ESTES PARK
COLORADO

Wednesday, January 09, 2013

Mr. Kevin Reidy
Office of Water Conservation and Drought Planning
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203

Re: Final Conservation Plan for Town of Estes Park

Dear Mr. Reidy,

The Town of Estes Park is pleased to provide herewith a copy of the final Town Conservation Plan to the Colorado Water Conservation Board. This final version addresses the concerns you raised about the draft Plan and is accepted by the Town as our Plan for the next seven years. The Plan was approved by our Town Board on the 27th of November 2012.

As the Utilities Director, I confirm that the Town has incorporated the Conservation Plan activities into the Department budget, but they are subject to Town Board approval of the budget on a yearly basis. The elements identified for action are budgeted as described in the Plan.

Sincerely,

Reuben Bergsten
Utilities Director
Town of Estes Park

cc: Jeff Boles, Water Superintendent
Sarah Clark, HDR
Jenn Stillman, HDR

Water Conservation Plan

Town of Estes Park, Colorado

Final Report

April 26, 2013

Prepared under the responsible charge of

Sarah C. Clark
Colorado PE 36489

HDR

303 E. 17th Ave. Suite 700
Denver, CO 80203

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1.0 Introduction

The Town of Estes Park, hereinafter referred to as the Town, initiated this water conservation planning effort to comply with pending state requirements. The approach used to develop this Conservation Plan follows the guidance provided by the State of Colorado Water Conservation Board.

Similar to other resort communities in Colorado, the Town of Estes Park has a permanent year-around population that typically doubles and sometimes triples in the summer due to the large influx of visitors. As a result, the water system must be capable of serving a wide range of potable water demands that result from direct consumption by the increased population.

In contrast to other cities in Colorado, very little water demand in Estes Park is attributable to irrigation. Landscape plantings are at high risk of survival due to the grazing of natural wildlife (elk and deer) so typical landscaping throughout the Estes Valley is natural vegetation. The small amount of landscaping in the Town is generally limited to municipal parks and property. This situation makes the Town unique with respect to conservation measures that are available to provide any significant water savings. This plan is limited to the use of multiple conservation measures having relatively small amounts of water savings.

Sections two through four contain background information taken from previous planning and evaluation work. The following list includes the reports from which information is drawn.

- Potable Water Demand Project, Town of Estes Park, July 12, 2007
- Water Treatment Facilities Evaluation, Town of Estes Park, January 2007
- Estes Park Water Treatment Facilities, Phase 2 Study, Town of Estes Park, July 2010
- Water Cost of Service Study, Town of Estes Park, December 2010

The plan was developed by the Conservation Plan Committee, whose members include the following:

- Reuben Bergsten, Utilities Director for the Town
- Jeff Boles, Water Superintendent for the Town
- Diana Beehler, Laboratory Technician for the Town
- Sarah Clark, Project Manager at HDR
- Jennifer Stillman, Project Engineer at HDR

The plan was presented to the public at the Utilities Committee monthly meeting and again at a public Town Board meeting where it was approved..

2.0 Existing Water System Profile

The following sections discuss the water system physical characteristics, sources of water, limitations, water costs, current policies and planning initiatives, and current conservation efforts.

2.1 Physical Characteristics of Existing Water System

The Town of Estes Park water system serves water to customers in the Estes Valley with an estimated service area of 17.58 square miles. The boundary of the Estes Park water system service area coincides roughly with the boundary of the Estes Valley. The majority of the water system is located below the "blue line", which is the maximum customer service elevation allowed for gravity fed services, i.e. 100 feet below the storage tanks' Hydraulic Grade Line (HGL)

The existing water system is composed of two (2) water treatment plants, nine (9) storage tanks, two (2) clearwells, and more than 100 miles of pipeline. The water system currently serves approximately 4,000 residential connections and 850 commercial connections. A map of the distribution system is shown in Figure 2-1, which depicts the service area, distribution system and pressure zones within the system.

Two water treatment plants serve the Town of Estes Park: Marys Lake Water Treatment Plant (MWTP) and Glacier Creek Water Treatment Plant (GWTP). The MWTP is located at the south end of the water distribution system, adjacent to Marys Lake. The MWTP was originally constructed in 1992 and was renovated in 2010 with membrane technology. The plant normally obtains its raw water supply by gravity from the BOR tunnel that feeds Marys Lake. The plant can also pump raw water from Marys Lake through the Marys Lake pump station which was installed in 2003 . The design capacity of MWTP is 4 **m**illion **g**allons per **d**ay (mgd), but the plant cannot be operated at that rate year round due to water rights constraints on the BOR supply and due to wastewater discharge limitations.

Originally constructed in 1972, the GWTP is a conventional treatment plant located along Glacier Creek with access through the YMCA campground. Minor improvements have been made to the treatment process since the original construction and the filter media was replaced in 2003. The design capacity of the plant is 4 mgd, with the exception of the filters which are rated for 6 mgd. However, plant staff report that the current maximum treated flow is about 3.6 mgd. Runoff events in the watershed are particularly challenging for GWTP due to extremely low water alkalinity, low water temperature, undesirable color and lack of robustness in the treatment process. Similar to the MWTP, the Town's available water rights on Glacier Creek limit the length of time that the Town can operate GWTP at maximum flow.

The Town's distribution system has 9 water storage tanks and 2 treatment plant clearwells. The Marys Lake storage tank is divided into two sections. One section serves as the clearwell while the other serves as storage. Table 2-1 is an inventory of those facilities, including pressure zones served, capacities, elevations, dimensions and general construction information.

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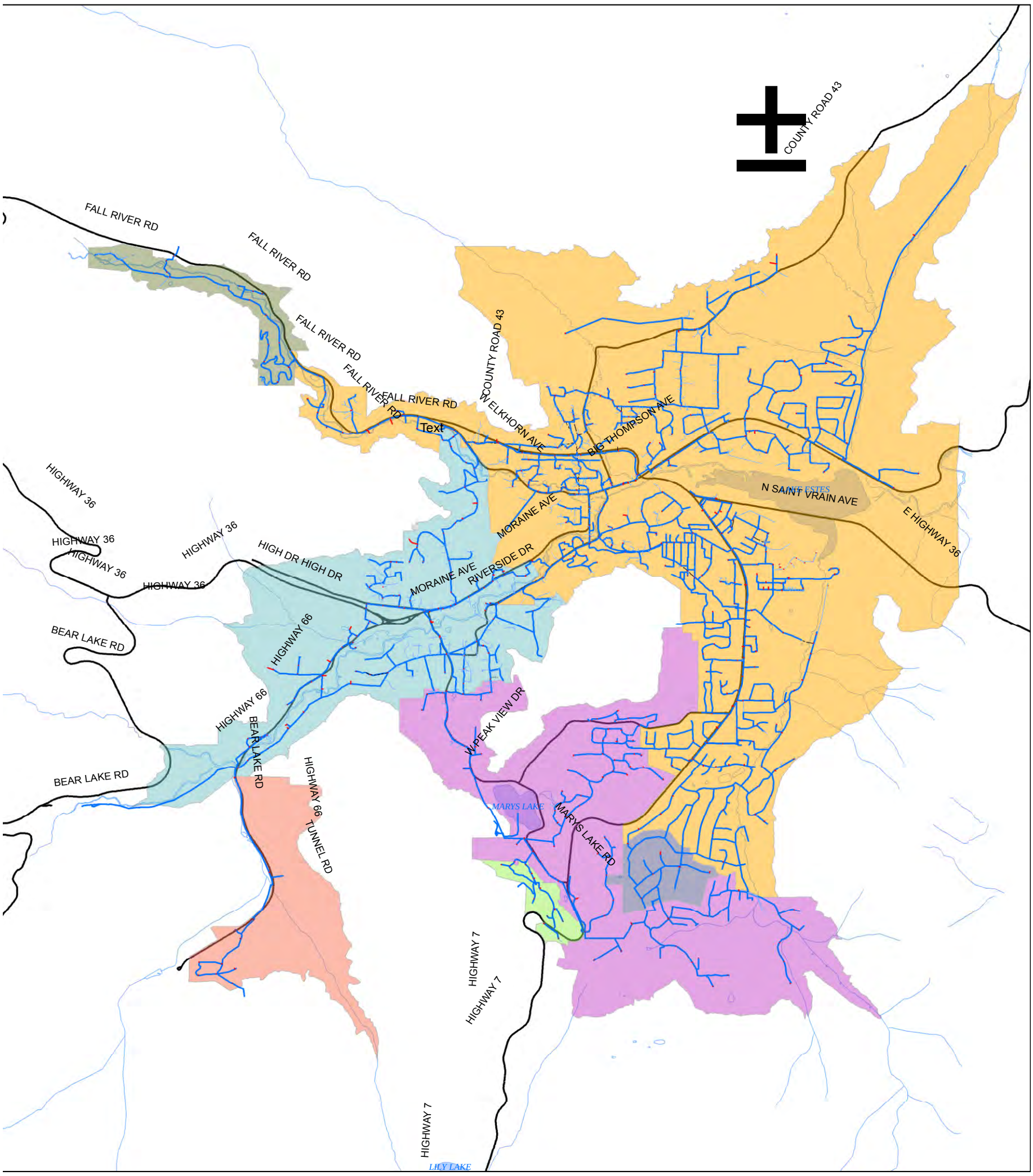
Figure 2-1
Existing Water System



Pressure Zones

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Zone 6
- Zone 7

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Town of Estes Park

Water Division

0 0.275 0.55 1.1 1.65 2.2 Miles

Table 2-1
Storage Facilities Inventory

Tank	Fall River Estates	MacGregor Mountain	Big Thompson	Castle Mountain	Glacier Creek WTP (Clearwell)	Glacier Creek WTP (Storage)	Marys Lake WTP (Clearwell & Storage)	Thunder Mountain	Kiowa Ridge	Crystal
Service Area (Pressure Zone)	"Fall River Estates Zone"	"Fall River Estates Zone"	"Red Zone"	"Red Zone"	"Green Zone"	"Green Zone"	"Yellow Zone"	"Thunder Mountain Zone"	"Kiowa Estates Zone"	"Crystal Zone"
Service Area Served	1	1	2	2	3	2, 3	2, 3, 4, 7	5	6	2, 7
Static HGL, ft	8,110	8,110	7,972	7,957	N/A	8,052	8,220	8,435	8,350	8,017
Design Service Elevation[1], ft	8,010	8,010	7,850	7,850	N/A	7,950	8,120	8,330	8,250	7,950
Highest Meter[2], ft	8,040 (HIGH)	8,040 (HIGH)	7,873 (HIGH)	7,873 (HIGH)	N/A	7,880 (OK)	8,120 (OK)	8,370 (HIGH)	8,260 (HIGH)	7,987 (HIGH)
Customer Elevation Range[3], ft	7,823-8,040	7,823-8,040	7,434-7,873	7,434-7,873	N/A	7,570-7,880	7,719–8,120	7,940-8,370	8,122-8,260	7,829-7,987
Capacity (MG)										
Total Rated Capacity	0.125	0.30	0.20	0.40	0.10	1.00	1.00	0.125	0.065	0.50
Elevations (ft)										
Tank Overflow	8,118	8,121	7,984	7,982	8,100	8,077	8,232	8,449.25	8,352.8	8,049
Tank Floor	8,104	8,096	7,972	7,957	8,090	8,052	8,214	8,435.25	8,338.8	8,017
Dimensions										
Design	Round	Round	Round	Round	Rectangle	Round	Rectangle	Round	Rectangle	Round
Diameter, ft	40	48	52	54	-	86	-	40	-	52
Length, ft	-	-	-	-	59.5	-	86	-	62	-
Width, ft	-	-	-	-	23	-	86	-	12	-
Equivalent Dia, ft	-	-	-	-	41.3	-	97.0	-	27.0	-
Water Depth, ft	14	25	12	25	10	25	18	14	14	32
Construction										
Year Constructed	1974	2004	1940	1965	1971	1995	1992	1985	2000	1963
Type	Buried	Buried	Buried	Above Ground	Buried	Buried	Buried	Buried	Buried	Above Ground
Material	Concrete	Concrete	Concrete	Steel	Concrete	Concrete	Concrete	Concrete	Concrete	Steel

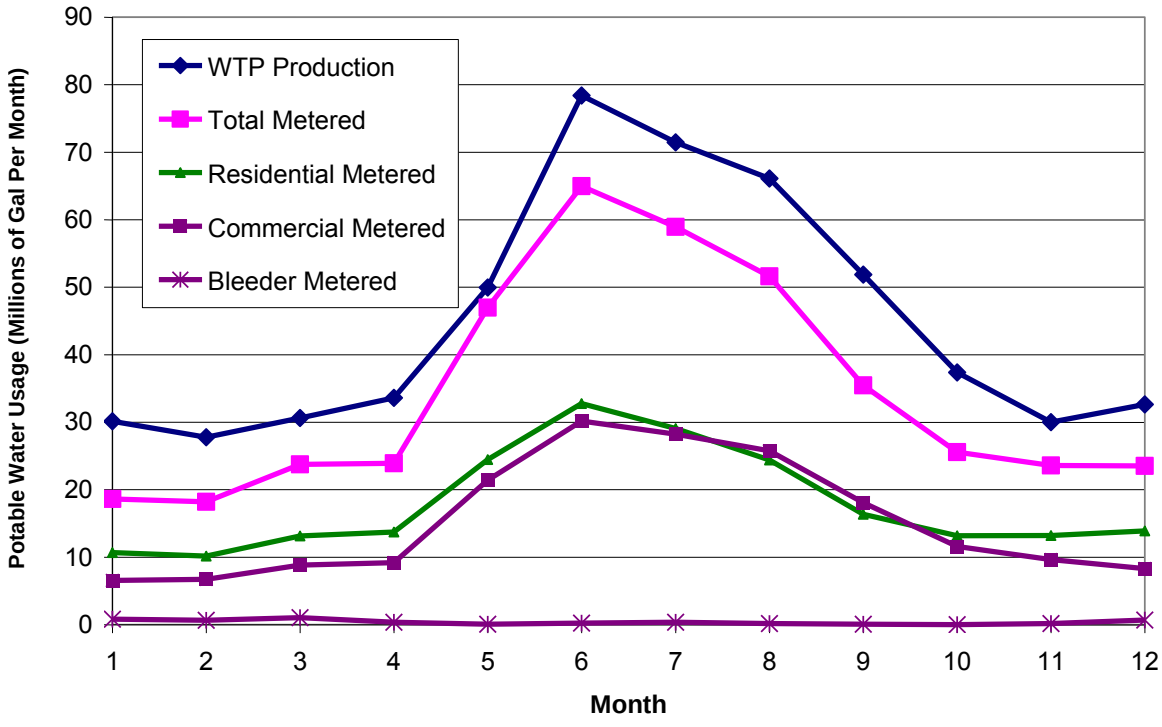
[1] Customers should be at or below this "Blue Line' elevation for service in the zone to receive adequate pressure.
[2] Elevation of ground at highest meter to calculate required and available storage at 20 and 30 psi.
[3] Elevation of model nodes representing customers served by the tank within the zone.

The Estes Valley is largely surrounded by public land (Rocky Mountain National Park and Roosevelt National Forest) and therefore future growth is limited to the boundaries of the water system service area. Current population in the Estes Valley varies significantly from winter to summer, with an estimated peak population of 22,350 occurring during the summer tourist season. The estimated build-out population is 32,624 by 2030, a 46% increase.

The Town's most recent water demand study was completed in 2007 (Potable Water Demand Projection, HDR, July 12, 2007) as part of a broad water plant evaluation and planning effort. Metered water usage by month as well as total water treatment plant production in 2006 is shown in Figure 2-2. The data show that residential water usage and commercial water usage are roughly the same at the present, and the usage follows the same seasonal demand trend. The difference between the water treatment plant production in Figure 2-2 and the total metered water is largely due to system losses and also partly due to wholesale customers (bulk and dispenser) whose meter records were not included.

System losses include water used or lost in the treatment plant and distribution system. Losses in the Town's water system have stabilized and are not expected to increase as long as the distribution system continues to be maintained. The distribution system does have a number of "bleeders", which are set to bleed water from the system during the winter to keep the distribution pipes from freezing. Their usage is also metered and shown in Figure 2-2.

Figure 2-2
2006 Potable Water Usage



2.2 Sources of Water

The Town owns two types of water, transmountain water and native water rights. The transmountain water comes from agreements with the Bureau of Reclamation (BOR), Colorado Big Thompson Project (CBT), and Windy Gap. The native water rights are all located on tributaries of the Big Thompson River. The two sets of rights, transmountain and native, are associated with the raw water supply to the MWTP and the GWTP, respectively.

The transmountain water is delivered to the Town by means of the BOR facilities which include the Rams Horn Tunnel (hereafter referred to as the "tunnel") and Alva B. Adams Tunnel from Lake Granby to Mary's Lake. The raw water source for the Town's newest plant, MWTP, is piped directly from the tunnel to the plant. The BOR typically shuts the tunnel down for 2-4 weeks during October for maintenance. During the tunnel shut down, the Town can rely on a pump station with an intake in Mary's Lake to pump raw water to MWTP. The BOR agreement dictates that the Town use their 500 ac-ft allotment of water at the MWTP prior to using their other transmountain water. Due to this agreement, the Town does not have an annual surplus of BOR water. In addition, a portion of the Windy Gap water is used as part of the Town's Augmentation Plan. The Town does have an annual surplus of CBT and Windy Gap water after the MWTP and augmentation demands are fulfilled. A portion of this surplus is sold to smaller water users who have agreements with the Town.

In the past, the Town's native water rights served as direct raw water diversions to three separate water treatment plants. Since then, the Fall River Water Treatment Plant and the Black Canyon Water Treatment Plant have been decommissioned. The GWTP is a 3 mgd operational facility with dedicated water rights for 1.3 mgd on average. Since only the GWTP is still operational, a portion of the remaining native water rights have been transferred to Glacier Creek. (Not all of the Fall River agricultural water rights have been transferred to date.) All of the Town's native water rights have junior priority. Consequently, the Town's rights are out-of-priority most of the time. In order to overcome this obstacle, the Town has adopted an Augmentation Plan. The Plan was implemented in 2001 and allows the Town to divert their junior native water rights year-round in exchange for augmentation with Windy Gap water. The average exchange ratio is 10:1, i.e. 100 ac-ft of treated junior native water rights is replaced by 10 ac-ft of Windy Gap water. It is important to note that BOR and CBT water cannot be used for augmentation at this time.

The native water rights associated with GWTP currently have an instantaneous withdrawal limitation of 4 **c**ubic **f**eet per **s**econd (cfs), which is equivalent to 2.58 mgd. The Town is planning to appropriate additional water rights for the GWTP to allow the plant to produce 4 mgd. Unlike GWTP, the MWTP does not have an instantaneous withdrawal limitation on its transmountain water rights. Therefore, MWTP could produce 4 mgd on a peak day/s if necessary. Following the purchase of additional water rights for GWTP, the Town's combined water supply capacity will be 8 mgd, which satisfies the projected buildout peak day demand of 7.9 mgd. (Section 3.0 will address the demand projection used to arrive at this value.) Consequently, there are no additional water supply purchases identified within the planning window of this Conservation Plan and water supply and water rights will not be further addressed.

2.3 System Limitations

The greatest issue of concern to the Town's water system is a major renovation project that is needed at GWTP in order to replace aging infrastructure and address upcoming EPA water regulations. Two recent engineering studies that evaluate existing water treatment facilities have been completed by the Town. The first of the two studies, the Water Treatment Facilities Evaluation, included condition assessments of the two water plants and developed a plan to meet the long-term projected water demand. Options for improvement or replacement of the two plants were evaluated in this study, with the final recommendation to improve and expand capacity at the MWTP utilizing submerged membranes, reserving the decision whether to improve or replace the GWTP until more information could be obtained regarding the cost of that effort. Since this study was completed in 2007, the MWTP has been upgraded with submerged membranes and now has a treatment capacity of 4 mgd but operates at 2 mgd peak flow. The current restrictions on operating at design flow are tied to the availability of waste discharge capacity (and the cost to discharge).

The second of the two studies, the Water Treatment Facilities Phase 2 Study, was completed in 2010. This study is an in-depth evaluation of the facilities at the GWTP, with the objective of making a determination whether to improve the plant or replace it entirely, and if it were to be replaced, at what location. GWTP is at significant risk for meting the drinking water quality regulations under certain water quality conditions which generally occur during runoff. In addition, the plant has the potential for being reclassified, after the 2016 round of sampling, in a treatment bin for the LT2ESWTR that requires additional treatment beyond conventional treatment. The plant is composed of aging equipment, buildings and concrete tanks, so that repair or upgrade without complete replacement is not cost effective. A significant amount of work is required to demolish and replace the GWTP on the existing site. The current plan is to move towards complete replacement for the plant, probably by 2021, with a treatment capacity of 2.65 mgd, which is equivalent to the water rights limit for instantaneous withdrawal at Glacier Creek of 4.1 cfs. (Note, the instantaneous withdrawal rate for GWTP has since been clarified as 4.0 cfs, which is equivalent to 2.58 mgd.)

2.4 Water Costs and Pricing

The water utility provides only potable water to its customers. Between 2000 and 2009, the peak billing years occurred in 2000 and 2007. The water utility has seen a steady decline in volume of sales in recent years. The following illustrates the decline of the most recent year's water use reduction:

2007 to 2008	0.5% reduction
2008 to 2009	1% reduction
2009 to 2010	almost 2% reduction

There have been no major reductions in customers to account for this decline. The decline in water use translates to a decline in revenue, which drives the need for greater rate adjustments to fully fund the operating and capital needs of the system. This trend holds true nationwide for residential customers and is due to a number of factors, but in particular to water efficient plumbing fixtures (toilets, washing machines and dishwashers). The national plumbing code has new low water use requirements in place for washing machines since 2010 and dishwashers beginning in 2011. This trend (decline in residential water use per household) is expected to continue as appliances are replaced over the next decade[1]. A

[1] Trends in Residential Water Usage and its Impact on Water Utility Financial Planning, American Water, Gary Naumick, P.E., AWWA Utility Management Conference, Denver CO, February 2011.

trend in less people per household and the economic downturn are two other elements playing into these household usage and billing reductions. The Town has also been actively reducing unaccounted for water over the past several years.

In 2010, the Town completed a comprehensive water rate study and review of water system development charges. As part of the comprehensive rate study, existing rates were reviewed and analyzed for each customer class of service. The existing rate structure is comprised of a monthly base charge that is dependent on the size of water meter for all classes of service. In addition to the base charge, there is a usage charge for each 1,000 gallons of water consumption. Outside the Town limits, rural customers pay an additional 60% for service.

The Town has four customer classes: residential, commercial, pumped flow, and bulk water. The bulk water customers are essentially subdivisions that are served by private water companies who have requested water service from the Town. The bulk water customers pay their system development charge over a period of twenty years once they are connected to the Town's system and receiving water service. One important revenue shift for the Town in 2011 is that this "surcharge" revenue from bulk water customers will discontinue by $22,000 as two of the bulk water customers have completed their 20-year payment period. This equates to slightly more than half a percent reduction of overall rate revenue.

