBT and Windy Gap water from the CBT project for its potable water supply. Because the CBT system has storage, both CBT and Windy Gap water can be delivered year-round. Fort Lupton uses its CBT water primarily in the summer months and its Windy Gap water primarily in the winter months. Since CBT is one-time use only water, this raw water supply is ordered and delivered in the summer months when the effluent percentage is low. The effluent percentage is the percentage of water delivered out of the WTP that eventually shows up at the WWTP. In the summer months, the majority of the water delivered from the WTP is used for outdoor lawn irrigation. Because a large portion of the water never makes it to the sewer system, only 35% to 40% is collected in the sewer systems and delivered to the WWTP. Conversely, in the winter months, little water is used outside. As a result, the water used in the winter collects in the sewer system through sinks, showers and toilets. The effluent percentages reach up to 90% in the wintertime. Since Windy Gap is fully consumable, using Windy Gap in the winter months maximizes the reusable component of Windy Gap. There are great efficiencies to operate the system this way.

Figure 3.3 below shows the total water use (potable + non-potable) from each water source. The total estimated City water use is 3,000 ac-ft. Figure 3.4 shows the total surface water versus groundwater use.

Figure 3.3 – Water Use by Source

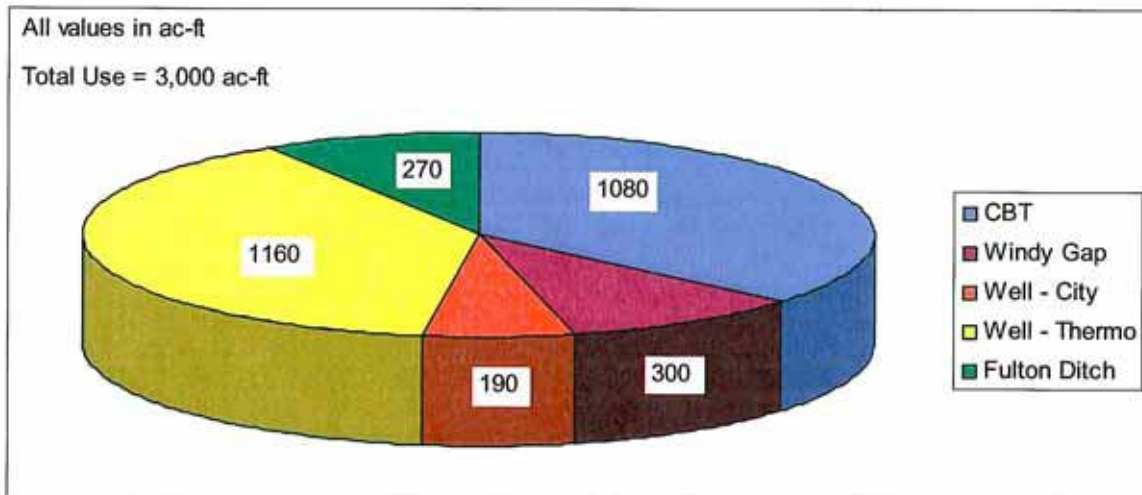
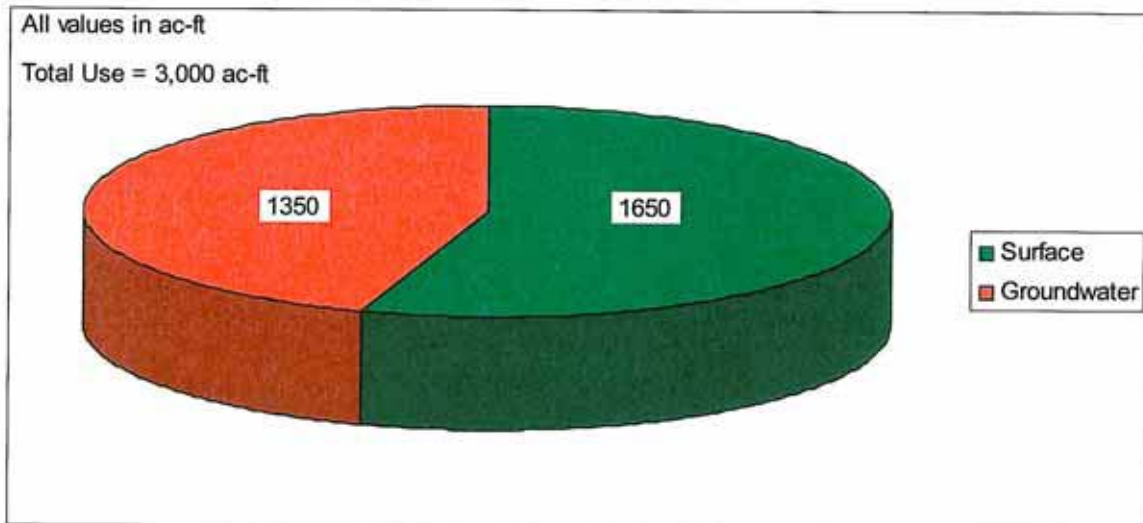