During the rate design phase of the 2010 study, discussions of goals and objectives for the utility were undertaken. The primary objective established by the study was to maintain revenue stability, and provide adequate revenue for operations and capital needs. At the same time, the utility has seen a decline in water consumption in recent years. While conservation billing rate options were discussed and explored, the utility management felt that with the existing reduction in consumption currently taking place, a conservation designed rate would de-stabilize the revenue stream. Since revenue stability was the key objective of the study, an adjustment to the meter charge was developed. This involved applying the American Water Works Association (AWWA) meter capacity weighting factors for a ¾-inch meter to the meter charges. These weighting factors reflect the capacity of the meter with respect to the potential demand on the system. Thus, a customer with a larger meter pays a larger meter charge, or base rate, to account for the greater demand they place on the system. Since this adjustment would create a greater rate increase to customers with larger meters, the proposed rates were developed to be implemented over a three-year period.

Overall, the 2010 rate study showed that the level of adjustment needed to meet the revenue requirement was 6.8% per year for the next several years. The Town Trustees felt that this increase was too high and that the meter charge increases would further penalize customers with larger meters at an economically sensitive time. Therefore, the Town decided to maintain the existing rate structure and apply a 5.6% revenue adjustment to each rate component (the meter charge and the consumption charge) for 2011 through 2013.

If the Town considers implementing a conservation-based rate structure in the future, a seasonal rate appears to be the most appropriate from a rate design perspective. This type of rate would have the volumetric, or consumption-based, rate component increase in the peak season (summer), when the Town's population swells with tourism. This form of rate structure provides increased cash flow closer to the time when system operating costs are higher, due to increased pumping and chemical usage to meet peak demands. A conservation-based rate structure will be considered in the next update of this Conservation Plan.

Table 2-2 provides a summary of the water utility rates for all customer classes of service, including the previous 2010 rates and the newly adopted 2011 rates.

Table 2-2
Summary of the 2010 and 2011 Water Utility Rates

	2010 Urban	2010 Rural	2011 Urban
Monthly Water Base Rate			
5/8"	$17.90	$28.67	$18.90
3/4"	17.90	28.67	18.90
1"	19.67	31.50	20.77
1- 1/2"	23.90	38.27	25.24
2"	26.85	42.98	28.35
3"	61.59	98.56	65.04
4"	86.32	138.13	91.15
Consumption - $/1,000 gallons			
Residential			
All Consumption	$3.77	$6.03	$3.98
Commercial			
All Consumption	$3.67	$5.88	$3.88
Pumped Flow			
All Consumption	$5.28	$8.44	$5.58
Bulk Water			
All Consumption	$4.22	$6.75	$4.46

Water customers are billed on a monthly basis. On average, an urban residential customer with a ¾-inch meter uses approximately 5,000 gallons of water in a month. Under the present rates, this customer would pay $36.75 per month. Under the Board adopted rates that cost will increase to approximately $38.80.

The Town's utility bills include both water and electric service charges, on a monthly basis. The billing department cannot distinguish between the water and electric utilities for numbers of delinquent billings. While water bills are highest in summer, the electric utility bills are highest in winter, due to heating requirements. Delinquent bills have increased somewhat since the economic downturn. The total number of delinquent bills issued from 2009 to 2010 increased 13%. However, for the first five months of 2011 compared to the first five months of 2010, the number of delinquencies issued has dropped 16%. Overall, levels of delinquencies appear to be remaining relatively stable. The Town has incurred the same increase in foreclosures and bankruptcies in recent years that are seen nationally, and along with that, some billings to write-off, but nothing unusual has transpired in the recent past.

This completes the discussion of the Town's water utility billing and revenue trends. A more detailed discussion of the development of the comprehensive rate study can be found in the Town's Comprehensive Water Rate Study Final Report, January 2011, HDR.

2.5 Current Policies and Planning Initiatives

The Town currently has a 3-stage water conservation plan that was developed after the drought in 2002. Table 2-3 summarizes the 3-stages and Table 2-4 summarizes the specific water usage restrictions during each of the stages.

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Table 2-3
3-Stage Conservation Plan Summary

Stage	Description	Conservation Measures
1	This is the normal mode of operation. Voluntary water conservation measures are suggested to encourage prudent water use, but none are mandated.	Voluntary conservation measures are included in this stage to embed water efficiency programs into the fabric of the community and achieve permanent reductions in per capita water use. Long-term water demand management programs include both structural and non-structural measures.
2	This stage is triggered by the loss of one of the water supply sources and a likely reduction in the other supply source. Mandatory water restrictions are in effect to reduce water demands. Water rates are increased to recover the same amount of revenue as existing rates recovered under Stage I conditions.	Immediate action is necessary in Stage II to reduce water demands. The Town's primary tool for achieving short-term reductions in water use is to declare that Stage II conditions exist and to enact restrictions to reduce water consumption until adequate supplies are available. The goal of the restrictions is to assure that water is continuously available to all customers for minimal irrigation and essential uses that protect the health, safety and welfare of the public.
3	This stage is triggered by the loss of both water supply sources. Severe water restrictions are in effect and water rates are drastically increased to recover the same amount of revenue as existing rates recovered under Stage I conditions and to penalize unnecessary water usage.	

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Table 2-4
Summary of Water Restrictions by Conservation Stage

Conservation Measures	Stage I (Normal)	Stage II (Moderate)	Stage III (Emergency)
Impose water rate surcharge	No	No	Yes
Allow turf Irrigation	Yes	Yes	No
Voluntary watering days are designated	Yes	N/A	N/A
Mandatory watering days are designated and should be observed	N/A	Yes	N/A
Voluntary landscape/lawn non-watering between 10 am and 6 pm.	Yes	N/A	N/A
Mandatory landscape/lawn non-watering between 10 am and 6 pm.	N/A	Yes	N/A
Limit lawn watering to 2 hours per day on designated watering days	N/A	Yes	N/A
Prohibit new lawn seeding or sod	No	Yes	Yes
Allow hand watering	Yes	Yes	Yes
Allow spray or bucket car washing	Yes	Yes	No
Allow use of automated car washes that recycle wash water	Yes	Yes	No
Allow use of automated car washes that do not recycle wash water	Yes	No	No
Watering days – Voluntary in Stage I, Mandatory in Stages II and III Street addresses ending in 0 to 4: Monday, Thursday, Saturday Street addresses ending in 5 to 9: Tuesday, Friday, Sunday			

In the future, the Colorado Water Conservation Board (CWCB) may require all water utilities to develop a Drought Mitigation Plan. If this requirement is implemented, the Town may revisit and further refine the 3-stage plan outlined above to address additional issues such as modified drought rates. It should be noted that CWCB does offer grants to assist water providers in development of these mitigation plans.

The Town has completed a number of planning documents over the past decade which have been referenced throughout this Conservation Plan. With the exception of a potential Drought Mitigation Plan for CWCB, the Town does not intend to develop any additional planning studies in the near future that would impact conservation efforts.

2.6 Current Water Conservation Activities

Historically the Town has promoted water conservation in the community using two means: posting of conservation information on the Town's website and distribution of free water saving plumbing fixtures. Conservation information on the Town's website includes a summary of the Town's 3-Stage Conservation Plan (see Section 2.5), a list of conservation tips, and an advertisement for a "free water-saver kit". The Town intends to maintain the conservation information on the website, but there are no plans to update the website at this time.

The "free water-saver kits" referenced on the Town website currently consists of a variety of water saving plumbing fixtures as sold by Niagara Conservation and distributed by the Town to its customers for free. The Town currently maintains an inventory of the following Niagara fixtures/accessories: 1.5 gpm showerheads, toilet tank bladders, 1.5 gpm faucet aerators, 0.5 gpm faucet aerators, and dye tablets (for toilet leak detection). The Town distributes these items for free to any customers who request them and some special interest groups such as the Recreation District. This program has been in place now for 5 years and the Town will continue to utilize this program in the future as part of its conservation efforts.

3.0 Historic Water Use and Demand Forecast

The Town completed a demand forecast as part of their "Potable Water Demand Projection" report in 2007 (hereinafter referred to as the "2007 Demand Projection"). The majority of Section 3.0 was extracted and streamlined from the 2007 Demand Projection to serve as the basis of water use characterization and demand forecasting for this Conservation Plan. The figures and tables presented in this section are based on data collected through 2006. The Town has not experienced any significant changes in the parameters that were used in the 2007 Demand Projection (population growth rates, water usage, land use, etc.) and therefore the demand forecast that was produced as a result of that study is considered to still be valid.

3.1 Service Area Population

The Town of Estes Park is somewhat unique in that the population doubles and sometimes triples in the summer due to the large influx of visitors. In general, the population of the water service area can be divided into four categories: permanent, transient, non-transient, and wholesale. The Town has prepared a statistical population analysis that is provided to the Colorado Department of Public Health and Environment (CDPHE). The analysis estimates the population of the Estes Valley in both the peak season (May-September) and the off-season (October-April) for each of the four categories listed above. (A copy of the statistical population analysis, titled 2006 Population Fact Sheet and Projections, is provided in the 2007 Demand Projection.) Some of the population data from the Town's population analysis was incorporated into the 2007 Demand Projection to serve as the current population basis. This data was projected into the future as part of the study.

3.1.1 Permanent Population

The historic permanent population of the Town is best-reflected in the population numbers from the U.S. Census Bureau. Table 3-1 summarizes the Census population numbers and estimates for the Town, Estes Valley, Larimer County, and the State. Figure 3-1 shows the annual percent growth for these entities as well as other Colorado communities and counties as estimated by various agencies. A copy of the population data used to compile Figure 3-1 is provided in the 2007 Demand Projection.

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Table 3-1
Census Population Summary

Year	Town of Estes Park	Percent Annual Change	Estes Valley	Percent Annual Change	Larimer County	Percent Annual Change	State of Colorado	Percent Annual Change
1950	1,617	-	-	-	43,554	-	1,325	-
1960	1,175	-3.1	-	-	53,343	2.0	1,754	2.8
1970	1,616	3.2	3,554	-	89,900	5.4	2,225	2.4
1980	2,703	5.3	4,070	1.4	149,184	5.2	2,908	2.7
1990	3,672[(1)]	3.1	6,044	4.0	186,136	2.2	3,303	1.3
2000	5,413	4.0	8,889	3.9	251,494	3.1	4,301	2.7
2010	8,013[(2)]	4.0	11,500[(2)]	2.6	-	-	-	-

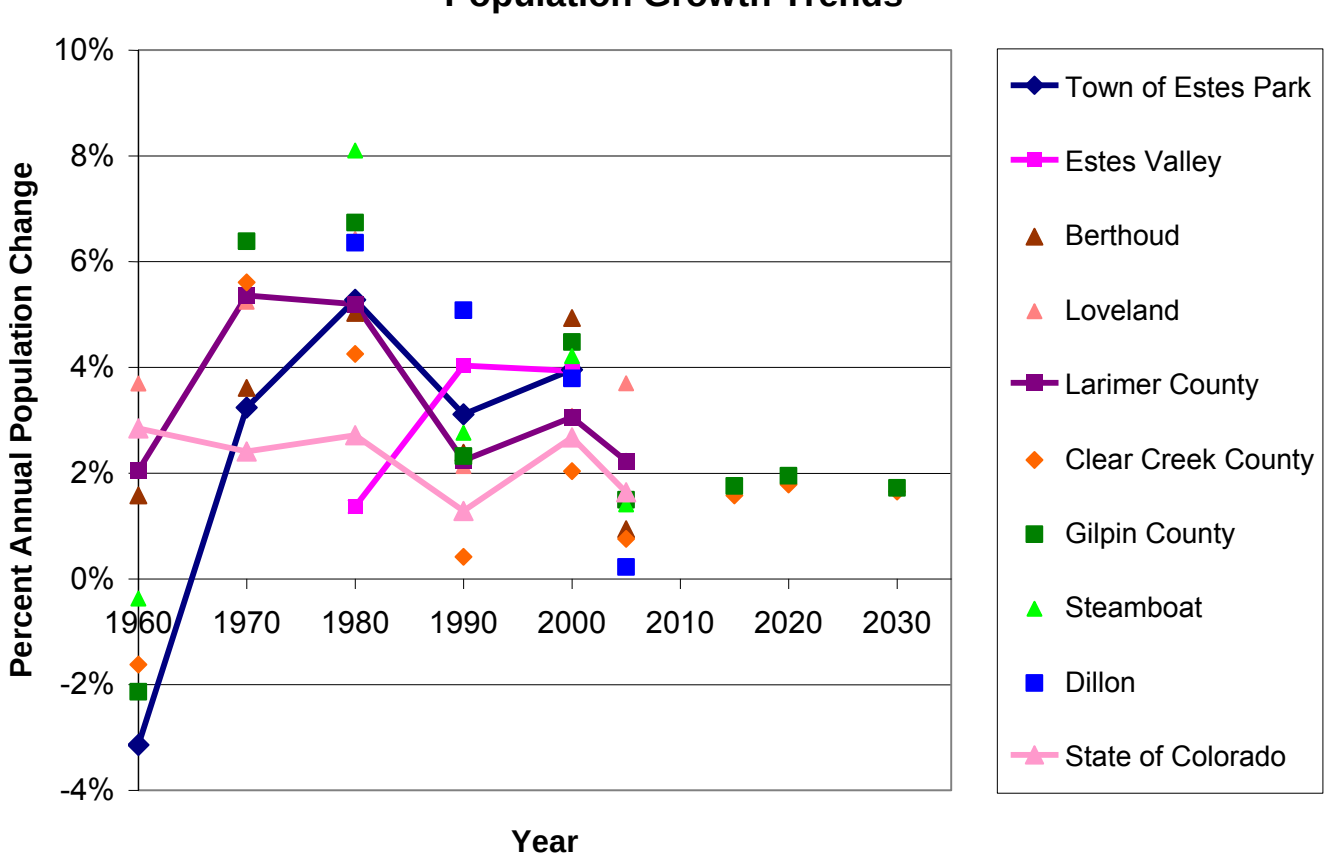
Notes:

(1) The U.S. Census Bureau reported a population of 3,184 for the Town in 1990. The Town did not feel this was an accurate count due to changes in Census Tract 28 and the means by which the Census surveys were distributed. The Town estimate of the 1990 population is 3,672.

(2) Town of Estes Park estimate taken from the May 2006 Town of Estes Park Community Profile.

(3) Percent Annual Change example calculation for the Town of Estes Park in 1960 = [(1175/1617)^(1/(1960-1950))]-1 = (-0.031)

Figure 3-1
Population Growth Trends



As shown in Figure 3-1, the Town, Valley, and the county all experienced 2-4% growth between 1990 and 2000. The Town estimated the 2010 population to be 8,013 in the Town itself and 11,500 in the Valley, representing 4.0% and 2.6% average annual growth, respectively from 2000. Another means to analyze growth in the Valley is the number of water accounts added each year. The total number of water accounts increased from 4,146 accounts in December of 2000 to 4,838 accounts in December of 2006. This increase represents a 2.6% average annual growth rate between 2000 and 2006, which is in agreement with the Town's estimated growth rate for the Valley. It is important to note the extreme variability in the population growth rates for the region during the past 50 years, as well as the potential for a deceleration in growth in the future.

3.1.2 Transient Population

Tourists make up the transient population in the Town. This group is comprised of both day visitors and overnight visitors. During the summer of 2006, the Town completed a survey to examine the visitor profile (Estes Park Summer Visitor Survey 2006, November 2006, RRC Associates). The survey found that the primary attraction for visitors is still Rocky Mountain National Park (RMNP), although activities such as wildlife viewing and other outdoor recreation activities also have a high importance. Roughly 30 percent of visitors to the Town were from Colorado, with the remainder coming from all over the country. The total number of out-of-state visitors increased from 64 to 70 percent since the previous survey ten years earlier. The survey results support the assumption that the transient population in the Town correlates closely with the total number of visitors to RMNP. Furthermore, the number of visitors to the Town is more influenced by national growth trends and trends in visitation to National Parks then it is by growth trends within Colorado.

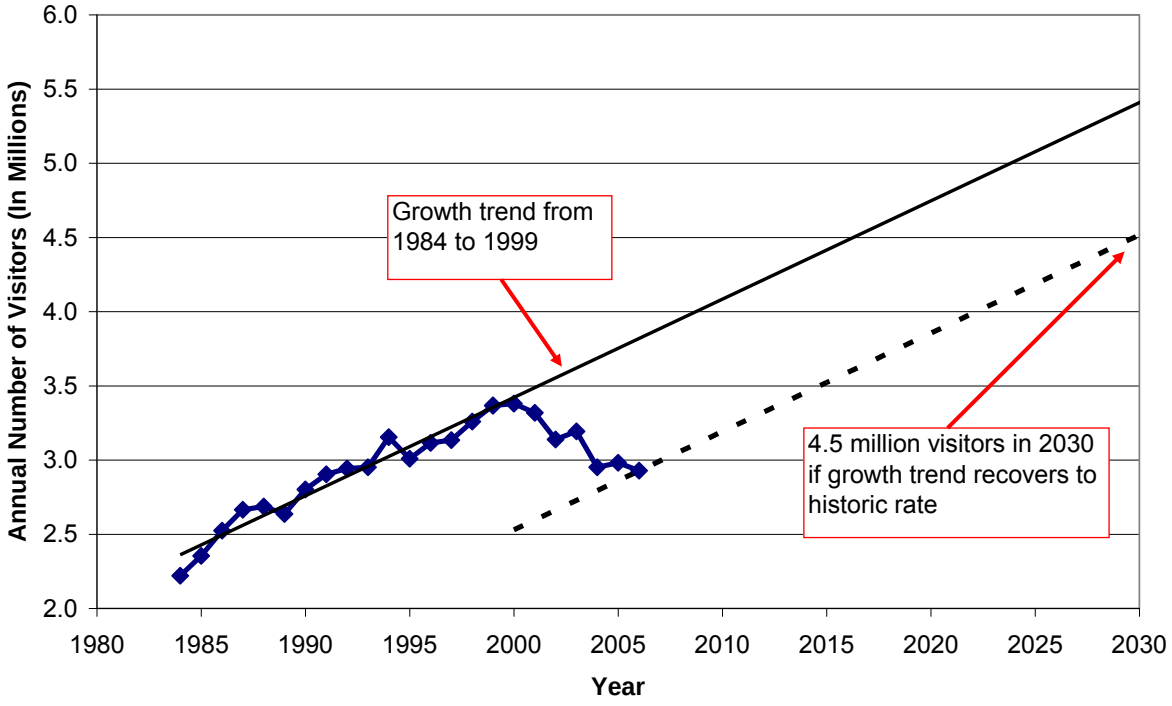
To obtain reasonable projections for the number of RMNP visitors, historic data for visitor numbers were obtained. RMNP staff has estimates for visitor numbers dating back to 1915. However, in 1984, RMNP changed their estimate methodology to adjust for the number of persons per vehicle. For this reason, only data collected after 1984 is shown in Figure 3-2. Visitation to RMNP has leveled off in the past 10 years and been on the decline since roughly 1999. A copy of the RMNP visitation records is provided in the 2007 Demand Projection.

HDR spoke with the Director of Planning for RMNP regarding future visitation trends during the preparation of the 2007 Demand Projection. It was the Director's opinion that growth would continue to be slow for the next 10 years, reaching approximately 3.5 million annual visitors by the year 2017. The reason for this decline, in the Director's opinion, is due to generational differences and a general decline of interest in the National Parks. However, the trend may also be related to the rising cost of gasoline and increased fees to RMNP.

For the 2007 Demand Projection, the future visitation trends of RMNP were estimated based on the Director's understanding of future visitation as well as historic visitation data. If the growth rate between 1984 and 1999 were to continue from 2006 forward, the projected annual visitors to RMNP would reach 4.5 million by approximately 2030, as shown in Figure 3-2. Additional data to support this opinion could be collected by examining visitation trends in all of the National Parks with a possible focus on the National Parks in the west.

HDR

Figure 3-2
Historic Annual Number of Visitors to Rocky Mountain National Park



Another source of information used for validating the transient population in the Town is the Estes Park Convention and Visitor's Bureau (CVB). Currently the Town has lodging accommodations for 3,000 people. The CVB refers to this as "3,000 pillows" since various lodging units can accommodate different numbers of guests. (This estimate includes rental condos.) The Town currently has a surplus of lodging inventory and the CVB is unaware of any significant future development plans for lodging. This information supports the concept of estimating the transient population based on the number of visitors to RMNP and placing an upper bound on the transient population projection. The CVB estimates that only 25 percent of visitors to the Town do not visit RMNP. This indicates that the RMNP visitor numbers remain the best parameter available to estimate the transient population in the Town.

The Town used to be completely booked every summer day roughly 10 years ago, but it is rarely booked full anymore with the exception of major holiday weekends. The CVB's current primary goal is to attract more tourists to the Town in the off-season. The Town is not trying to expand its accommodations infrastructure, but instead is trying to fill what they already have. Increasing occupancy in the off-season does not impact the development of the demand estimate as future water treatment capacity is calculated using the peak day demand.

The Town's population analysis estimated the transient population using percentage estimates of RMNP traffic, accommodation bed counts, and estimates of unaccounted for visitors (those who do not visit the Park and do not stay overnight in the Town). Using this information, the Town estimated that the 2006 transient population was 10,789 visitors per day in the peak season and 2,756 visitors per day in the off-season.

For the 2007 Demand Projection, the most likely estimate of the current transient population was based on the estimate by the Town. Since this group of the population is the most difficult to estimate accurately, both low and high estimates of this value were also developed. The high estimate of the transient population was based directly on the RMNP visitors during the period from May through September, 2006. Monthly visitor numbers for 2006 were taken from the visitor summary on the RMNP web site. The daily average number of visitors during the peak season was 15,377 in 2006. As a low end estimate of the transient population, half the number projected by the Town's population analysis was used (5,394), reflecting the high variability potential in the Town's parameters. This falls roughly between the Town's estimates for the transient population in the off-season and peak season.

3.1.3 Non-Transient Population

The non-transient population is comprised largely of workers who commute into Town. The major employers in the water service area who were interviewed by the Town for the population analysis included the Park School District, Estes Park Medical Center, Town of Estes Park, Eagle Rock School, Harmony Foundation, and the Estes Valley Recreation District. The number of non-residents within these organizations ranged from 10% to 50%, with an average of 27%. The Town also estimated the unrecorded fraction of the non-transient population who do not work for the employers listed above. In contrast to the typical peak season population increase, the population of non-transients is higher in the off-season due to the schools being in session. The Town estimated the 2006 non-transient population to be 398 persons per day during the peak season and 666 persons per day in the off-season. To simplify the analysis, it was assumed that the estimate developed by the Town was reasonable as it was based on interviews with major employers. Consequently, the peak season estimate of 398 people was used for the analysis.

3.1.4 Wholesale Population

The Town provides wholesale water to four bulk wholesale customers and to rural customers via a dispenser located in Town. There are currently four bulk wholesale customers including Windcliff Property Owners Association, Hondius Water Users Association, Park Entrance Mutual Pipeline Water Company, and John Timothy Stone Association. The Town's population estimates for the wholesale bulk customers are based on metered sales and an assumption of per capita water usage. Using this data, the Town estimated the wholesale bulk water customers to be 796 persons per day in the peak-season and 482 persons per day in the off-season. In addition, the Town estimated that the existing wholesale bulk water customers were at 80% of buildout with no future plans for expansion. The wholesale population is not a significant component of the total water service area population. To simplify the analysis, it was assumed that the estimate developed by the Town is reasonable and the peak season estimate of 796 people per day was used.

3.1.5 Other Populations Not Included in Projections

Several other populations exist inside and around the water service area, including the YMCA of the Rockies, Camp Cheley, and Prospect Mountain Water Company. The YMCA of the Rockies recently constructed a new water treatment plant and is not expected to require permanent Town water service in the future. Camp Cheley has their own water system, but is currently hauling water from the Town dispenser. The Town has discussed serving Prospect Mountain (approximately 350 homes and 0.03 mgd usage) in the past. It is possible that when the Prospect Mountain contract with the Bureau of Reclamation is up for renewal this year, discussions will resume, but this population was not included in the population projections.

The Town has existing emergency agreements with the YMCA of the Rockies (up to 0.43 mgd) and with Prospect Mountain Water Company to provide water on an emergency request. Although these customers are not included in the population projections, they are included in the buildout demand to ensure that the water treatment plant has capacity for both the Town's peak day demand as well as emergency service to both the YMCA and Prospect Mountain Water Company. (Since the 2007 Demand Projection, the Town has entered into discussions with Prospect Mountain regarding becoming their permanent water supplier.)

The Town is currently in discussion with the National Park Service regarding future connection of the RMNP headquarters facilities to the Town's water system as a wholesale customer. Based on the average peak season usage by RMNP since 2000, adding the Park as a wholesale customer is the equivalent of 375 people per day to the population projection. Town staff indicated that RMNP could become a wholesale customer in the near future. This demand does not have a significant impact on water treatment plant capacity. Therefore, the population was not included in the projections, but the demand was included in the buildout demand calculation.

3.1.6 Population Growth Rate Projections

Table 3-2 below summarizes the probability of projected growth rates for the various populations served by the water system as well as the basis for the projected growth. The 2006 peak season population for wholesale bulk and non-transient populations was based on the population analysis by the Town. The 2006 peak season population for transient visitors was assigned a level of variability as part of the analysis.

Table 3-2
Summary of Projected Population Growth Rates

Population Type	2006 Peak Season Population	Percent Annual Growth	Probability	Basis of Growth Projection
Permanent	10,369[(1)]	1.4	Low	Lowest annual growth rate for Town, Valley, and County since 1970 based on Census data.
		2.6	Most Likely	Average annual increase in number of water accounts between 2000 and 2006.
		4.0	High	Average annual growth rate for Town and Valley between 1990 and 2000 from Census data
Transient	10,789[(2)]	1.1	Low	Average annual growth rate for number of visitors to RMNP between 1990 and 2006.
		3.5	Most Likely	Average annual growth rate for number of visitors to RMNP between 1984 and 2006. Assumes balance of visitors who do not visit RMNP and visitors to RMNP that do not stop In Estes Park.
		6.6	High	Average annual growth rate for number of visitors to RMNP between 1984 and 1999, which is the period of maximum growth of RMNP visitors.
Wholesale Bulk	796[(3)]	0.7	Low	Primarily rural communities; assume growth rates will be half of the permanent population growth rate based on growth rates in the region.
		1.3	Most Likely	
		2.0	High	
Non-Transient	398[(3)]	1.4	Low	Primarily supports the permanent population; use same growth rates as permanent population growth rates.
		2.6	Most Likely	
		4.0	High	

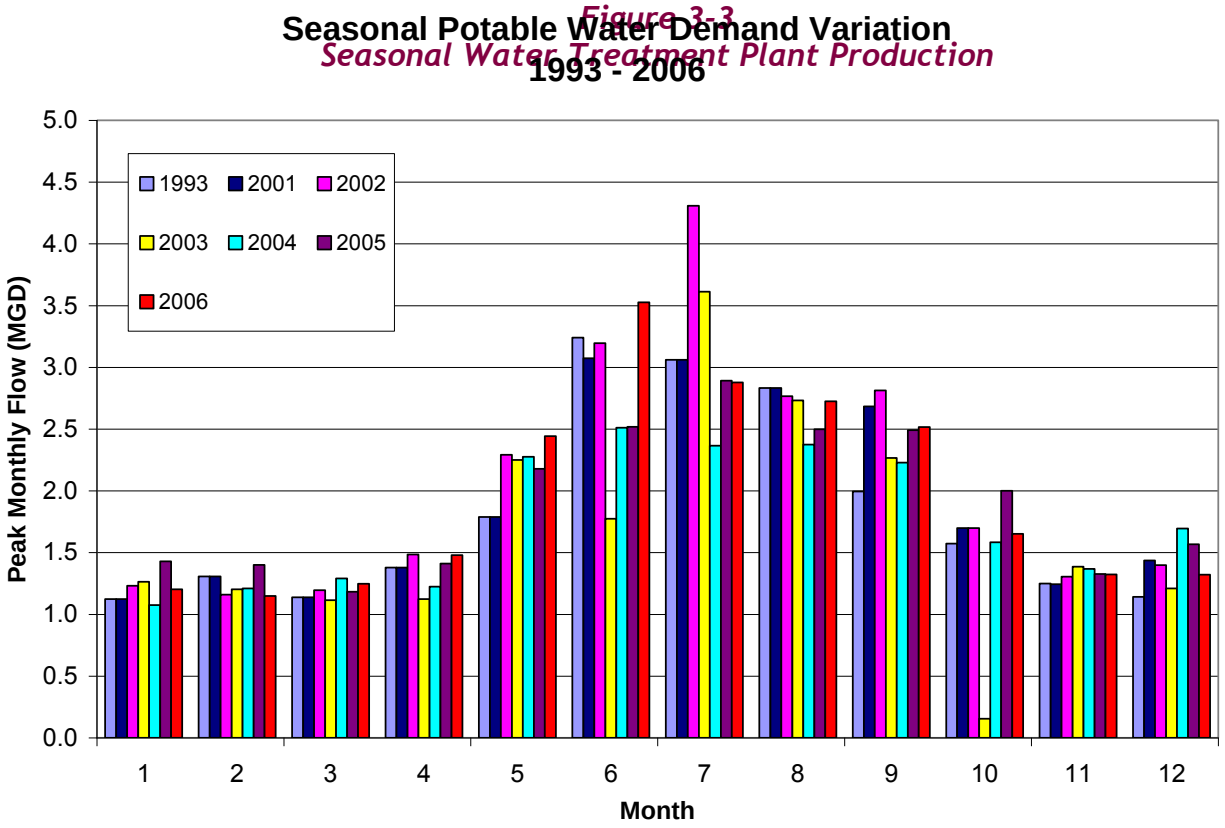
Notes:
(1) Based on 2000 population of Estes Valley (8,889) and an average annual growth rate of 2.6 percent.
(2) For this study, the 2006 transient population will be varied as follows: low = 5,394, most likely = 10,789, and high = 15,377.
(3) Based on 2006 Population Fact Sheet and Projections, which is a statistical population analysis prepared by the Town for the State. (See Appendix of 2007 Demand Projection.)

3.2 Potable Water Demand

3.2.1 Historic Treatment Plant Production

Figure 3-3 is a plot of historic peak day water treatment plant production by month for 2001-2006. Data from 1993 were also plotted for comparison. This figure shows the seasonality of potable water demand which has two components: increased population in the water service area in the summer time and increased water demand by the population in the summer as compared to the winter. The figure also shows that the pattern of seasonal usage has remained relatively consistent for the past twenty years. Note that the maximum peak day production occurred in 2002 (4.3 mgd), which is considered by the water industry to be a representative year for drought conditions in Colorado.

Figure 3-3
Seasonal Water Treatment Plant Production



Potable water demand is typically analyzed by determining the average annual day demand and applying a peaking factor to estimate peak day demand. For the 2007 Demand Projection, the average day demand in the peak season (May-September) was used along with a peaking factor representing the ratio of the peak day demand to the average demand in the peak season. This adjustment was made because the growth rate of the peak season population is more easily estimated for this community than the growth rate of the average annual population. Figure 3-4 shows the historic peak day demand, average demand in the peak season, and the peaking factor from the Town's treatment plant production records. Note that demand decreased significantly following the drought in 2002. Since this time, the demand appears to be rebounding back to the pre-drought conditions. Like many communities in the region, this may reflect voluntary conservation practices. However, there is not enough data currently available to solidify this conclusion. Table 3-3 shows the historic minimum, average, and maximum values for each

of these parameters. The values listed for the peaking factor (ratio of peak demand to average demand in peak season) were used as the low, most-likely, and high values in the 2007 Demand Projection.

Figure 3-4
Historic Treatment Plant Production

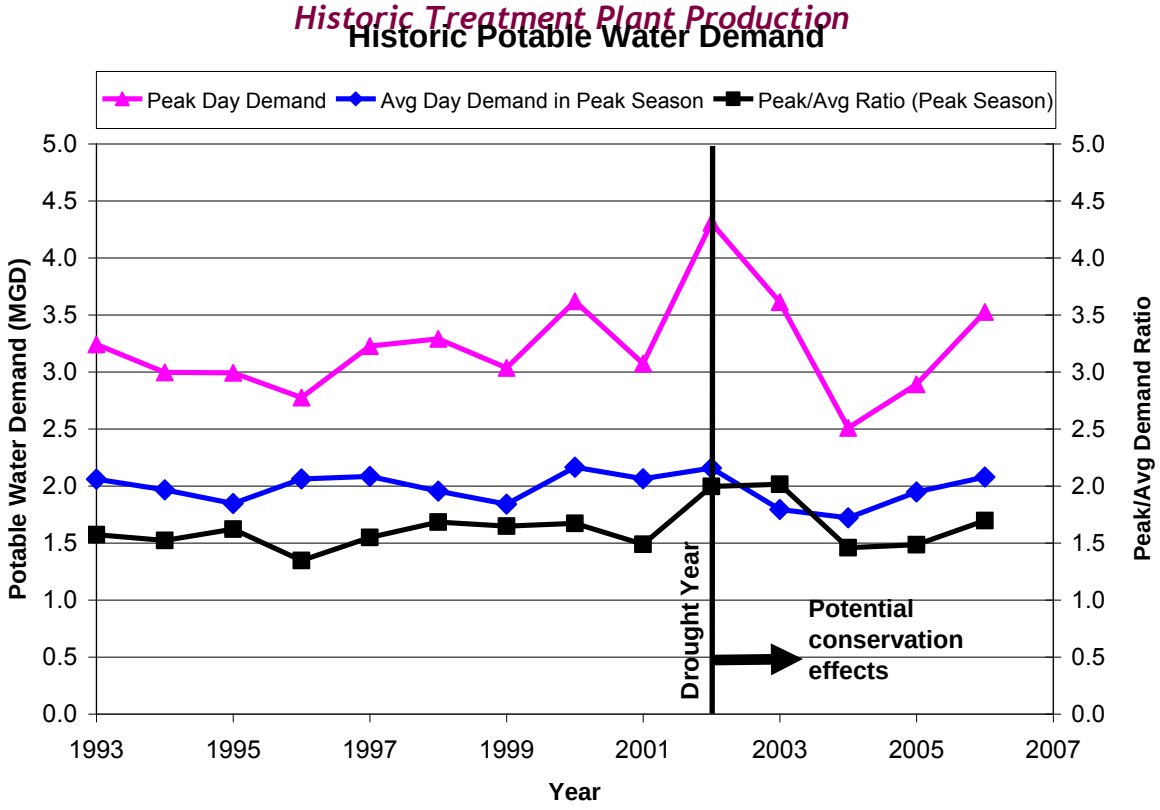


Table 3-3
Historic Potable Water Production (1993-2006)

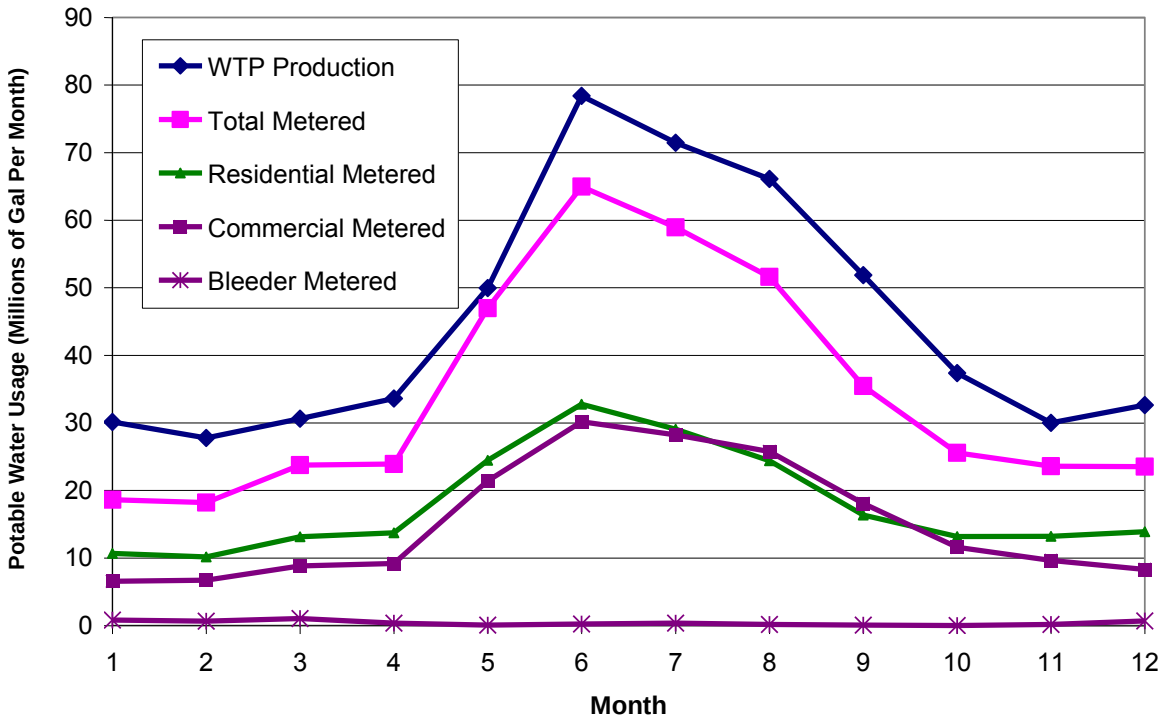
Historic Occurrence	Peak Day Demand	Avg. Day Demand Peak Season (May-Sept)	Peak/Avg Ratio Peak Season
Minimum	2.5	1.7	1.3 (Low)
Average	3.2	2.0	1.6 (Most Likely)
Maximum	4.3	2.2	2.0 (High)

3.2.2 Per Capita Usage

Metered water usage by month as well as total water treatment plant production in 2006 is shown in Figure 3-5. The data show that residential water usage and commercial water usage are roughly the same at the present, and the usage follows the same seasonal demand trend. The difference between the water treatment plant production in Figure 3-5 and the total metered water is in small part due to wholesale customers (bulk and dispenser) because their meter records are not included here, and is largely due to system losses. System losses include water used or lost in the treatment plant, conveyance, and distribution. Losses in the Town's water system have stabilized and are not expected

to increase as long as the distribution system continues to be maintained. Bleeders are set to bleed water from the system during the winter to keep the distribution pipes from freezing. Their usage is also metered and shown in Figure 3-5 (repeated here from Section 2.1 for the reader's reference).

Figure 3-5
2006 Potable Water Usage



Per capita water demand can be calculated by distributing the water treatment production over the population to arrive at a usage per customer. Using this method, each customer is allocated a portion of residential and commercial demand as well as system losses. For the 2007 Demand Projection, the 2006 average water treatment plant production in the peak season (2,078,000 gal/day) was distributed over the peak season population (22,352) to arrive at a per capita usage rate of 93 gallon per capita per day (gpcd). To establish a low value for per capita usage, the average water plant production in the off-season (1,047,000 gal/day) was distributed over the off-season population (14,273) to arrive at a per capita usage rate of 73 gpcd. The high value for per capita usage was established by examining the ratio of peak day demand in a drought condition (2002) with the 2006 peak day demand (year that population data is available). The peak day demands were 4.31 mgd and 3.53 mgd, respectively, representing a 22% increase. This is considered a conservative estimate of the effects of a drought on average peak day usage. There is some impact from population growth between 2002 and 2006 that may have also caused the peak day usage to increase during this time period. However, the effect is considered minimal and counter-acted by potential voluntary conservation efforts following the drought of 2002. The 22% increase was applied to the most likely per capita usage rate of 93 gpcd to establish the upper limit of per capita usage at 113 gpcd. For comparison, the per capita usage of the Northern Colorado NISP communities is 177 gpcd and the average per capita usage for Denver Water is 180 gpcd. The Town's per capita usage is not as high as these other communities due to the transient population (who use less water than the permanent population), the low occupancy rate of the permanent population

(many households are second homes), and the absence of large irrigation demands. Table 3-4 provides a summary of per capita usage rates used in the 2007 Demand Projection.

Table 3-4
Per Capita Demands

Probability	Per Capita Demand (gpcd)
Low	73
Most Likely	93
High	113

The per capita demands listed in the table above include all four categories of population (permanent, transient, wholesale, and non-transient). A more detailed analysis could be performed if per capita demands could be developed for each of these population categories, specifically permanent and transient since they represent the majority of the population. However, the permanent and transient populations can not be specifically associated with the residential and commercial usage (billing records) for several reasons including:

- A portion of the transient population stays in rental condos, which have residential meters
- The permanent population has an impact on commercial usage, which cannot be separated from the impact of the transient population on commercial usage

In general, the transient population will use less water than the permanent population primarily because a significant portion of the transient population is day visitors to Town and do not stay overnight. By applying the same per capita demand to both populations, we assumed that the ratio of permanent and transient populations will remain the same in the future. In reality, it is more likely that the growth rate of the transient population will outpace the growth rate of the permanent population. However, the demand projection will still be conservative (on the high side) since it is based on the ratio of the permanent population to the transient population in 2006 and this ratio is expected to increase in the future.

3.3 Buildout Conditions

The buildout population of Estes Park was identified for each of the population categories discussed above. The buildout number for the permanent population was estimated using an extensive land use analysis. The buildout number for the transient population for the transient population was estimated using an analysis of growth trends in visitation to Rocky Mountain National Park. The buildout population of the wholesale population and the non-transient population could be reasonably estimated from the available data. These populations do not have much impact on the total water demand and therefore single point estimates were used with very little variability.

The peak day demand at buildout was estimated by multiplying the total buildout population by the high per capita usage rate (113 gpcd) and the high peaking factor (2.0). Using the high values for both of these parameters helps to ensure that the Town will have capacity to handle unexpected demand, mainly due to drought, but also due to changes in people's water usage patterns. A 2.0 peaking factor occurred in the past (2002 and 2003). Three additional demands were included in the buildout peak day demand including the RMNP headquarters facilities, the emergency interconnect with the YMCA of the Rockies

(up to 0.43 mgd) and the emergency interconnect with the Prospect Mountain Water Company. The resulting peak day demand estimate at buildout is 7.9 mgd using the buildout condition assumptions established in the 2007 Demand Projection. Table 3-5 provides a summary of the calculation used for peak day demand at buildout.

Table 3-5
Summary of Peak Day Demand at Buildout

Peak Season Population	2006	Additional at Buildout/%	Total at Buildout
Permanent	10,369	2,369 / 23%	12,738
Transient	10,789	7,592 / 70%	18,381
Wholesale Bulk	796	200 / 25%	996
Non-Transient	398	111 / 28%	509
Total Population	22,352	10,272 / 46%	**32,624**
Average Per Capita Usage during Peak Season (gpcd)			113
Peak/Avg Ratio in Peak Season (Peaking Factor)			2.0
Subtotal Peak Day Demand (mdg)			7.37
RMNP Headquarters Demand (mgd)			0.08
YMCA of the Rockies Emergency Interconnect (mgd)			0.43
Prospect Mountain Emergency Interconnect (mgd)			0.03
Water Treatment Plant Capacity Required at Buildout (mgd)			**7.9**

3.4 Potable Water Demand Projections

The low, most likely, and high estimates developed in the previous sections of this report were incorporated into a Monte Carlo simulation. Monte Carlo simulation is a widely accepted risk assessment tool, which randomly samples from within the underlying distributions associated with demand parameters to generate a very large number of alternative combinations of these variables. The result is a joint frequency distribution for peak day demand consisting of 5,000 or more possible outcomes, with a probability associated with each. The following four steps were used to perform the analysis in the 2007 Demand Projection:

1. The 2006 peak season population was used as a starting point for each of the four population categories (permanent, transient, wholesale, and non-transient). The 2006 transient population was assigned a low, most likely, and high probability. All other population categories were not varied for 2006.

2. Low, most likely and high growth rates were assigned to each of the population categories.

3. The total population was multiplied by the average per capita demand in the peak season. The average per capita demand was assigned a low, most likely, and high value.

4. The average demand in the peak season from Step 4 was multiplied by a peaking factor. The peaking factor was assigned a low, most-likely, and high value.

HDR

Table 3-6
Summary of Parameters Used in Monte Carlo Simulation

Parameter	Low	Most Likely	High
2006 Permanent Population	10,369	10,369	10,369
2006 Transient Population	5,395	10,789	15,377
2006 Whole Sale Population	796	796	796
2006 Non-Transient Population	398	398	398
Permanent Population Growth Rate	1.4	2.6	4.0
Transient Population Growth Rate	1.1	3.5	6.6
Whole Sale Population Growth Rate	0.7	1.3	2.0
Non-Transient Population Growth Rate	1.4	2.6	4.0
Per Capita Demand (gal/day)	73	93	113
Peak Day Demand / Avg Day Demand in Peak Season Ratio (Peaking Factor)	1.3	1.6	2.0

Figure 3-6 illustrates the peak day demand projection curves resulting from the 2007 Demand Projection. Each curve represents a peak day demand condition with a percent probability that the demand in a given year will exceed that demand condition. For example, in 2015, there is 25 percent probability that the 4.9 mgd demand will be exceeded based on the assumptions of this analysis.