Figure 3.4 – Surface vs. Groundwater



System Limitations

As part of providing an overall perspective, it is appropriate to also provide insight into potential system limitations. Accordingly, major limitations of the water supply components have been provided.

Well Water

The City's well water supply is very reliable since the aquifer is replenished on an annual basis. The age of the wells is less than ideal, but on-going maintenance and repair have extended the life of these wells. Use of well water requires augmentation to the stream system. Since the City will continue to operate its wells for irrigation and for Thermo and CGH, it must plan on how to address augmentation now and into the future.

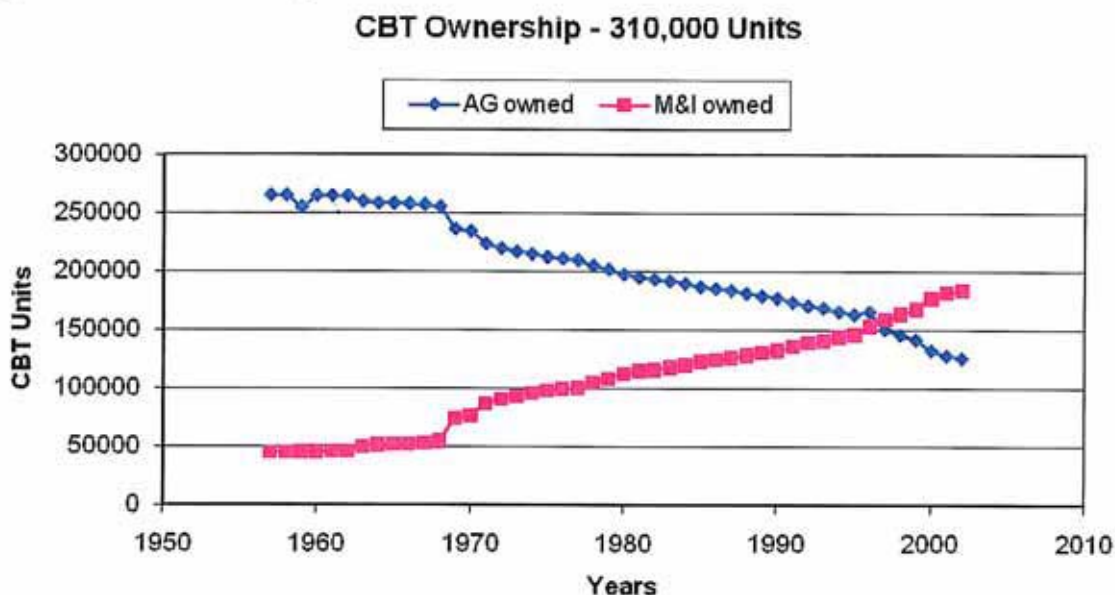
Fulton Ditch Water

The Fulton Ditch water owned by the City is 100% utilized at this point. Between irrigation of the golf course and cemetery and augmentation of its well usage, the City's 217.9 shares are sufficient to meet current needs. The City will continue to need additional Fulton Ditch water or other augmentation water sources as it grows. The primary concerns with Fulton Ditch water is its cost due to increased demand for the water and if it is used for any use other than irrigation, i.e. augmentation, the winter return flow component must be maintained at the South Platte River. Although the Fulton water delivers seasonally from April through October, use of the water for augmentation requires replacements year round. The City must manage its water supplies to address this issue.