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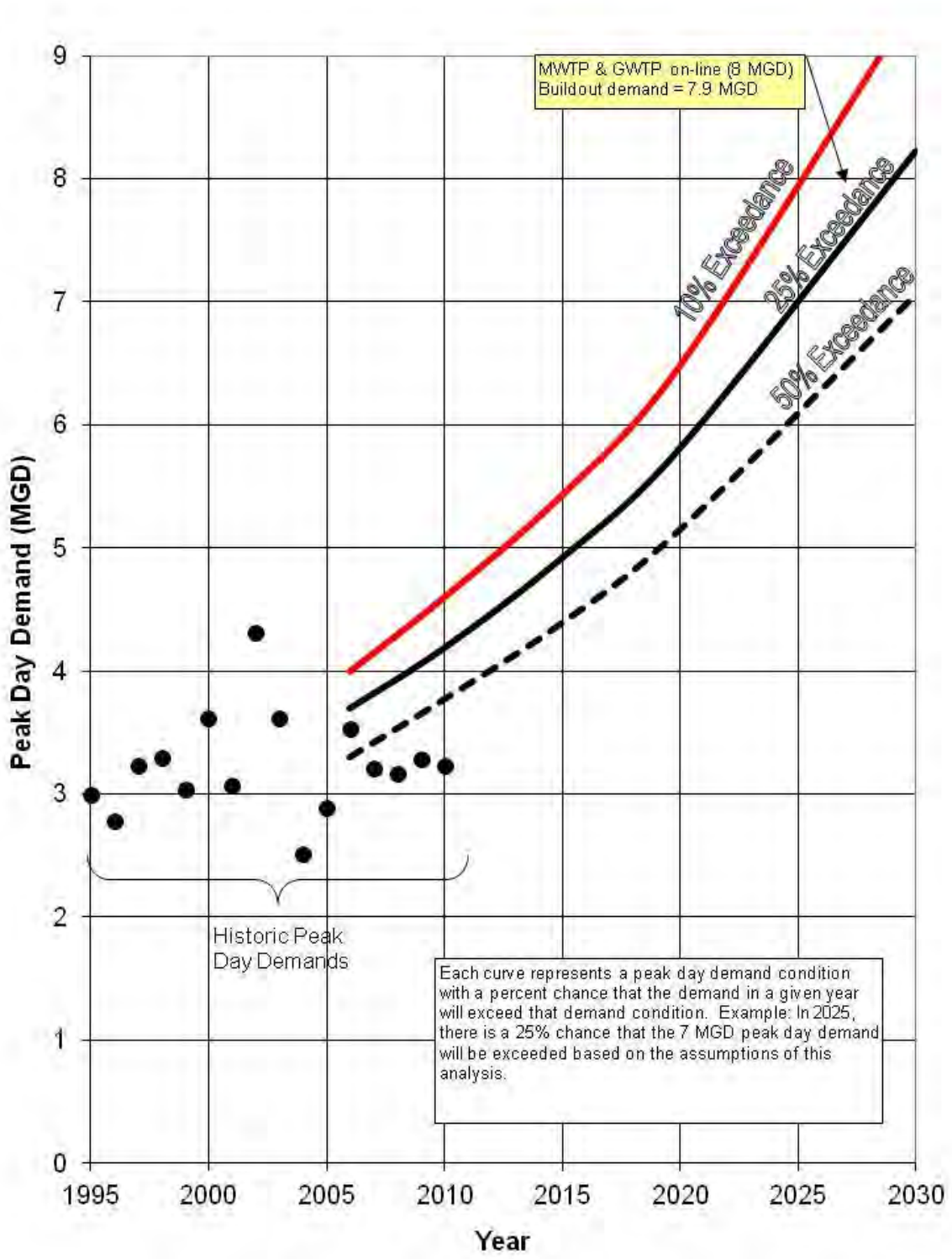
Figure 3-6
Peak Day Demand Projections



The Most Likely Peak Day Demand curve represents an estimate of future demands with a 50 percent probability that the demands will be larger or smaller than the represented demand condition. In planning for plant expansion, decision makers typically do not use the most likely peak day demand because the risk of the demand being larger than planned is higher than is typically prudent. A more prudent planning curve is the 10 percent exceedance curve. Using the 10 percent curve for the Town, the current plant production capacity will not be exceeded until roughly 2020. However, the GWTP will require replacement prior to this date as previously discussed in this Conservation Plan.

3.5 Conclusion

Based on this analysis, the projected peak day demand at buildout of the permanent population will be 7.9 mgd and the buildout population will be 32,664 (including all categories of population). The peak day demand projection is a planning number and reflects several critical assumptions. The first major assumption is that water demands must be met in drought conditions, which means that the buildout peak demand calculation is based on the high peaking factor typical of a drought year. The other major assumptions pertain to the uncertainty in per capita water usage and the future population estimate. The peak day demand projection at buildout is based on a high per capita usage, which is above the calculated average for the Town, but still much below the average per capita usage levels in areas where irrigation is prevalent and the transient population does not make up such a large percentage of the water users (e.g. Denver). If irrigation practices change, the per capita usage will change as well. Uncertainty in the buildout population is associated with the fact that more than half the peak season population is transient and is thus not predictable in association with land use. HDR believes that 7.9 mgd represents a reliable planning level projection that will ensure the Town can provide sufficient water to customers in the future. Consequently, this buildout projection which was established by the 2007 Demand Projection will serve as the basis of planning for this Conservation Plan.

4.0 Profile Proposed Facilities

4.1 Identify and Cost Potential Facility Needs

Through the Town's planning efforts over the past 10 years, a number of facility improvements and additions have been identified to replace aging infrastructure. The schedule for these improvements has been developed in a manner that allows for completion of plant improvements projects while still having potable water capacity to operate. The four major project areas included in the planning are detailed in this section.

4.1.1 MWTP Improvements

MWTP improvements, which were completed in early 2011, brought the total plant capacity to 4 mgd by retrofitting the existing facility with 2-stage membrane treatment. The plant typically operates at or near 99% recovery, with waste flows of one percent of production being discharged to the wastewater system. Currently, the Town has a discharge limit of 20,000 gal/day, averaged over a month, to the sanitary sewer. This limitation effectively limits plant production to 2.2 mgd.

The Upper Thompson Sanitation District (UTSD) fee structure is comprised of tap fees, discharge fees, and surcharge fees. UTSD does not have a commercial or industrial tap rate, so MWTP discharges are

subject to the single family equivalent (SFE) tap fee of $8,700/SFE. Each SFE is equivalent to 200 gpd discharge. The current UTSD discharge fee is $6.25 per 1000 gallons of water discharged, with a surcharge for wastewater with TDS above 230 mg/L of $0.36/lb.

Based on these fees, the cost for the Town to purchase additional discharge capacity to increase the discharge limit to 40,000 gal/day would be $870,000 for the tap fees. If the taps were purchased by the town, the Marys Lake WTP production limit would be 4 mgd. Daily discharge fees for wastewater at 4 mgd plant flow rate would be $250/day.

4.1.2 GWTP Replacement

The Town plan calls for replacing the existing GWTP conventional treatment plant with a two-stage membrane plant on the same site. The current plant can produce up to 3.6 mgd for very short periods of time, but typically operates at peak flows of 2.65 mgd during the summer season. Replacement plant infrastructure would be sized for eventual expansion to 4 mgd, with the initial investment in membrane equipment for 2.65 mgd. The plan for providing a 4 mgd plant at the Glacier Creek site is tied back to utilization of water rights at that location and to the desire on the part of the Town to be able to run either one of the two treatment plants during low flow production periods (typically winter), allowing for routine annual scheduled maintenance to take place with the plant off line.

The proposed replacement for the GWTP is a two-stage submerged membrane plant similar to MWTP. The project will include pretreatment ahead of the membranes, along with waste tankage, chemical feed systems and storage, and a clearwell. Access road improvements will be required, along with electric service, fiber optic connection, and natural gas service upgrades. The site of the current plant creates some challenges, including piping of waste flows to the nearest sanitary sewer and the associated cost for sewer taps. Disposal of wastewater from the GWTP site to the sanitary sewer will require compliance with the same rate structure from UTSD as is in place at MWTP. Discharge capacity for the GWTP to meet 40,000 gal/day production levels will be $1.74M for tap fees and $250/day for discharge fees.

The total 2010 order of magnitude cost estimate for replacing GWTP is $22,772,000 at a capacity of 2.65 mgd. The estimated cost to install additional membrane equipment to increase capacity from 2.65 mgd to 4 mgd is $3,000,000.

4.1.3 System Water Storage Improvements

The Town operates 11 water storage tanks, including two treatment plant clearwells, which are distributed within seven different pressure zones. Analysis and evaluation of storage capacity in each pressure zone identified four zones that require additional storage to provide optimum flow equalization, fire flow, and standby volumes of water. These extra storage requirements are not related to increased demand, rather they are necessary to provide adequate storage and fire flow under current demand conditions. Order of magnitude costs for the proposed new tanks can be found in Appendix A.

4.1.4 Distribution System Improvements

The Town has identified distribution system improvements that will upgrade several pipelines that have high velocities and headloss under current demand scenarios, including some upstream of PRV stations. The overall objective of these projects is to reduce the risk of failure in distribution system piping. Upgrades to or parallel PRV installations to existing Stations have been identified to increase flow

through them. These improvements are being scheduled into the capital improvement program for the utility over the coming years and are not tied solely to expanded water demand. Order of magnitude costs for the proposed system improvements can be found in Appendix A.

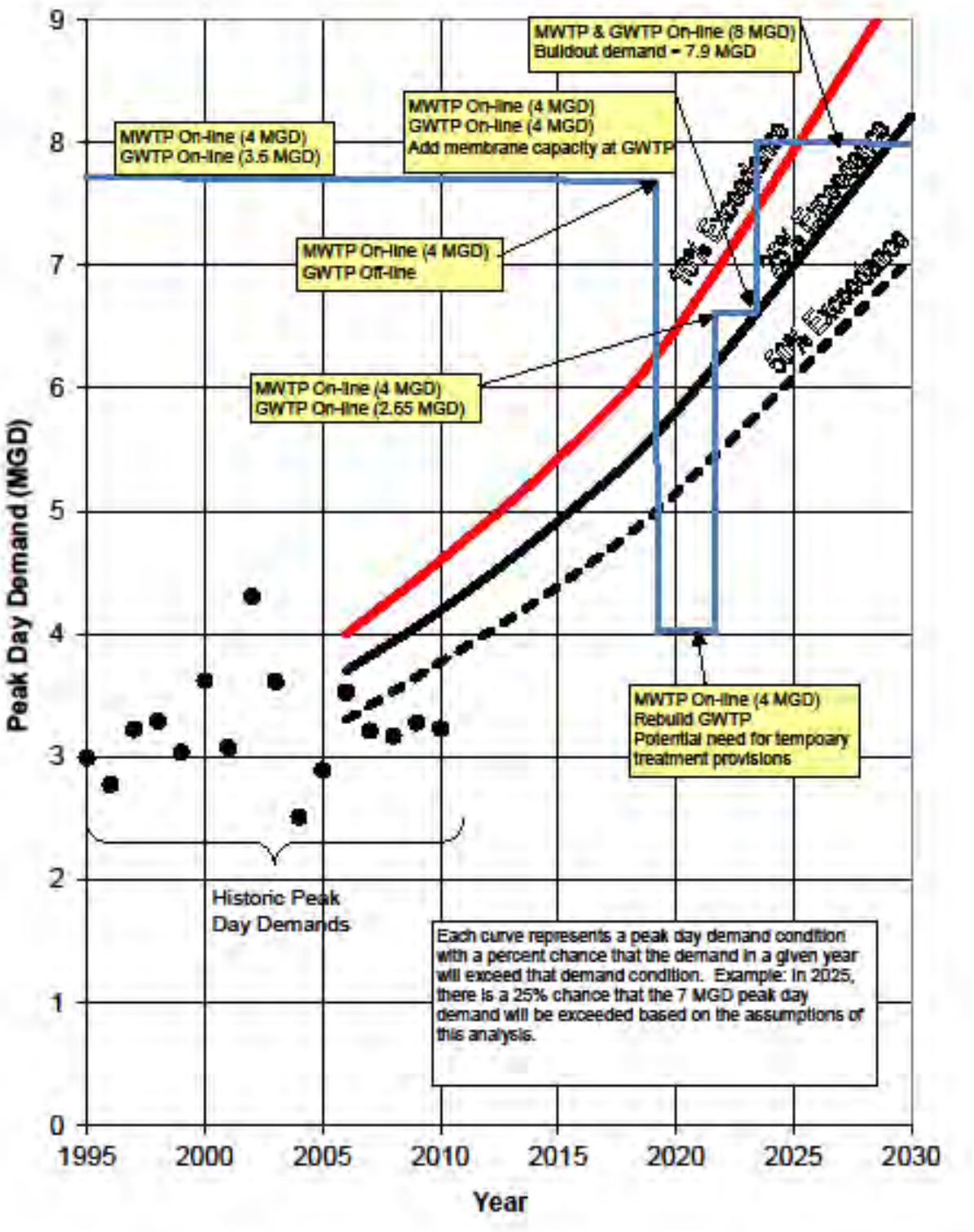
4.1.5 Improvements Schedule

The Town has already completed the first major project that is part of the improvements plan, the renovation of MWTP to produce 4 mgd. As the Town moves forward to replace the GWTP, timing must be tied to both the demand projections and to the potential for required treatment improvements that may arise as a result of raw water quality testing under the Long-Term 2 Enhanced Surface Water Treatment Rule.

Plant improvements are proposed to take place in accordance with Figure 4-1, where GWTP is taken off line for replacement in 2019, with completion at 2.65 mgd capacity by 2021. Prior to taking GWTP off line, the wastewater discharge capacity at MWTP must be adequate to allow the plant to produce 4 mgd as the Town must have capacity to survive on only one plant for a two-year period. (This could be accomplished either through third stage treatment or purchase of additional discharge capacity from UTSD.) Even with MWTP at 4 mgd capacity, additional temporary treatment may be necessary during the GWTP reconstruction period (or at least during peak summer demands). The Town cannot further delay the reconstruction of GWTP because the deficit in available treated water would be so large as to require extensive temporary treatment units, which would significantly increase the cost of construction.

The timing for addition of capacity (from 2.65 mgd to 4 mgd) to the reconstructed GWTP may be delayed, depending on a revision of the demand projection in the future.

Figure 4-1 Plant Improvements Schedule Coordinated with Demand Projections



4.2 Prepare an Incremental Cost Analysis

The annual incremental cost of expanding water production at the Town of Estes Park is based on the cost of increasing wastewater discharge capacity and on the incremental cost of installed equipment to expand the future GWTP from 2.65 mgd to 4 mgd. The annual capital cost estimate shown in Table 4.1 is based on a facility lifetime of 50 years.

Table 4-1 Estimated Capital and O&M Costs for System Expansion

Improvement Associated with System Capacity Expansion	Estimated Capital Cost	Estimated Annual Capital Cost (over 50 year life)	Estimated Annual O&M Cost
Wastewater Discharge at MWTP	**$870,000**	**$17,400**	**$125**
Wastewater Discharge at GWTP for Increased Capacity	**$587,250**	**$11,745**	**$84**
Increase in Future GWTP Capacity from 2.65 mgd to 4 mgd	**$3,000,000**	**$60,000**	**$1,040**
TOTAL COST	**$4,457,250**	**$89,145**	**$1,249**

5.0 Identify Conservation Goals

The unique situation at the Town of Estes Park prohibits the use of traditional goals that would normally be established in a water conservation planning effort. The Town's situation can be defined as follows:

- Peak day demand for the Town is driven by the influx of tourists arriving in the summer, not the permanent population.
- Per capita water usage is relatively low given that there is negligible irrigation water usage and the number of tourists, who use significantly less water than a representative of the permanent population.
- The projects identified in the Town's capital improvements plan (CIP) are not driven by the need for additional potable water capacity.
- The Town has limited staff resources and funding for new conservation efforts.

As a result of the issues defined above, the Conservation Plan Committee has established the following goals for the development of this Conservation Plan:

1. Reduce annual treated water volume production by 3%
2. Reduce the volume of waste discharged to sewer at MWTP
3. Review existing conservation measures/programs and decide whether to continue them
4. Provide definition for current utility practices that do not have formal plans or budgets, but that contribute to overall water conservation

5. Provide a documented report of potential conservation measures/programs that could be implemented in the future, even if they are not selected for immediate implementation as part of this plan
6. Develop a Conservation Program that will be implemented by the Town following the completion of this plan

6.0 Identify Conservation Measures and Programs

6.1 Identify Conservation Measures and Programs

The Conservation Plan Committee met on June 8, 2011 and September 28, 2011 to review potential conservation measures and programs. The list of conservation measures and programs that were considered for this Conservation Plan are listed below and a description of each follows.

Demand-Side Measures (DM)

- Water-Saving Fixtures
- Town Irrigation System Improvements

Supply-Side Measures (SM)

- Third Stage Treatment
- Bleeder Automation
- Pressure Zone Management
- Reuse

Demand Side Programs (DP)

- Water Audits for Top Customers
- Elementary Education Program
- Drought Plans and Rates
- Rate Structure by Meter Size
- Time of Upgrade and Time of Sale
- Multi-Family Residential Unit Metering
- Town Website

Supply-Side Programs (SP)

- Customer Meter Testing and Replacement
- Leak Detection and Repair
- Tracking of Breaks and Repairs

6.1.1 Water-Saving Fixtures (DM)

As previously mentioned in Section 2.6, the Town currently advertises and distributes "free water-saver kits" to its customers for free. The kits consist of a variety of water saving plumbing fixtures as sold by Niagara Conservation including: 1.5 gpm showerheads, toilet tank bladders, 1.5 gpm faucet aerators, 0.5 gpm faucet aerators, dye tablets (for toilet leak detection), and kits containing all of the items listed. This program has been in place now for 5 years and the Town will continue to utilize this program in the

future as part of its conservation efforts. This includes distribution of the water saving fixtures at events like "Sustainable Estes Park".
Over the past year, the Town has distributed 40 kits. Assuming one third of the kits distributed are installed by homeowners and the approximate water savings from each kit is 6,000 gal/year, the total water saved by the free water saver kits is approximately 79,000 gal/year. At the current cost of water of $0.77 per 1,000 gallons, the cost savings to the utility for each free kit is $0.77 x 6 = $4.62. Since each kit costs $4.84 to purchase, the Town does not intend to expand the program beyond its current scope at this time.

6.1.2 Town Irrigation System Improvements (DM)

Being a major tourist destination, the Town has a number of beautifully landscaped areas that are irrigated with treated water. The existing irrigation system controls are linked to the Town's SCADA, which allows Town staff to turn the system on/off from selected computers (i.e. staff do not have to manually turn the irrigation systems on/off at the individual landscaped locations). The existing system does not currently include the necessary software or hardware to automatically adjust watering amounts based on rainfall, temperature, etc. In order to provide this capability and improve the overall efficiency of the irrigation system, Town staff has proposed the following improvements to the irrigation system for evaluation as part of this conservation planning study:

- Purchase and install wireless rainfall sensors
- Perform water audits on all of the Town's irrigated water zones
- Work with the Parks Department to upgrade the irrigation control system with IRRInet

With the exception of the Town's irrigation system, there are limited opportunities for landscape efficiency measures within the Town. The vast majority of residents do not have turf lawns and/or landscaped areas due to the climate and the large population of elk that would destroy such vegetation.

6.1.3 Third Stage Treatment at MWTP (SM)

Although the MWTP is rated for 4 mgd treatment capacity, the plant is somewhat handicapped by its sewer discharge limitations. Sewer discharge from MWTP is sent to the Upper Thompson Sanitation District (UTSD) wastewater plant and generally consists of waste from the second stage membranes, backwash waste from the raw water screens, waste from water quality analyzers, and sanitary waste. The Town has purchased sewer capacity and has an agreement in place with UTSD which allows for a sewer discharge of 20,000 gallons per day (calculated as an average daily discharge over a month). In addition to the base capacity that has already been purchased, the Town must also pay a discharge cost, which is currently set at $6.25 per 1,000 gallons of sewer discharge.

On a continual basis, the MWTP can produce roughly 2.2 mgd and stay within the 20,000 gallon per day discharge limitation. In order to produce more than 2.2 mgd, additional sewer capacity must be purchased from UTSD at a cost of $8,700 per tap (1 tap = 200 gallons per day of capacity). In addition, UTSD may implement a surcharge fee in the future if the waste exceeds UTSD's criteria for total suspended solids (TSS) and/or biological oxygen demand (BOD). Based on the water quality of the discharge at MWTP, the membrane waste flows can be expected to exceed UTS's TSS limit of 230

mg/L, but not the BOD limit of 230 mg/L. UTSD has notified the Town that the estimated surcharge fee for TSS is $0.36 per pound. UTSD tap fees and discharge fees are published on their website.

By far, the major source of sewer discharge is backwash waste from the second stage membranes at MWTP. The most efficient means to decrease this waste volume is to install a third stage treatment process, which would result in a dry residual waste that could be hauled to a landfill. Using this approach, only sanitary waste would be discharged to the sewer. The Town evaluated technology alternatives for third stage treatment as part of their "Phase 2 Study, 2010, HDR". The results of that study indicated that membrane technology was the most viable choice for third stage treatment. At that time, the Siemens Memtek crossflow tubular membrane appeared to be the most promising product. Since that time, another membrane supplier, Inge, has entered the United States marketplace and indicated to HDR that they are also interested in a third stage treatment application. The current two-stage membrane system at MWTP has an overall system recovery of about 98%. Using third stage treatment, the system should be able to achieve about 99.9% recovery.

6.1.4 Bleeder Automation (SM)

The Town currently has eleven (11) "bleeder" locations located throughout the distribution system where water is allowed to continuously run, primarily during the winter months. These bleeders are operated for freeze protection and are located on 2" distribution lines with shallow bury depths (< 3 feet). The Town has investigated an automatic flushing hydrant product that would allow some of the bleeders to be operated on a timed schedule in lieu of continuous operation. The Town has budgeted to purchase, install, and test several automatic flushing hydrants in 2012 to evaluate the potential water savings from this conservation measure.

6.1.5 Pressure Zone Management (SM)

The Town has a significant vertical elevation profile across its service area. A number of pressure zones are required throughout the distribution system in order to maintain the appropriate pressures in each zone of the system. The pressures and zones are controlled by pressure reducing valves (PRV), which reduce the upstream pressure to a pre-set downstream pressure that is acceptable for that particular area of the system. One of the PRV suppliers, Cla-Val, now manufactures a PRV product that can automatically adjust pressure settings depending on system demand. During periods of low demand, the valve automatically adjusts to a lower pressure setting. This results in less water loss since customers will use less water (as a result of lower pressures) and existing leaks will experience less loss (also due to lower pressures).

As part of this Conservation Plan, HDR performed a pressure zone management evaluation to assess the potential water savings from implementation of the automatic PRV's described above. Service Area 2 was selected for evaluation since it comprises about 73% of the total system demand and 63% of the total distribution pipe. Within Service Area 2, a total of 8 PRV's would be replaced with new automatic PRV's ranging in size from 2-inch through 8-inch. Using a water savings calculator program available from Cla-Val, the estimated annual water savings value for this system upgrade is $43,000. Additional information on the Cla-Val automatic PRV and the details of the analysis are included in Appendix C.

Implementation of the automatic PRV's described above will change the distribution system dynamics such that various portions of Service Area 2 would experience fluctuating pressures on a daily basis (daytime demand versus nighttime demand and the associated pressure settings). Due to the age of the distribution piping in the Town, there is some concern that these pressure fluctuations could increase the

frequency of pipe leaks and breaks, thereby decreasing the service life of the affected distribution piping. HDR did not explore this concept with Cla-Val, but agrees that it is a valid concern. Consequently, pressure zone management was not included in the list of final conservation measures/programs to be implemented by the Town as part of this Conservation Plan. However, due to the potential water and cost savings estimated using the analysis presented above, it is strongly recommended that the Town further investigate this conservation measure in the future.

6.1.6 Reuse (SM)

Reuse systems are typically implemented in situations where outdoor irrigation is a large component of the potable water system demand, or when there are industrial or commercial customers within the service area with significant potable water usage that could take advantage of reuse water. The Town has neither of these characteristics. Furthermore, the Town's water rights are largely dictated by an obligation to return flows to the river, which would be directly impacted by implementation of a reuse system. Due to the reasons outlined above, reuse was not considered as a potential measure for this Conservation Plan.