Mountain Water

Fort Lupton is on the cusp of experiencing a high rate of growth. The CBT and Windy Gap supplies are currently sufficient to meet demands, and to date, there have not been any shortages from a potable supply standpoint. Over the years, the City has received more CBT water through dedication than allowed by Northern Colorado Water Conservancy District (NCWCD) regulations (Resolution D-962-02-95). Accordingly, the City cannot purchase additional CBT supplies through the open market and must rely on additional acquisition of CBT through dedication from developers. This requirement puts a burden on the City to figure out other ways to extend its water supplies since it cannot purchase additional CBT water in the open market. CBT water is in great demand and is converting from agricultural use to municipal/industrial use rapidly. In the late 1950's, CBT ownership was 85% agricultural owned and 15% municipal/industrial owned. Today, the estimated ownership is 65% municipal/industrial and 35% agricultural. The chart below shows the ownership transition.

Figure 3.5 – CBT Ownership Transition



Because CBT is in such high demand, Fort Lupton is faced with a difficult challenge. In order to fund other water acquisitions, such as its recent purchase of Windy Gap supplies, the City has switched from a CBT dedication policy to a cash-in-lieu policy. However, since CBT is being obtained by other municipalities so quickly, one of the greatest challenges the City must face in the near future is whether to switch back to CBT dedication while this precious resource is still available.

Infrastructure

The City water system currently consists of a "High Pressure Zone" and a "Low Pressure Zone" to provide water to its residents. These zones refer to the location of the zone with respect to geographic location and elevation, not the actual pressure

supplied to residents. To accommodate future growth, the City will need to serve areas outside of these pressure zones in the future. To accomplish this, the City will need additional infrastructure to provide water to areas outside its current infrastructure.

Water Costs and Pricing

As with all aspects of managing a water utility, many decisions are based on a cost-benefit analysis. Accordingly, we have included the City's most current rate structures for reference.

Rate Structure

In response to ordinances requiring a review of water rates at least every two years, and as part of the 2003 Drought Response Plan, the City reviewed its rates and resultant revenue shortfalls to fund ongoing operations. The City currently reviews and sets its rates annually during its budget process. As a result, a Resolution was established for a two-tier water rate structure. In 2006, the City added a third tier. The City has one rate structure for all customer types, except Thermo and Parks. The City's current and past rate structure is shown in the table below.

Table 3.3 – Past and Current Rate Structure

	Prior to June 2004	After June 2004	2005	2006
Base Fee	\$22.50	\$27.50	\$27.50	\$27.50
Water Usage Blocks	Rate per 1000 gallons			
Potable Rates				
< 12,000 gal	\$2.85	\$3.20	\$3.26	\$3.43
12000 gal - 20000 gal	\$2.85	\$3.65	\$3.72	\$3.91
> 20000 gal	\$2.85	\$3.65	\$3.72	\$5.15
Non-Potable Rates				
Thermo	\$0.28	\$0.28	\$0.28	\$0.29
Parks	\$0.50	\$0.50	\$0.50	\$0.50

Water Revenue

The City divides its water customers into Residential, Commercial/Industrial, Schools, Multi-Family, Hotels/Motels, and City Irrigation. The City's water sales per customer category from 2002 to 2005 are shown in the following table.

Table 3.4 – Water Revenue by Customer Category

Customer Category	2002	2003	2004	2005
Residential	\$586,274	\$569,696	\$563,291	\$649,873
Commercial/Industrial	\$153,945	\$156,998	\$125,443	\$112,651
Schools	\$82,691	\$43,440	\$75,968	\$78,320
Multi-Family	\$108,318	\$88,050	\$87,700	\$107,929
Hotel/Motel	\$8,016	\$5,162	\$4,697	\$6,135
City Irrigation	\$1,755	\$5,416	\$53,774	\$16,465
Total	\$940,999	\$868,762	\$910,873	\$971,373

Billings and Collections

The City follows these steps for billings and collections.