6.1.7 Water Audits for Top Customers (DP)

As part of this study, the Town's water billing records from 2008-2010 were reviewed to identify the top water users in the system. This information is included in Appendix B. Being a tourist destination, a number of the Town's top water users are hotels. It may be advantageous to form a partnership between the Town and specific hotels to perform a water audit. There are companies that specialize in water audits of this nature including the Brendle Group located in Fort Collins. The audit process involves a site visit by a specialist who will take an inventory of the existing water using fixtures/equipment (both quantity and rates), estimate the water savings from upgrading to more efficient fixtures/equipment, estimate the costs of the upgrades, and provide a summary report. For a hotel, the audit would focus on the following fixtures/equipment:

- Guest room domestic use (shower, toilets, faucet)
- Restrooms in common areas
- Laundry facilities (if located on site)
- Food service equipment (ice machines, dishwashers, sinks, food steamers)
- Pool and hot tub

Based on the results of the water audit, it may be advantageous for the Town to offer a rebate program to the hotel as part of a fixture/equipment upgrade. HDR estimates the cost of a typical water audit to be roughly $1,000. However, actual estimates are available from the companies that perform this type of work including the Brendle Group.

Incentives are typically only useful when the benefit of implementing the change is greater than the cost of the fixture replacement. Typical toilet replacements save 2.2 gal/flush or 9,000 gal/year/toilet for toilets that are used year around. Hotels in Estes Park are generally fully occupied for only three months out of the year, so the estimated water savings per toilet replacement in a hotel is 2,250 gal/year/toilet. The cost savings in water production per toilet replacement would be $1.75. A typical rebate amount for a low flow toilet replacement is $50 to $100 per toilet. Based on the cost/benefit for toilet replacement in hotels, the Town has determined that a rebate program is not cost effective. As the plumbing fixture

manufacturers move towards uniformly producing only low flow toilets, all toilets will be replaced with low flow fixtures without need for incentives. Predictions are that all toilets will be low flow by 2040. The implementation of either voluntary or mandatory audits for hotels and the other large water customers in Town is a sensitive subject and must be well planned and executed in order to be successful for both the Town and the customers. Consequently, the implementation of a large customer audit program is beyond the scope of this plan and will not be further evaluated. However, this idea will be revisited during the next update of the Conservation Plan.

6.1.8 Elementary Education Program (DP)

One means to increase the distribution and implementation of the Town's Niagara water-saving fixtures is to implement an elementary education program for water conservation. However, given the Town's limited staff resources and the already challenged school curriculum, this program was not further evaluated.

6.1.9 Drought Plans and Rates (DP)

Town staff is anticipating that the Colorado Water Conservation Board will require all water supply utilities within the State to develop and submit a "drought mitigation plan". Assuming that this requirement will be formalized in the future, the Town is giving consideration to developing a drought rate structure as part of their mitigation plan. The rate structure would establish various water cost rates for customers depending on pre-determined drought triggers with a goal of reducing water consumption through higher rates during times of drought. This measure was not further addressed as part of this Conservation Plan.

6.1.10 Modify Rate Structure by Meter Size (DP)

The Town's most recent rate study was performed in 2010 (Water Cost of Service, HDR, December 2010). One of the recommendations from this study was to adjust the monthly water base rate per water meter size using the standard AWWA meter capacity weightings. In essence, this adjustment would result in larger monthly base rates for all customers based on meter size. Due to the poor economic conditions at the time, it was recommended that the monthly base rate increase be implemented over a 3 year period. This modification to the Town's rate structure was not approved by the Town Board and thus was not further evaluated for this Conservation Plan. However, it is recommended that rate modification by meter size be revisited in the future as part of the Town's next rate study. Modifying the rate structure by meter size will lead to conservation by putting pressure on commercial structures to incorporate water-saving fixtures in new construction and by the financial pressure of higher monthly water bills.

6.1.11 Time of Upgrade and Time of Sale (DP)

This conservation measure requires customers to meet specific water usage criteria for various fixtures in their home/business in order to receive Building Department approval for upgrades or at the time of sale. If the existing fixtures in the home/business do not meet the water usage criteria, then the customer would be required to install new fixtures prior to proceeding with upgrades or sale. The Conservation Committee believed that the legal issues associated with this conservation measure would make it too difficult to implement and therefore this measure was not further evaluated.

6.1.12 Multi-family Residential Unit Metering (DP)

Town ordinance currently requires all new multi-family residential developments to provide individual water meters for each unit of the development. However, many of the existing multi-family residential customers utilize a common "association" meter in lieu of individual meters. A potential conservation measure that was considered would be to enact a new ordinance requiring these existing customers to install individual meters. However, the legal issues required to implement this ordinance would be too complicated and therefore this measure was not further evaluated.

6.1.13 Town Website (DP)

As previously mentioned, the Town's website currently contains a summary of the Town's 3-Stage Conservation Plan (see Section 2.5), a list of conservation tips, and an advertisement for a "free water-saver kit". The Town intends to maintain the conservation information on the website, but there are no plans to update the website at this time due to limited staff resources.

6.1.14 Customer Meter Testing and Replacement (SP)

All of the Town's water customers are metered and the Town maintains a database of individual meters in the system. The database includes meter size, serial number, and model. The database also includes "installation dates", however, it is unclear whether these dates have been updated as meters are replaced in the system. The Town is in the process of converting to a new accounting software and the issue of meter tracking will be revisited at that time.

The Town has tested a number of ¾" -2" meters in the recent past and found that the accuracy is generally within 2-5%. Having identified the top water consumers in the system (Appendix B), the Town is interested in testing the larger water meters (3" and 4") for overall accuracy sometime in the future. Town staff estimate that there are fewer than 5 of these larger meters in the system. The testing is performed by an outside agency and can be either performed in place or off-site. Either situation requires considerable coordination with the customer since most of these larger meters are on hotels, which cannot be out of service for a significant amount of time.

At this time, the Town does not have a formal meter testing and replacement program in place. Furthermore, there is no dedicated budget within the utility for this task. Members of the Town's metering department have proposed the following program for implementation as part of this Conservation Plan:

- Test all 3" and 4" meters in the system within the next 3 years
- Replace 2" and larger meters every 5 years
- Replace meters smaller than 2" every 10 years

Correction and calibration of inaccurate meters will not likely impact the actual amount of water used by the customer unless the meter is found to be grossly under-measuring the water usage (which is not likely based on the Town's previous experience checking water meter accuracy).

6.1.15 Leak Detection and Repair (SP)

The Town does not currently have a written policy regarding distribution system leak detection and repair. However, they have conducted leak detection surveys in the past using contract services. The Town would like to have a formalized leak detection program and dedicated budget with the goal of checking the entire distribution system in the next five years. Town staff has proposed the following leak detection and repair program for implementation as part of this conservation planning study:

- Allocate funds annually for one week of leak detection survey work.
- Repair any leaks identified through the survey work

6.1.16 Tracking of Breaks and Repairs (SP)

Town staff has attempted to track major breaks and repairs on a system map located in their Maintenance Shop. Ideally, the Town would like to track breaks and repairs using the existing GIS system database in the future. Customer leaks are tracked by Town staff on an existing spreadsheet. The Town has a "leak" policy stating that leaks occurring on the customer's side of the water meter will be reimbursed 100% if the leak is defendable based on the customer's historic water usage. At this time, the Town does not have budget to dedicate existing or new staff to upgrading the GIS database for tracing breaks and repairs. However, this effort will be considered in future conservation efforts.

6.2 Develop and Define Screening Criteria

The Conservation Plan Committee developed the following list of criteria to screen the conservation measures and programs described in the previous section:

- Staff resources not available
- Legal issues too complex
- Other

6.3 Screen Conservation Measures and Programs

Table 6-1 summarizes which conservation measures and programs were selected for implementation and which were ruled out based on the screening criteria defined above.

Table 6-1 Screening Summary of Conservation Measures and Programs

Conservation Measure/Program	Will be Implemented / Continued (Yes/No)	Comment
Water-Saving Fixtures (DM)	Yes	Town will continue current program and does not plan to expand program
Town Irrigation System Improvements (DM)	Yes	
Third Stage Treatment (SM)	Yes	
Bleeder Automation (SM)	Yes	
Pressure Zone Management (SM)	No	Potential increase in number of pipe breaks and decrease in service life; needs to be further investigated
Water Audits for Top Customers (DP)	No	Requires further evaluation beyond the scope of this study
Elementary Education Program (DP)	No	Staff resources not available
Drought Plans and Rates (DP)	No	On-hold until CWCB enacts a drought mitigation plan requirement
Rate Structure by Meter Size (DP)	No	Not approved by Board; will be revisited as part of next rate study
Time of Upgrade and Time of Sale (DP)	No	Legal issues too complex
Multi-Family Residential Metering (DP)	No	Legal issues too complex to convert existing multi-family customers; however, policy is implemented for new multi-family customers
Town Website (DP)	Yes	Current conservation information will be maintained, but staff resources are not available to expand the website content
Customer Meter Testing and Replacement (SP)	Yes	
Leak Detection and Repair (SP)	Yes	
Tracking of Breaks and Repairs (SP)	Yes	

7.0 Evaluate and Select Conservation Measures and Programs

A total of eight conservation measures and programs were selected for further evaluation in the previous section. For the purposes of this report, these eight measures and programs were combined into a single program, which will hereinafter be referred to as the "Town's Conservation Program". The following sections will summarize the potential cost and water savings for each of the eight program components.

7.1 Capital and O&M Costs

Table 7-1 summarizes the capital and O&M costs estimated for each of the Town's Conservation Program components. Administration costs for each program component were not included in the estimate since it is assumed that the program will be administered by the Town's existing staff without significant impact to their existing workload. Similarly, labor costs were only included in the capital costs if the program component requires outside contractors to perform the labor.

Table 7-1 Estimated Capital and O&M Costs for Town's Conservation Program

Water Conservation Measure/Program	CAPITAL COSTS				O&M COSTS
	Materials	Labor	Engineering	Total	
Water Saving Fixtures[1]					$1,500
Town Irrigation System Improvements and Audit[2]	$1,000	$7,000		$8,000	$200
Third Stage Treatment[3]	$358,000	$150,000	$76,000	$584,000	$1,460
Bleeder Automation[4]	$33,000			$33,000	$1,000
Town Website[5]					
Customer Meter Testing and Replacement[6]					$1,000
Leak Detection and Repair[7]					$16,000
Tracking of Breaks and Repairs[8]					

Notes:

(1) The Town will continue the existing program. Estimated O&M cost is $1,500 every 5 years based on historic invoices for Niagara water-saving fixtures.

(2) The estimated cost of new equipment for the irrigation system is $1,000 and the estimated cost of the audit is $7,000. Estimated O&M cost is $200 every year for replacement parts.

(3) Estimated cost of treatment unit in 2010 was $268,000. Addition to treatment plant for housing equipment estimated at $90,000 for 30'x30' space. Labor for equipment installation estimated at $150,000. Engineering costs estimated at 15% of total project cost or $76,000. Assumed $0.10/1000 gallons treated through third stage membrane (power and cleaning chemicals) and a maximum total of 14.6 MG/year treated.

(4) Material cost based on price quote from Ten Point Sales for a total of (11) Kupferle Foundry Company, Model #9800 Eclipse Automatic Flushing Devices. O&M costs estimated for purchase of replacement parts each year.

(5) The existing conservation information on the Town's website will be maintained and it will not be expanded at this time. Therefore, this is a "no cost" item.

(6) Estimated O&M cost is $1,000 per year based on hiring an outside contractor to test two (2) of the 3"-4" meters in the system every year.

(7) Estimated O&M cost includes $6,000 per year for an outside contractor to perform leak detection services on a portion of the distribution system and $10,000 to repair any leaks identified in the process.

(8) The Town will continue to track breaks and repairs using the existing distribution system maps located in the Water Shop. Therefore, this is a "no cost" item.

7.2 Potential Water Savings

The total water savings potential of each program component was estimated based on an assumed life span of the program component and the estimated annual water savings. In general, the life span of the program component was linked to the expected life of the equipment installed. This was the case for the following program components: Town Irrigation System Improvements, Third Stage Treatment, and Bleeder Automation. For the Leak Detection and Repair Component, the estimated life span is the estimated number of years to check the entire distribution system for leaks. Table 7-2 summarizes the estimated annual water savings and total life span water savings for the program components. Note that these water savings estimates could only be made on four of the eight program components given the available information.

Table 7-2 Estimated Water Savings from Town's Conservation Program

Water Conservation Measure/Program	Expected Life Span (Years)	Annual Water Savings (Millions of Gal)	Total Life Span Water Savings (Millions of Gal)
Water Saving Fixtures[(1)]			
Town Irrigation System Improvements[(2)]	10	0.55	5.5
Third Stage Treatment[(3)]	25	5.27	131.8
Bleeder Automation[(4)]	10	10.5	105
Town Website[(5)]			
Customer Meter Testing and Replacement[(6)]			
Leak Detection and Repair[(7)]	6	4.2	25.2
Tracking of Breaks and Repairs[(8)]			
Total		**20.5**	**267**

Notes:

(1) Water savings was not estimated for this program given the limited distribution and inability to confirm if/when the fixtures were installed and if they were installed in the Estes Park water distribution system.

(2) The Town's irrigation system used approximately 5.5 million gallons of water in 2011. The estimated water savings from the irrigation system improvements is 10%, which yields an estimated annual water savings of 0.55 million gallons.

(3) Total treated water production at MWTP in 2011 was 309.7 million gallons. The current 2-stage treatment process is 98% efficient, for a total waste volume of 6.2 million gallons. A third stage treatment process is assumed to be at least 85% efficient, which results in a net annual water savings of 5.27 MG.

(4) The Town's eleven (11) bleeder locations used approximately 10.6 million gallons during the 2010-2011 season. The estimated usage for the same (11) bleeders with the new automatic flushing devices installed is 0.1 million gallons (3 minutes per hour at 7 gpm flow rate for 6 months), which yields an estimated annual water savings of 10.5 million gallons.

(5) The potential water savings generated by posting conservation information on the Town's website cannot be estimated.

(6) The verification of water meter accuracy is not expected to significantly impact overall water usage and therefore the potential water savings from this program was not estimated.

(7) Based on past experience, the leak detection process will identify an average of 4 leaks per year. Each leak is assumed to be flowing at 2 gpm continuously, which yields an estimated annual water savings of 4.2 million gallons.
(8) The potential water savings generated by tracking breaks and repairs can be estimated after a few years of data is collected.

7.3 Cost Effectiveness

In order to evaluate the cost effectiveness of each of the Town's Conservation Program components, it is necessary to estimate the cost to supply treated water to the Town. This type of estimate would generally include costs for all of the treated water system components including supply, treatment, and distribution. However, for the purposes of this study, only the cost of water supply and the cost of treatment were evaluated. Changes to the distribution system that may arise in the future when expansion of the GWTP is necessary are currently undefined because the location of potential growth inside the Town limits is unknown, so those future costs are not included.

The cost of water supply only applies to the MWTP and covers a "carriage cost" and "power interruption cost" associated with the Town's water rights through the Bureau of Reclamation. The cost of treatment is comprised of the operation and maintenance costs at the Town's two water plants, which includes chemicals, power, and sewer discharge. The O&M costs do not include staff time because regardless of the number of gallons of water treated, the same equipment must be operated and maintained. No savings in staff time will be realized by conservation measures. Table 7-3 summarizes the cost components described above.

Table 7-3 Estimated Cost to Supply Treated Water to Town

Treated Water O&M Cost Item	Cost per 1,000 Gallons of Treated Water
Chemicals	$0.33
Power	$0.11
Sewer Discharge	$0.048
Water Supply	$0.28
Total	**$0.77**

Notes:
(1) Total treated water produced at GWTP and MWTP in 2011 was 537.43 million gallons. For the purposes of this evaluation, it is assumed that the Town will continue to operate the plants the same time periods during any given year.
(2) Total chemical cost at GWTP and MWTP in 2011 was $178,000.
(3) Total power cost for GWTP and MWTP in 2011 was $60,000.
(4) Total sewer discharge cost at MWTP in 2011 was $26,000. GWTP does not have any costs associated with sewer discharge. The MWTP sewer discharge cost was divided by the total treated water production at both plants.
(5) The cost of water supply at MWTP includes a "carriage cost" and "power interruption cost". The total water supply cost for MWTP in 2011 was $150,000.

As shown in Table 7-3, the estimated cost to supply treated water to the Town is $0.77 per 1,000 gallons. To evaluate the cost effectiveness of the Town's Conservation Program components, this cost was compared to the cost to "save the water" using the various conservation efforts identified. The cost to save the water was estimated by dividing the net present value (NPV) of each program component by the total water savings generated over the life span of the program component. The NPV calculation

includes both the initial capital cost as well as the operation and maintenance costs over the life span of the program (see Table 7-1), discounted at a 4% interest rate. A copy of the NPV calculations is provided in Appendix D.

A "cost effectiveness" number was generated by subtracting the cost to save the water from the cost to treat the water, with a positive result indicating that the conservation effort is cost effective and a negative result indicating that the conservation effort is not cost effective. Table 7-4 summarizes the cost effectiveness calculations described above. These calculations were only performed on the program components where an estimate of the potential water savings was available. Note, the cost of Third Stage Treatment will be addressed using a different calculation since this conservation effort is related to the cost to discharge water to the sewer in addition to the cost to retreat the water at the plant after the third stage process.

Table 7-4 Cost Effectiveness of Town's Conservation Program

Water Conservation Measure/Program	**Total Project Cost NPV[(1)]**	**Total Life Span Savings[(2)] (Millions of Gal)**	**Cost to Save Water[(3)] ($/1,000 Gal)**	**Cost to Treat Water[(4)] ($/1,000 Gal)**	**Cost Effectiveness[(5)] ($/1,000 Gal)**
Water Saving Fixtures[(7)]	$2,250				
Town Irrigation System Improvements	$9,600	5.5	$1.75	$0.77	($0.98)
Third Stage Treatment[(6)]					
Bleeder Automation	$41,100	105	$0.39	$0.77	$0.38
Town Website					
Customer Meter Testing and Replacement	$2,800				
Leak Detection and Repair	$83,900	25.2	$3.33	$0.77	($2.56)
Tracking of Breaks and Repairs					
Total NPV	**$139,650**				

Notes:

(1) NPV of capital and O&M costs generated in Table 7-4 at a 4% annual interest rate for the expected life span of the program identified in Table 7-2.
(2) "Total Life Span Water Savings" from Table 7-2.
(3) Cost to Save Water = "Total Project Cost NPV" / ("Total Life Span Savings" x 1,000)
(4) "Cost to Treat Water" from Table 7-3.
(5) "Cost Effectiveness" = "Cost to Treat Water" - "Cost to Save Water".
(6) The cost effectiveness of Third Stage Treatment is addressed in Table 7-5 since the primary cost factor is not the "cost to treat the water", but the "cost to discharge the water to sewer".
(7) Water savings was not estimated for this program given the limited distribution and inability to confirm if/when the fixtures were installed and if they were installed in the Estes Park water distribution system.

As shown in Table7-4, the total NPV of the Town's Conservation Program (with the exception of Third Stage Treatment) is approximately $140,000. Only one of the three program components evaluated appears to be cost effective, which is the Bleeder Automation. The Town Irrigation System Improvements and the Leak Detection and Repair components do not appear to be cost effective when compared to the cost of treating additional water required to replace the water losses that could potentially be saved by these two conservation efforts.

As previously mentioned, the cost effectiveness of Third Stage Treatment must compare the cost to save the water through this conservation effort to the cost to discharge the same water to the sewer. Table 7-5 summarizes this calculation using the Town's contracted rate with the UTSD of $6.25 per 1,000 gallons discharged to the sewer.

Table 7-5 Cost Effectiveness of Third Stage Treatment

Water Conservation Measure/Program	Total Project Cost NPV(1)	Total Life Span Savings(2) (Millions of Gal)	Cost to Save Water(3) ($/1,000 Gal)	Cost to Discharge Waste Water to Sewer ($/1,000 Gal)	Cost Effectiveness(4) ($/1,000 Gal)
Third Stage Treatment	$606,800	131.75	$5.38	$6.25	$0.87

Notes:

(1) NPV of capital and O&M costs generated in Table 7-4 at a 4% annual interest rate for the expected life span of the program identified in Table 7-2.
(2) "Total Life Span Water Savings" from Table 7-2.
(3) Cost to Save Water = ["Total Project Cost NPV" / ("Total Life Span Savings" x 1,000)] + ($0.77 to re-treat water at plant)
(4) "Cost Effectiveness" = "Cost to Discharge Waste Water" - "Cost to Save Water".

The results of the Third Stage Treatment evaluation presented above reveal that this conservation effort is cost effective for the Town relative to the other program components with a potential savings of $0.87 per 1,000 gallons. The financial plan proposed in 2010 included a pilot-scale test of third stage treatment at the MWTP in 2013. Data collected from that pilot would be used to refine the costs and benefits of implementing full-scale third stage treatment in the future. In light of the reduced revenues from lower implemented rates, the timing of this project is being re-evaluated.

7.4 Summary of Benefits and Costs

The previous sections generated a "cost effectiveness" value to help the Town evaluate the components of their selected Conservation Program. Only four of the eight components could be evaluated in this analysis since potential water savings estimates could not be generated for the remaining four components. Of the four components evaluated, two appear to be relatively cost effective, Third Stage Treatment and Bleeder Automation. The remaining two components, Town Irrigation System Improvements and Leak Detection and Repair, do not appear to be cost effective based on the

assumptions used in this report. However, the cost effectiveness analysis presented herein does not address all the potential benefits that could be recognized from implementation of the program components. For example, the Town's distribution system contains a large percentage of "aged" pipe that is susceptible to catastrophic failure. Implementation of the Leak Detection and Repair program could identify a leak that would otherwise become a break in the future, resulting in costs to the Town that are much greater than the cost to implement the program as a safety-precaution.

Although four of the program components could not be evaluated for cost effectiveness, the Town will still include these in their overall Conservation Program as they are believed to offer benefits that justify the cost (if any) of implementing the program component. In conclusion, the Town will move forward with the Conservation Program identified in this Section, which consists of the following eight components:

- Water Saving Fixtures
- Town Irrigation System Improvements
- Third Stage Treatment
- Bleeder Automation
- Town Website
- Customer Meter Testing and Replacement
- Leak Detection and Repair
- Tracking of Breaks and Repairs

Where the Town could see financial benefit from implementation of the Conservation Program is the reduction of operation and maintenance costs. This cost was previously evaluated in Section 7.3 with the results producing an estimated treated water cost of $0.77 per 1,000 gallons. Using this cost and the estimated annual water savings from the Conservation Program (20.5 million gallons from Table 7-2), the estimated annual operations and maintenance cost savings is roughly $16,000. Interestingly enough, this cost savings roughly covers the estimated operations and maintenance costs associated with the Conservation Program itself, with the largest expenditure going towards the Leak Detection and Repair program (estimated O&M at $16,000 per year from Table 7-1).