1. Statements for the charges of water service will be dated and mailed out to water users monthly by the 18th of each month. Customers will have until the end of the following month to pay said bill.
2. In the event that the utility bill is not paid by the end of the following month in which it was sent, the City shall serve upon or mail the customer a delinquent notice, in writing, notifying the customer that they have ten days from the date of the notice to pay the delinquent amount or the water will be turned off to the premises.

In the event that the utility bill is not paid within the ten-day delinquency notice, the City shall begin delinquency shut-off procedures as follows:

3. If payment of the past due balance is not received by 12:00 noon on the day before scheduled shut-off date, the City or its agent(s) shall shut-off water service to the premises and a \$40.00 nonpayment charge shall be added to the past due balance to cover costs to the City in activating shut-off procedures. This fee and the past due balance-must be paid prior to water service being restored.
4. If a customer cannot pay the entire balance due, they may, upon request in writing, ask to arrange a payment schedule. However, all pay arrangements must be made by the customer prior to 12:00 noon on the day before scheduled shut-off date.
5. If payment is not made as arranged, water will be shut-off with a 24 notice, and water will not be restored until the past due balance and the \$40.00 nonpayment charge is paid. Arrangements will not be made on prior arrangements.
6. If, after following through on the delinquency shut-off procedures, the account still remains unpaid, the City shall file a lien upon the real property served on all water and sewer charges, service charges and fees. Said lien shall not be discharged until all fees and costs have been paid.
7. In the event the lien provided in (6) above is not discharged by payment, the City or its agent(s) shall be authorized to collect such delinquent charges for water

and sewer charges, service charges and fees, and charge such collected amounts in the same manner as taxes, pursuant to Colorado Revised Statutes 31-15-302.

Alternately, upon the election of the City Council, proceedings may be instituted for the collection of amounts due by the County Treasurer pursuant to Colorado Revised Statutes 31-20-105.

In the event of any collection process, the City shall also be entitled to collect from the customer or the property owner, all attorney's fees and reasonable costs incurred in the collection process

The City averages between 30 and 40 account shut-offs each month. The shut-off day is the second Tuesday of each month.

Current Policies and Planning Initiatives

The City of Fort Lupton has enacted numerous water conservation policies and ordinances. Some ordinances are in place continuously. Other policies and ordinances are in place and can be enforced annually depending on CBT yield.

The City completed a Raw Water Master Plan in 2003. The plan evaluated growth and developed a water acquisition plan to meet that growth. Various water resources were identified for purchase and future water storage needs were quantified. The City's raw water dedication policy was evaluated and changes were recommended to help fund water acquisition.

A Drought Response Plan was also completed in 2003. This plan helped the City respond to the drought by evaluating water needs and developing short-term solutions to solve those water needs.

In addition, in 1999 the City completed a Water and Wastewater Master Plan that addressed infrastructure needs and capital improvement costs. This report also evaluated growth and identified capital improvement projects needed to meet this growth.

Current Water Conservation Activities

As previously discussed, the City has more CBT water than it currently needs. As a result, the City has not had to implement strict water conservation measures. Since 2003, by Resolution 2003-002, the City has implemented the following water restrictions.

1. No outside watering from 10 am to 6 pm every day beginning May 1st and ending August 31st.

2. Exclusions and exceptions include:

- Coyote Creek Golf Course – greens and tee boxes.
- Waivers for new lawns, except for the period June 1st through August 31st.
- Residential car washing provided that a bucket and a hand-held hose with a shut-off nozzle are used.
- Commercial car washes.

This water restriction has been in place every year since 2003. Each year on the March Utility Bill, the City includes a message depicting the watering restrictions that will be in place for the upcoming irrigation season. An article is also put into the Fort Lupton Press. Although the City believes this annual watering restriction has helped, the benefits of this conservation measure have been difficult to quantify to date. Again, the excess mountain water supplies have not required the City to focus on water use as much as some other water providers with more limited resources.