8.0 Integrate Resources and Modify Forecasts

8.1 Revise Demand Forecast(s)

Section 3.0 presented a demand forecast for the Town that is based on being able to reliably meet peak day demand. The Conservation Program that has been selected for implementation is not expected to change this demand forecast as the program components will have little to no impact on peak day demand. The Town's peak day demand is largely driven by the influx of tourists during the summer months and the program components identified will have little impact on the amount of water used by those tourists. For this reason, the demand forecast presented in Section 3.0 will not be revised as part of this current Conservation Program effort.

The demand forecast will be re-visited in the future to refine the potable water demand projection. Since the last demand projection was develop, the housing market and economic downturn may have impacted

future growth and the number of transient water users. In specific, the next demand projection effort should consider including the following:

- Perform a more detailed analysis of buildout population that considers individual parcels, land use, zoning, steepness of terrain (i.e. location with respect to the blue line), and access to utilities as well as redevelopment of existing developed land and changes in zoning and land use.

- Work towards reducing the number of land use categories to make them more consistent with zoning districts. For example, land area designated as Potential Future Development (primarily agricultural land) was not considered in the calculation of the buildout permanent population in this analysis, even though some of this land is zoned as residential. Better correlations between land use and zoning districts might avoid this issue.

- Attach water demand (meters and billing records) to GIS zoning and land use data to allow for additional water demand analysis using land use information.

- Gain a better understanding of RMNP visitor quantities and the likelihood of a cap on total visitors. One aspect of this evaluation would be to examine trends in National Park visitation as a whole and inquire about projections for future visitation to all National Parks.

- Evaluate the impact of water conserving plumbing fixtures on future per capita usage. In communities where the residential water usage is dominated by indoor use, the impact of water conserving plumbing fixtures can be as much as an 18-20% reduction.

- Consider the impacts to the Town land use categories of converting lodging properties to condos for tax purposes.

- Work towards developing per capita demands for each category of population, primarily the permanent population and the transient population.

There is some potential that implementation of the Town's Conservation Program could impact average day water demand over the course of the year. Table 8-1 summarizes the potential annual percent reduction in treated water volumes that could be recognized as a result of implementing the Conservation Program based on 2011 treated water production.

HDR

Table 8-1 Estimated Percent Reduction in Annual Treated Water Volume

Estimated Annual Water Savings from Town's Conservation Program (Millions of Gal)(1)	20.5
Total Treated Water Volume in 2011 (Millions of Gal)(2)	537.43
Potential Percent Reduction in Annual Treated Water Volume following Implementation of Town's Conservation Program(3)	**3.8%**

Notes:

(1) Estimated Annual Water Savings from Table 7-2.

(2) Treated water production at both MWTP and GWTP in 2011.

(3) "Potential Percent Reduction" = ("Estimated Annual Water Savings...") / ("Total Treated Water Volume…") x 100

8.2 Identify Project Specific Savings

Similar to the demand projection discussion above, the capital improvement projects that are currently included in the Town's capital improvement plan (CIP) are not driven by the need to provide additional treated water to the Town, but are instead driven by such things as the need to replace aging infrastructure (GWTP replacement project), correct existing system deficiencies (such as treated water storage volume and distribution piping), optimize the Town's water rights portfolio (water supply purchases), etc. Consequently, the implementation of the Town's Conservation Program will not delay the need to execute the CIP in the manner which has been previously identified in the numerous planning studies and reports that have been prepared for the Town in the recent past (see Section 1.0 for a list of these reports and studies).

8.3 Revise Supply-Capacity Forecast(s)

The only water supply related project currently included in the Town's CIP is the purchase of additional water rights for the GWTP, which will be executed in the next year or two. The purchase of these additional water rights is required to ensure that GWTP can meet existing peak day water demands should the MWTP be out of service. However, the purchase of these rights will also allow the Town to meet the projected peak day demand at buildout that was forecast as part of the demand projection in Section 3.0. Consequently, the implementation of the Town's Conservation Program will not impact the Town's current plans for water supply.

8.4 Consider Revenue Effects

Implementation of the Town's Conservation Program is not expected to significantly impact revenue from treated water sales. The Town will be revisiting their overall rates and rate structure with an updated Financial Plan in 2013. The largest funding concern for the future is the GWTP replacement project, which as previously mentioned, will not be impacted by the implementation of the Town's Conservation Plan.

9.0 Implementation Plan

9.1 Implementation Schedule

Review and approval of this Conservation Plan as well as the Town's Conservation Program identified herein was initiated at the March 2012 Utility Committee meeting and the Draft Conservation Plan was subsequently approved by the Town Board of Trustees. An advertisement was published in the Trail Gazette to notify the public that the Conservation Plan was available for public review and comment for 60 days. A copy of the advertisement is provided in Appendix E. The Final Conservation Plan was approved by the Town Board on November 27, 2012.

The Town has already integrated some of the plan elements into capital and O&M planning. Leak detection and repair costs are included in both the 2012 and 2013 budgets. Water saving fixtures, the Town web site, and leak tracking are ongoing programs that will be continued through the upcoming years. Table 9-1 summarizes the implementation schedule for the various programs/measures.

Table 9-1 Summary of Implementation Schedule

Water Conservation Measure/Program	Required Action	Timing of Activity
Water Saving Fixtures	Distribute fixtures at appropriate events	Ongoing activity
Town Irrigation System Improvements	Upgrade irrigation control system and automatic rainfall sensors	Dependent on Town budget for Parks Department
Third Stage Treatment	Pilot test technologies and install if successful	2013 or later, depending on funding availability
Bleeder Automation	Install "test" bleeders for evaluation	2012
Town Website	Describe conservation programs	Ongoing activity to update as staff time is available
Customer Meter Testing and Replacement	Test 3" and 4" meters	2013-2016
Leak Detection and Repair	Find existing leaks in water mains and make repairs	2012 and 2013 as budgeted
Tracking of Breaks and Repairs	Record appropriate information regarding water main breaks	Ongoing activity

9.2 Plan for Monitoring and Evaluation Processes

The Water Utility normally keeps track of lost water and of costs associated with all the elements of the proposed conservation program, so the monitoring and evaluation process are on-going elements within the utility's current management program. Each year the utility reviews this information to gain an understanding of progress towards conservation and other goals. Table 9-2 summarizes the methods that will be used to track water savings with each measure/program.

HDR

Table 9-2 Summary of Methods for Evaluating Water Savings

Water Conservation Measure/Program	Number of Giveaways	Unaccounted for Water	Metered Usage	Metered Discharge to Sewer	Metered Raw Water Supply at WTP
Water Saving Fixtures	X				
Town Irrigation System Improvements			X		
Third Stage Treatment				X	X
Bleeder Automation			X		
Town Website					
Customer Meter Testing and Replacement			X		
Leak Detection and Repair		X			
Tracking of Breaks and Repairs		X			

9.3 Plan Approval Date and Future Revisions

The Water Utility plans to officially review and update the Conservation Plan every 7 years. The Final Conservation Plan was adopted by the Town Board of Trustees on November 27, 2012.

10.0 Abbreviations

Ac	Acre
CDPHE	Colorado Department of Public Health and Environment
CVB	Convention and Visitors Bureau
Gal	Gallons
Gal/day	Gallons per day
GIS	Geographic Information System
gpcd	Gallons per capita per day
GWTP	Glacier Creek Water Treatment Plant
MGD	Million gallons per day
MWTP	Mary's Lake Water Treatment Plant
O&M	Operations and maintenance
RMNP	Rocky Mountain National Park

11.0 Appendices

Appendix A	Order of Magnitude CIP Cost Estimates
Appendix B	Top Water Customers for Town of Estes Park
Appendix C	Pressure Zone Management Analysis for Service Area No. 2
Appendix D	NPV Calculations
Appendix E	Copy of Public Notices for Public Review and Comment

Appendix A

Order of Magnitude CIP Cost Estimates

Order of magnitude costs for the proposed new storage tanks are shown in Table 12.1. The total estimated cost for new storage in the system is $7,920,000.

Table 12.1 2010 Construction Costs for Proposed New System Storage

Project Description	Quantity (Gallons)	Unit Price	Estimated Cost in 2010 Dollars
1.4 MG "Yellow Zone" Storage Tank - Buried Concrete	900,000	$4	$3,600,000
0.05 MG "Crystal Zone" Storage Tank - Buried Concrete	50,000	$4	$200,000
0.4 MG "Fall River Estates Zone" Storage Tank - Buried Concrete	400,000	$4	$1,600,000
0.13 MG "Kiowa Estates Zone" Storage Tank - Buried Concrete	130,000	$4	$520,000

Projects identified to correct distribution system problems are shown in Table 12.2. The total estimated 2010 construction cost of these improvements is $867,900.

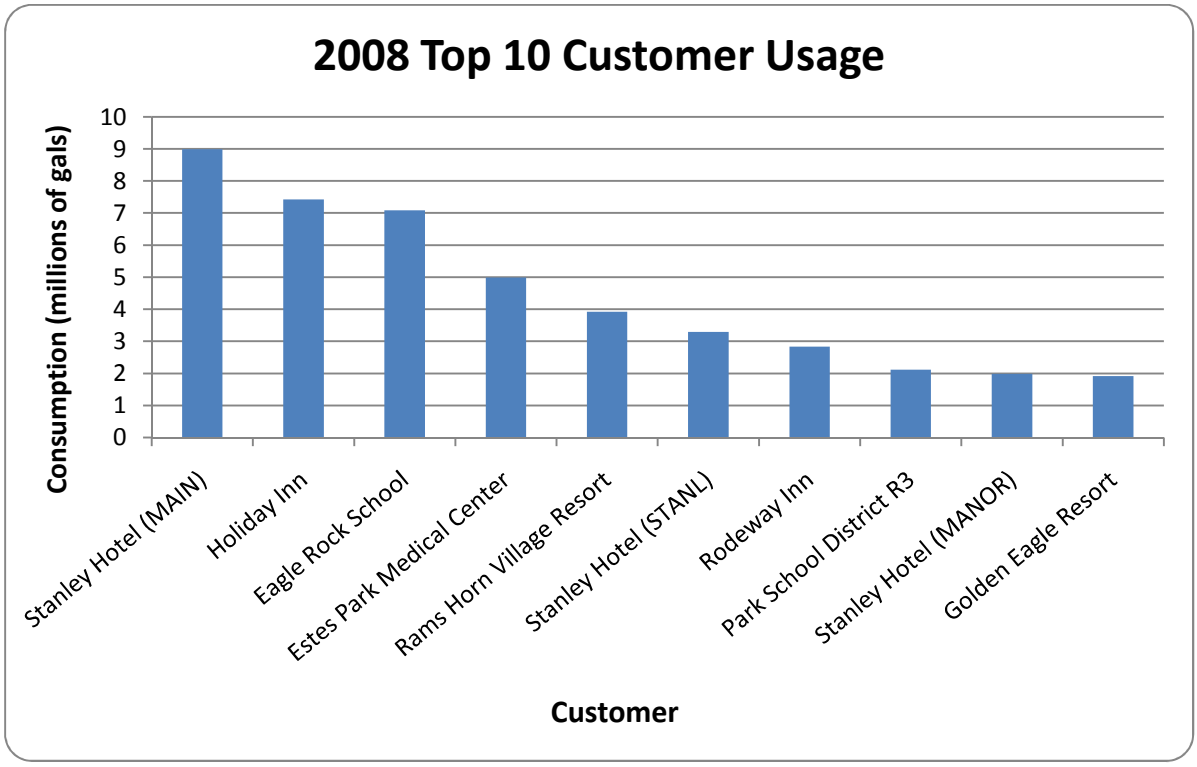
Table 12.2 2010 Construction Cost for Proposed Distribution System Improvements

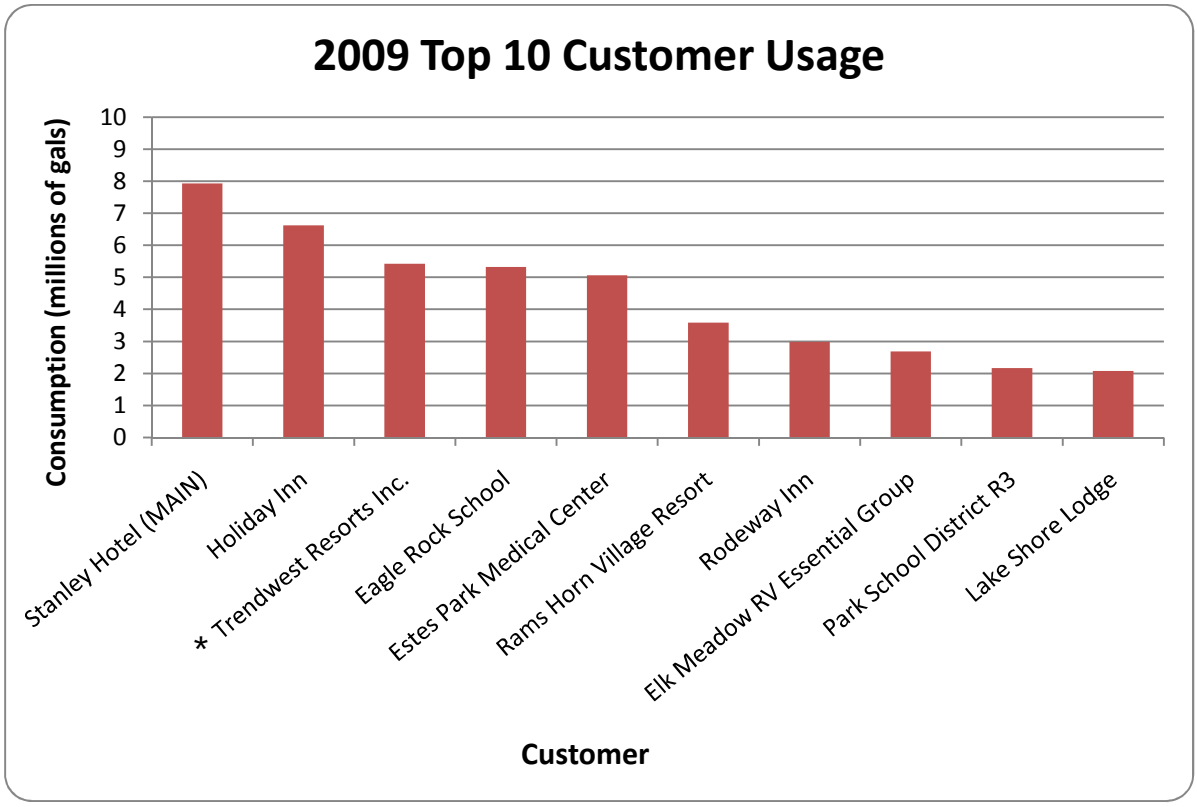
Project Description	Quantity (LF)	Unit Price[(1)]	Estimated Cost in 2010 Dollars
8" Pipe	325	$160	$52,000
8" Pipe	365	$160	$58,400
12" Pipe	1,850	$190	$351,500
8" Pipe	350	$160	$56,000
Upgrade Prospects Estates PRV	1	$100,000	$100,000
Upgrade Strongs Ave PRV	1	$75,000	$75,000
New Grey Fox PRV	1	$175,000	$175,000

Appendix B

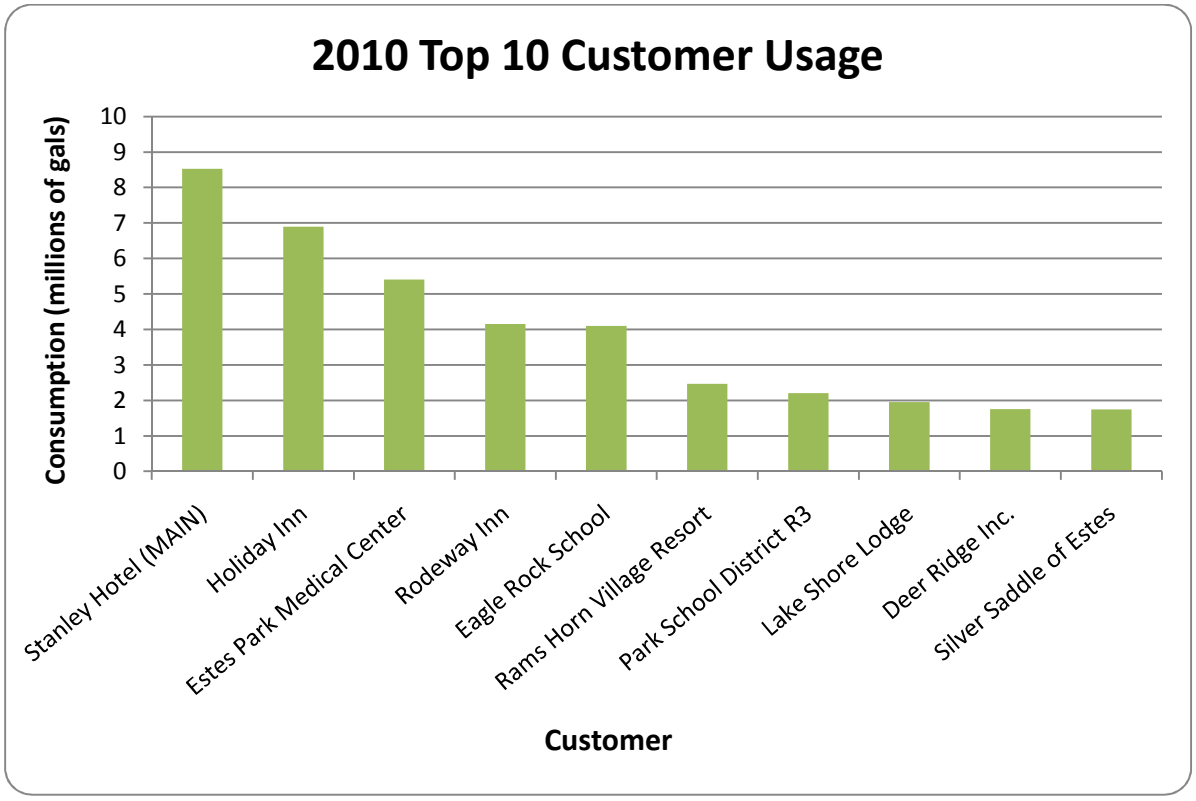
Top Water Customers for Town of Estes Park

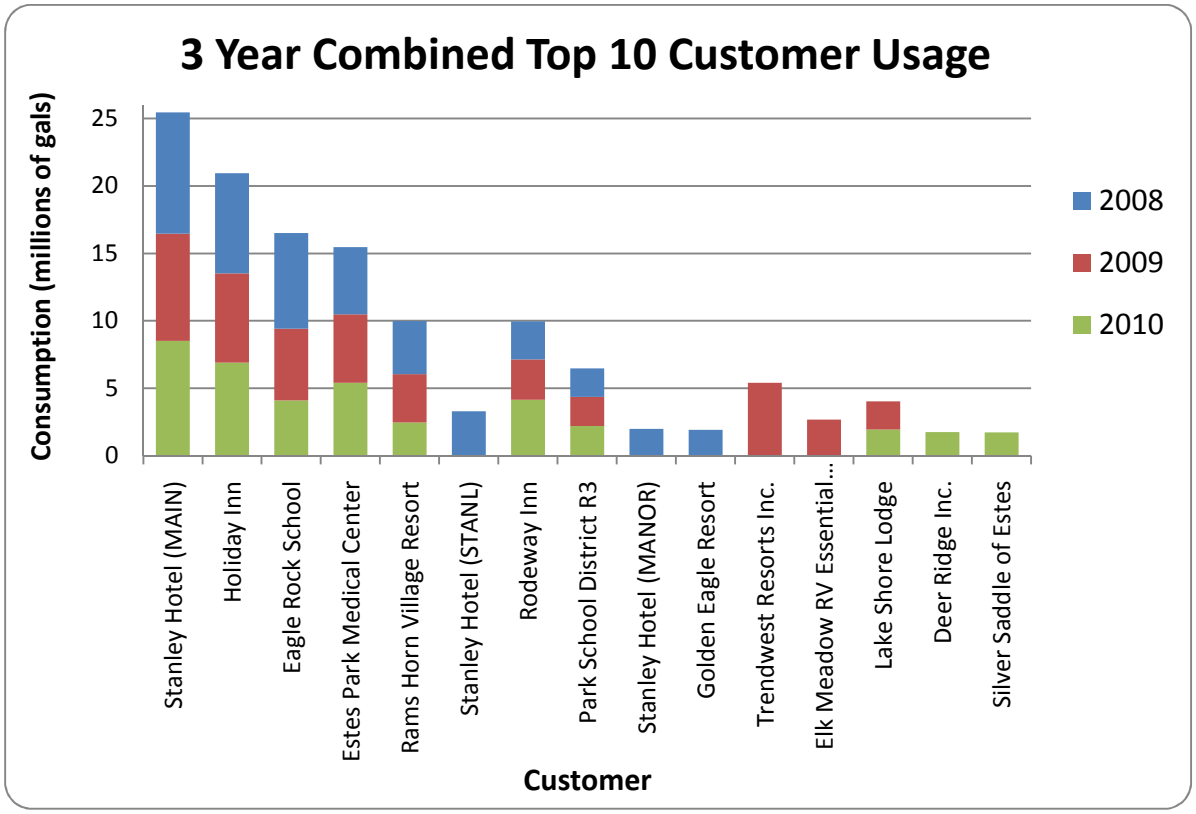
Estes Park Water Conservation Plan

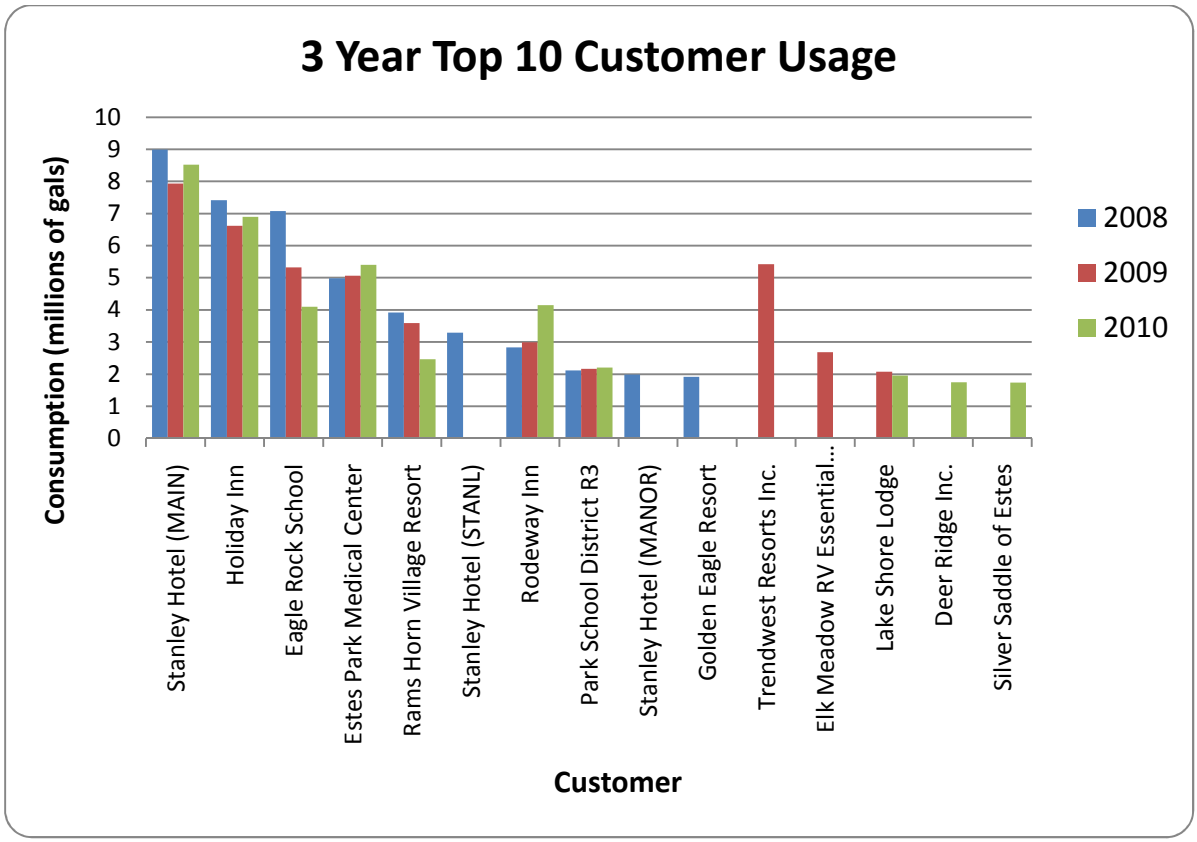


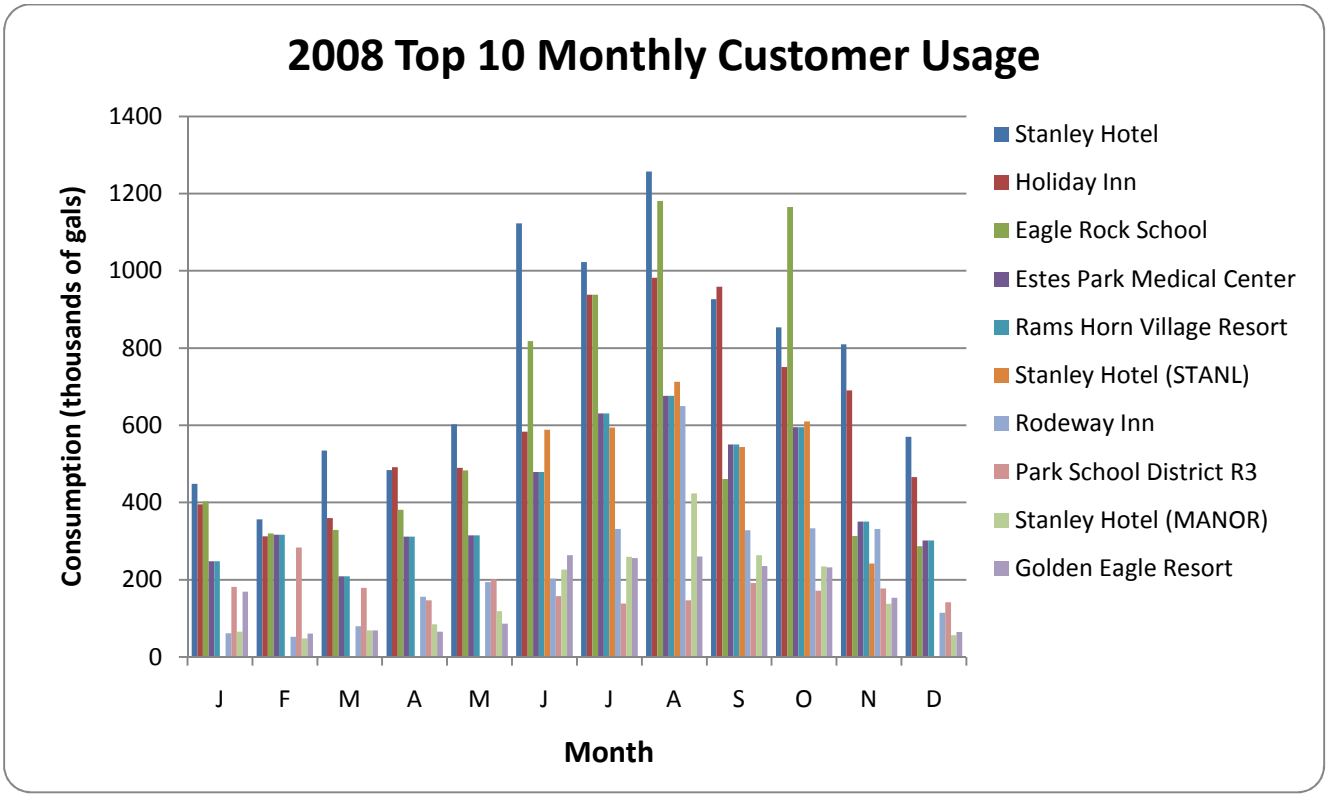


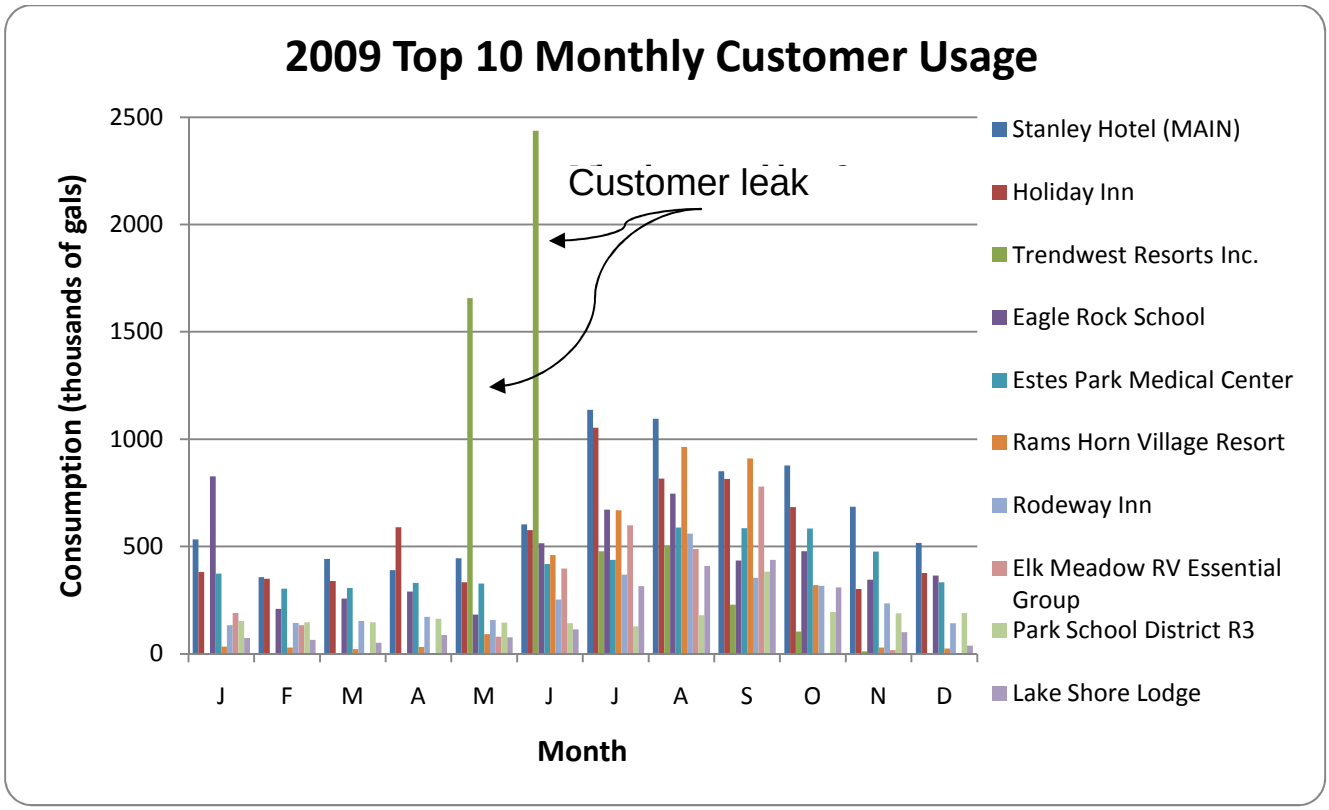
* A large water leak caused Trendwest Resorts Inc. to appear for 2009 only

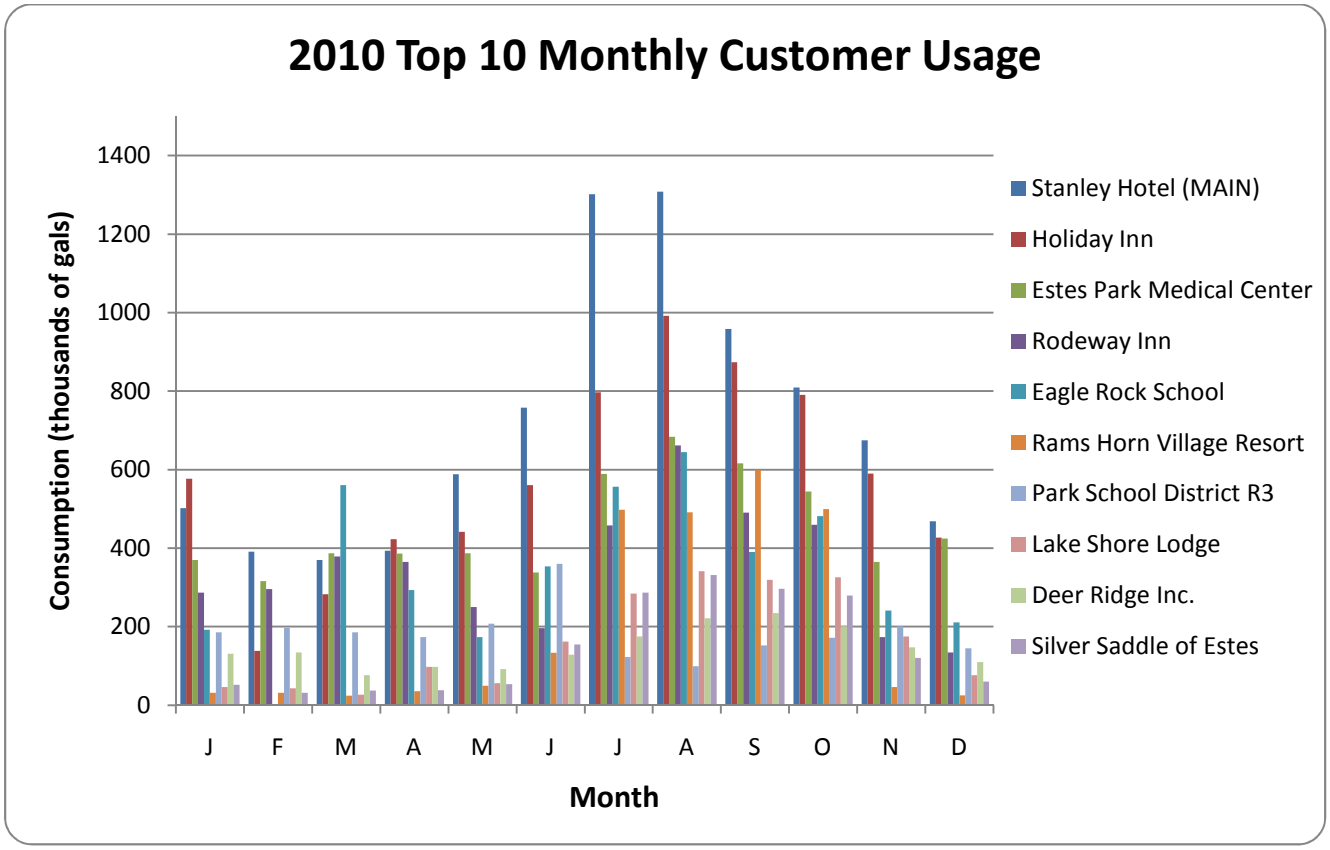

2010 Top 10 Customer Usage
Consumption (millions of gals)
10
9
8
7
6
5
4
3
2
1
0
Stanley Hotel (MAIN)
Holiday Inn
Estes Park Medical Center
Rodeway Inn
Eagle Rock School
Rams Horn Village Resort
Park School District R3
Lake Shore Lodge
Deer Ridge Inc.
Silver Saddle of Estes
Customer


3 Year Combined Top 10 Customer Usage
Consumption (millions of gals)
25
20
15
10
5
0
2008
2009
2010
Stanley Hotel (MAIN)
Holiday Inn
Eagle Rock School
Estes Park Medical Center
Rams Horn Village Resort
Stanley Hotel (STANL)
Rodeway Inn
Park School District R3
Stanley Hotel (MANOR)
Golden Eagle Resort
Trendwest Resorts Inc.
Elk Meadow RV Essential...
Lake Shore Lodge
Deer Ridge Inc.
Silver Saddle of Estes
Customer

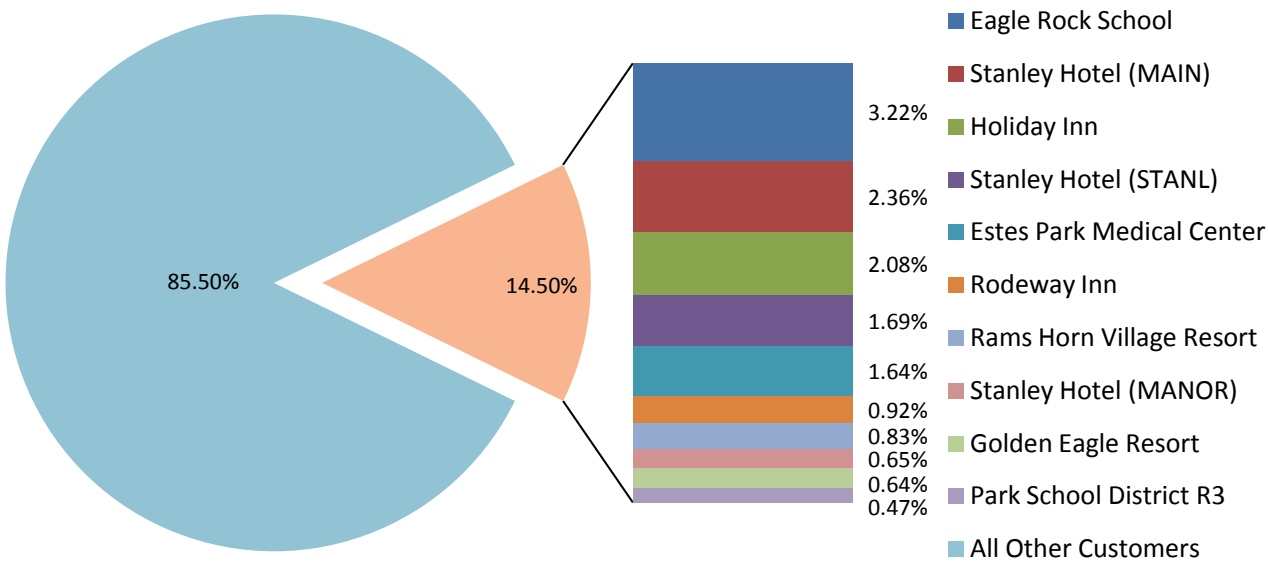

3 Year Top 10 Customer Usage
Consumption (millions of gals)
10
9
8
7
6
5
4
3
2
1
0
Stanley Hotel (MAIN)
Holiday Inn
Eagle Rock School
Estes Park Medical Center
Rams Horn Village Resort
Stanley Hotel (STANL)
Rodeway Inn
Park School District R3
Stanley Hotel (MANOR)
Golden Eagle Resort
Trendwest Resorts Inc.
Elk Meadow RV Essential...
Lake Shore Lodge
Deer Ridge Inc.
Silver Saddle of Estes
Customer
2008
2009
2010


2008 Top 10 Monthly Customer Usage
Consumption (thousands of gals)
1400
1200
1000
800
600
400
200
0
J
F
M
A
M
J
J
A
S
O
N
D
Month
Stanley Hotel
Holiday Inn
Eagle Rock School
Estes Park Medical Center
Rams Horn Village Resort
Stanley Hotel (STANL)
Rodeway Inn
Park School District R3
Stanley Hotel (MANOR)
Golden Eagle Resort

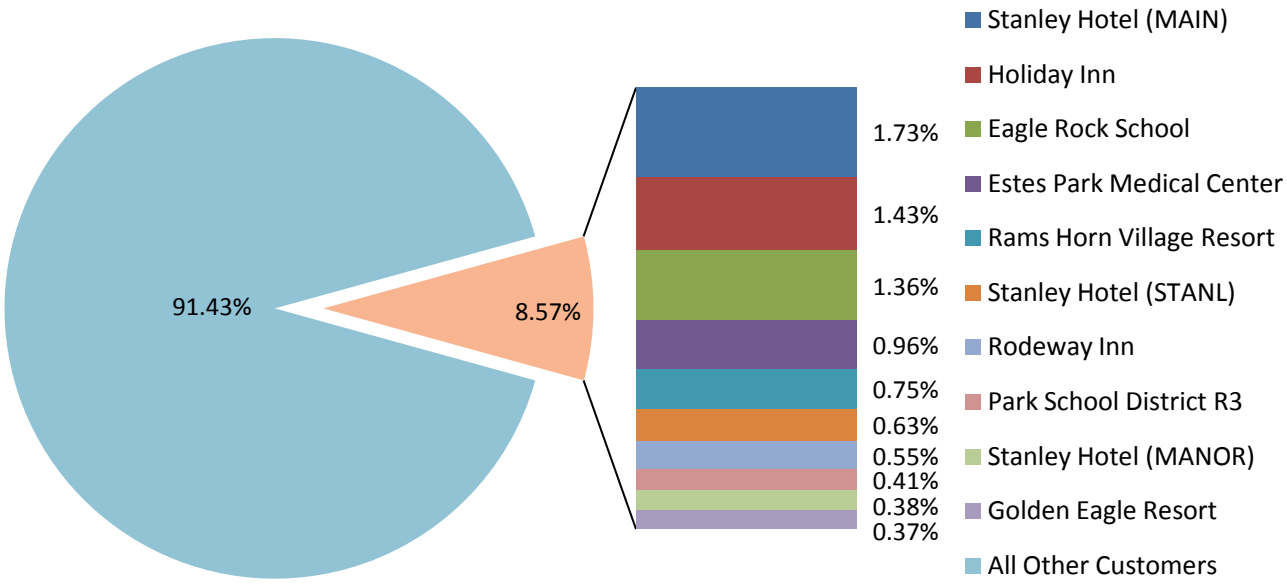

2009 Top 10 Monthly Customer Usage
Consumption (thousands of gals)
2500
2000
1500
1000
500
0
Customer leak
J
F
M
A
M
J
J
A
S
O
N
D
Month
Stanley Hotel (MAIN)
Holiday Inn
Trendwest Resorts Inc.
Eagle Rock School
Estes Park Medical Center
Rams Horn Village Resort
Rodeway Inn
Elk Meadow RV Essential Group
Park School District R3
Lake Shore Lodge

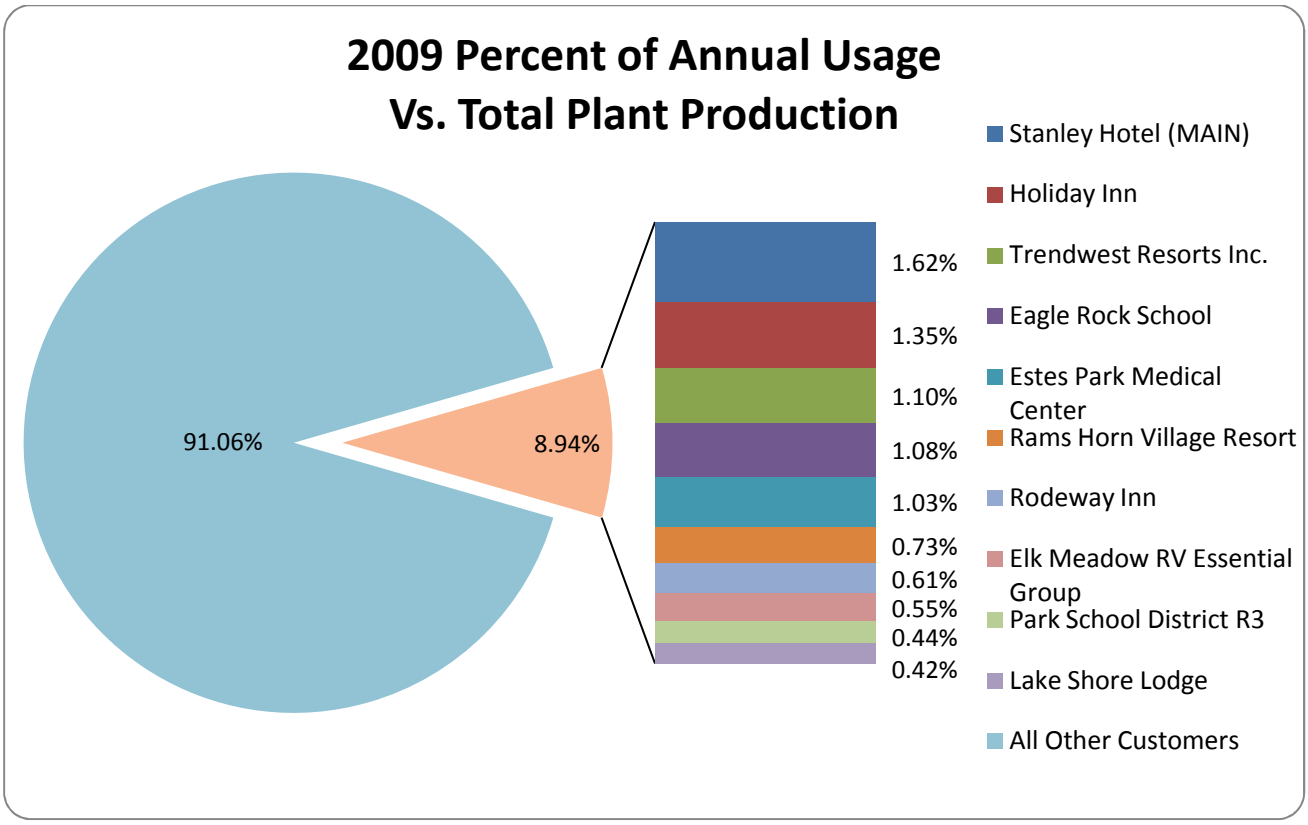

2010 Top 10 Monthly Customer Usage
Consumption (thousands of gals)
1400
1200
1000
800
600
400
200
0
J
F
M
A
M
J
J
A
S
O
N
D
Month
Stanley Hotel (MAIN)
Holiday Inn
Estes Park Medical Center
Rodeway Inn
Eagle Rock School
Rams Horn Village Resort
Park School District R3
Lake Shore Lodge
Deer Ridge Inc.
Silver Saddle of Estes

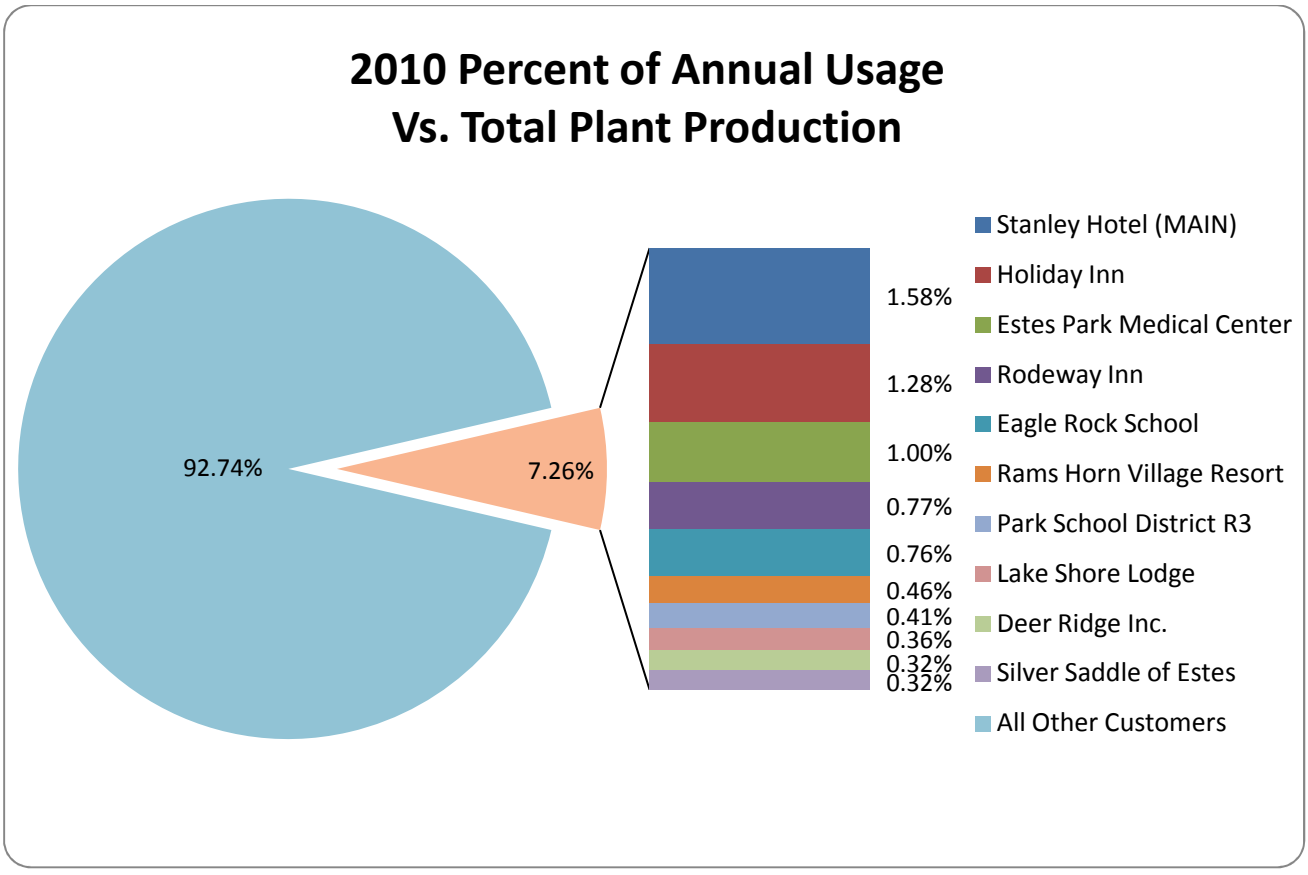
October 2008 Percent Monthly Usage Vs. Total Plant Production



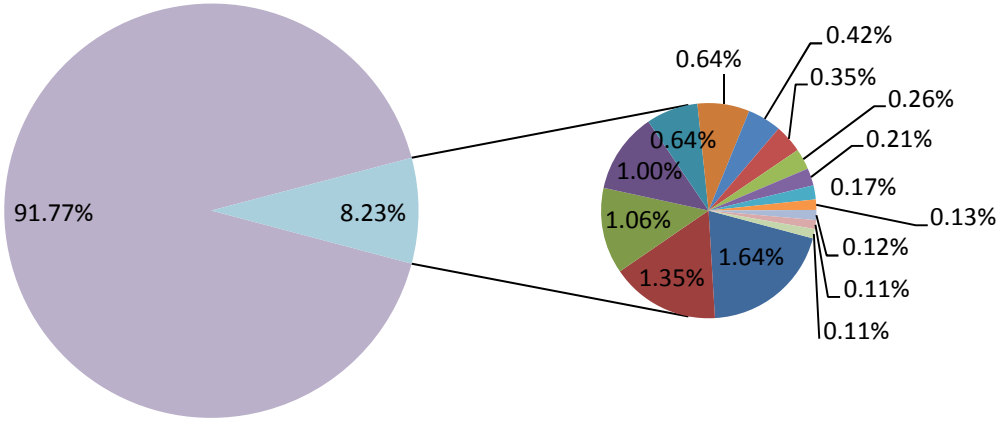
2008 Percent of Annual Usage Vs. Total Plant Production




2009 Percent of Annual Usage
Vs. Total Plant Production
91.06%
8.94%
1.62%
1.35%
1.10%
1.08%
1.03%
0.73%
0.61%
0.55%
0.44%
0.42%
Stanley Hotel (MAIN)
Holiday Inn
Trendwest Resorts Inc.
Eagle Rock School
Estes Park Medical Center
Rams Horn Village Resort
Rodeway Inn
Elk Meadow RV Essential Group
Park School District R3
Lake Shore Lodge
All Other Customers


2010 Percent of Annual Usage
Vs. Total Plant Production
92.74%
7.26%
1.58%
1.28%
1.00%
0.77%
0.76%
0.46%
0.41%
0.36%
0.32%
0.32%
Stanley Hotel (MAIN)
Holiday Inn
Estes Park Medical Center
Rodeway Inn
Eagle Rock School
Rams Horn Village Resort
Park School District R3
Lake Shore Lodge
Deer Ridge Inc.
Silver Saddle of Estes
All Other Customers

3 Year Percent Annual Usage
Vs. Total Plant Production



- Stanley Hotel (MAIN)
- Holiday Inn
- Eagle Rock School
- Estes Park Medical Center
- Rams Horn Village Resort
- Rodeway Inn
- Park School District R3
- Trendwest Resorts Inc.
- Lake Shore Lodge
- Stanley Hotel (STANL)
- Elk Meadow RV Essential Group
- Stanley Hotel (MANOR)
- Golden Eagle Resort
- Deer Ridge Inc.
- Silver Saddle of Estes
- All Other Customers

Appendix C

Pressure Zone Management Analysis for Service Area No. 2

Water Savings Calculator Input

Service Area 2 - Input Values	
Average Pipe Size (in)	6.4
Daily Water Usage (gpd)	1,473,120
Estimated System Leakage	10%
Water Cost Per 1,000 Gallons	$4.11
Standard System Pressure (psi)	142.0
Minimum Outlet Pressure (psi)	102.00
Time at Max Pressure (hrs)	12
Time at Min Pressure (hrs)	12
Leakage Coefficient, N1	1.50

Water Savings Calculator Results

Service Area 2 - Output for System Leaks	
Average Flow Rate (gpm)	1,023
Average Flow Velocity (ft/s)	10.2
Average Weekly Water Usage (gal)	10,311,840
Average Annual Water Usage (acre-ft)	1,650
Average Annual Water Usage (mg)	537.7
Estimated Daily Water Loss Based on Standard System Pressure & Estimated System Leakage (gal)	147,312
Estimated Annual Water Loss (acre-ft)	165
Annual Financial Loss Due to Estimated System Leakage	**$ 220,990**

Service Area 2 - Pressure Management Output Data	
Estimated System Leakage at Standard System Pressure & Before Pressure Management Input Data	10.0%
Calculated % of System Leakage Recovered with Pressure Management Input data	19.6%
Average Daily Pressure with Pressure Management Input Data (psi)	122
Calculated Daily Water Savings with Pressure Management Input Data (gal)	28,815
Calculated Annual Water Savings with Pressure Management Input Data (acre-ft)	32.3
Calculated Annual Water Savings with Pressure Management Input Data (mg)	10.5
Calculated Annual Financial Savings with Pressure Management Input Data	**$ 43,227**
Years to pay back cost of PRVs	0.0

CLA-VAL™

Automatic Control Valves

Enter Model or Series number then click Search:

Search

PMV Water Savings Calculator

PRESSURE MANAGEMENT ANALYSIS FOR 98-01* PRESSURE MANAGEMENT CONTROL VALVE

PREPARED BY: **CLA-VAL Application Example**
www.cla-val.com
DATE: July 14, 2011

Update
Print

SYSTEM INPUT DATA		
Pipe Size	6.4	in
Estimated Daily Water Usage	1,473,120	gal
Standard System Pressure	142	psi
Estimated System Leakage	10.0	%
Water Cost per 1000 Gallons	4.11	$
System Leakage Orifice Dia		in

PRESSURE MANAGEMENT INPUT DATA		
Outlet Pressure (min)	102	psi
Time at Max Pressure (daily)	12.0	hrs
Time at Min Pressure (daily)	12.0	hrs
Leakage Coefficient, N1	1.5	-

Leakage Coefficient Guideline

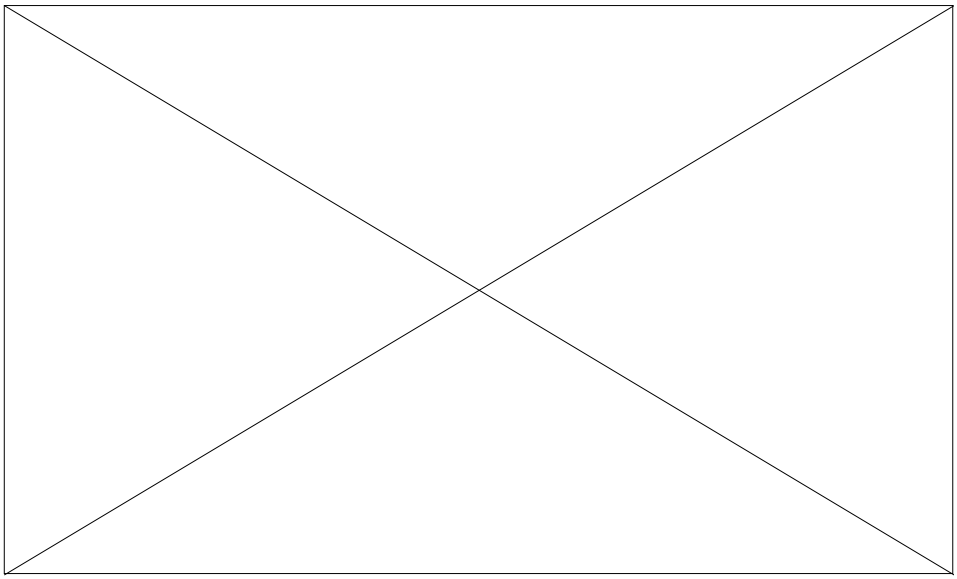
Leakage coefficient, N1, can vary depending on factors such as pipe material, level and type of leakage as well as the type of distribution system (residential, commercial, agricultural, etc.). For analysis purposes the following guideline can be used to select a number for N1. These N1 values are referenced from a system leakage analysis study. The user may want to enter different values for N1 if they are familiar with the leakage analysis method used and the proper coefficient value for their particular system. N1 = 1.5 is an average leakage coefficient value used for typical systems with undetectable background leakage with any pipe material. N1 = 1.0 is recommended if there is an abscence of knowledge of pipe materials and leakage level. N1 = 1.15 is a japanese standard used for their systems for the past 20 years. N1 = 1.52 was an average value determined from lab tests by Ashcroft & Taylor (Surveyor, July 1983) on artificially created leaks in plastic pipe. N1 = 2.50 maximum recognized coefficient value for systems with excessive leakage.

OUTPUT DATA FOR SYSTEM LEAKS		
Average Flow Rate	1,023	gpm
Average Flow Velocity (approx.)	10.2	ft/sec
Average Weekly Water Usage	10,311,840	gal
Average Annual Water Usage	1,650	acre-ft
Average Annual Water Usage	537.7	mg
Estimated Daily Water Loss Based on Standard System Pressure & Estimated System Leakage	147,312	gal
Estimated Annual Water Loss	165.0	acre-ft
Annual Financial Loss Due to Estimated System Leakage	$220,990	$

PRESSURE MANAGEMENT OUTPUT DATA		
Estimated System Leakage at Standard System Pressure & Before Pressure Management Input Data	10.0	%
Calculated % of System Leakage Recovered with Pressure Management Input data	19.6	%
Average Daily Pressure with Pressure Management Input Data	122.0	psi
Calculated Daily Water Savings with Pressure Management Input Data	28,815	gal
Calculated Annual Water Savings with Pressure Management Input Data	32.3	acre-ft
Calculated Annual Water Savings with Pressure Management Input Data	10.5	mg
Calculated Annual Financial Savings with		

NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN NaN

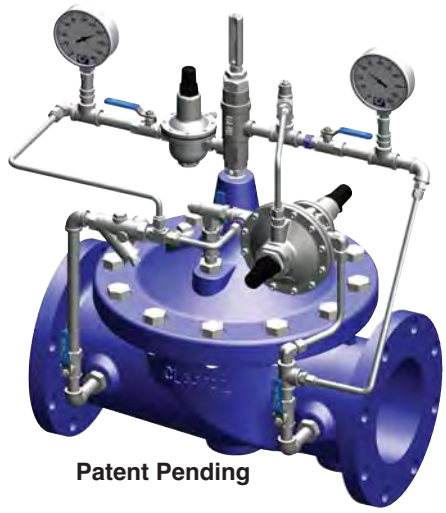
Although some general theories reference upper coefficient values of 2.50, case studies associated with this value were not found.	Pressure Management Input Data	$43,227	$



CLA-VAL™

— MODEL — 98 Series (Full Internal Port) / 698 Series (Reduced Internal Port)

Pressure Management Control Valve



Patent Pending

- **Water Conservation**
- **Pipe Break Prevention**
- **Leakage Reduction**
- **System Efficiency**
- **Energy Savings**
- **Retrofits to Existing Valves**
- **100% Hydraulic Control**
- **Supplies Optimal Pressure Based on Flow Demand**
- **No Inline Orifice Plate Required**

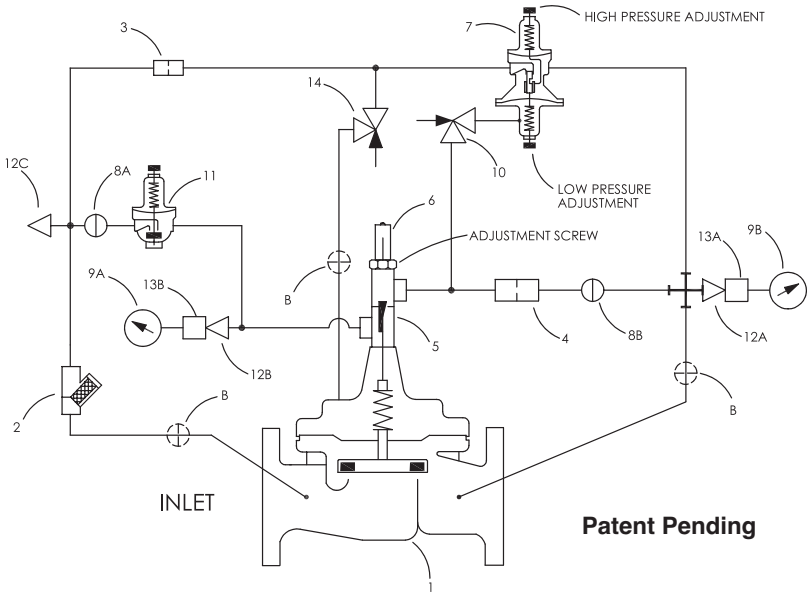
The Cla-Val Model 98 Series / 698 Series Pressure Management Control Valve automatically adjusts downstream pressure based on demand changes in the system. This fully adjustable control valve automatically changes outlet pressure from a high setting during high flow conditions to a low setting during low flow conditions. The patent pending all-hydraulic operation design assures smooth ramping between pressure settings as flow demand conditions change. Model 98 Series easily manages the system pressure based on demand changes to reduce costly system leakage losses and line breaks.

Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X43 "Y" Strainer
3	X58C Restriction Assembly
4	X58A Restriction Fitting
5	X78 Stem Assembly
6	X101 Valve Position Indicator Assembly
7	CRD2SF Pressure Management Control
8	CK2 (Isolation Valve)
9	X141 Gage
10	CV Flow Control (Closing)
11	CRD Pressure Reducing Control
12	Plug, Gage Connection
13	Socket, Gage Connection
14	CV Flow Control (Opening)

Optional Features

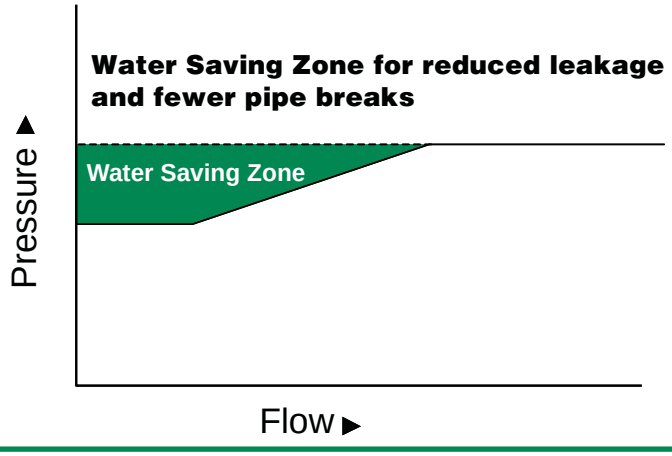
Item	Description
B	CK2 (Isolation Valve)



Patent Pending

Typical Performance

A desired pressure profile with reduced system pressure during low demand periods is illustrated by the solid line in chart. At low flows a minimum pressure is maintained and as flow increases delivery pressure gradually increases up to maximum pressure set point for maximum flow. The ramping is adjustable to fine tune valve to system requirements.The “water saving zone” below maximum pressure line represents valve effectiveness in reducing water losses and pipeline breakage in system.



Model 98 Series (Uses Basic Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

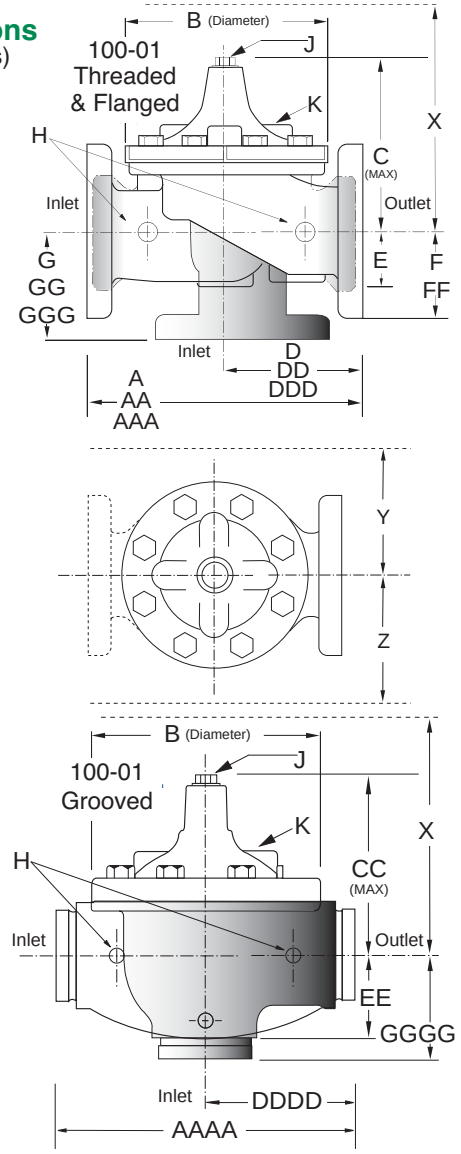
Valve Body & Cover		Pressure Class				
		Flanged			Grooved	Threaded
Grade	Material	ANSI Standards*	150 Class	300 Class	300 Class	End‡ Details
ASTM A536	Ductile Iron	B16.42	250	400	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400	400
ASTM B62	Bronze	B16.24	225	400	400	400

Note: * ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details

Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	2" - 24"	2" - 16"	2" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		
For material options not listed, consult factory. Cla-Val manufactures valves in more than 50 different alloys.			

Dimensions
(In inches)



Valve Size (Inches)	**2**	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**24**
A Threaded	9.38	12.50	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	9.38	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	46.00	52.00	61.50
AAA 300 ANSI	10.00	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	47.64	53.62	63.24
AAAA Grooved End	9.00	12.50	15.00	20.00	25.38	—	—	—	—	—	—	—
B Dia.	6.62	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	41.50	45.00	53.16
C Max.	6.50	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	39.06	41.90	43.93
CC Max. Grooved End	5.75	7.25	9.31	12.12	14.62	—	—	—	—	—	—	—
D Threaded	4.75	6.25	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	4.75	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.81	—	—	30.75
DDD 300 ANSI	5.00	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	31.62
DDDD Grooved End	4.75	6.00	7.50	—	—	—	—	—	—	—	—	—
E	1.50	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	12.95	15.00	17.75
EE Grooved End	2.50	3.12	4.25	6.00	7.56	—	—	—	—	—	—	—
F 150 ANSI	3.00	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	15.00	16.50	19.25
FF 300 ANSI	3.25	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.00	16.50	19.25
G Threaded	3.25	4.50	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	3.25	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—	22.06
GGG 300 ANSI	3.50	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	22.90
GGGG Grooved End	3.25	4.25	5.00	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	.375	.50	.75	.75	1	1	1	1	1	1	1	1
J NPT Cover Center Plug	.50	.50	.75	.75	1	1	1.25	1.5	2	1.5	1.5	1.5
K NPT Cover Tapping	.375	.50	.75	.75	1	1	1	1	1	1	1	1
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	5.1	5.63	6.75
Approx. Ship Wt. Lbs.	35	70	140	285	500	780	1165	1600	2265	2982	3900	6200
X Pilot System	13	15	17	29	31	33	36	40	40	43	47	68
Y Pilot System	9	11	12	20	22	24	26	29	30	32	34	39
Z Pilot System	9	11	12	20	22	24	26	29	30	32	34	39

Note: The top two flange holes on valve size 36 are threaded to 1 1/2"-6 UNC.

Model 698 Series (Uses Basic Valve Model 100-20)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 Class	300 Class
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400

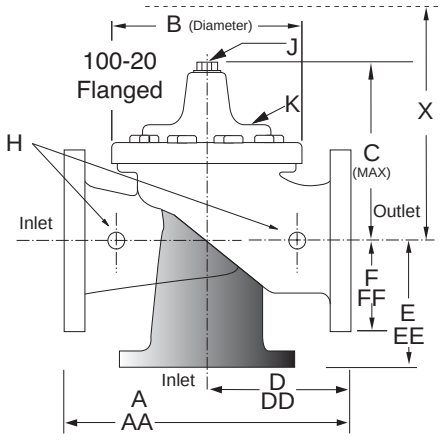
Note: * ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
Valves for higher pressure are available; consult factory for details

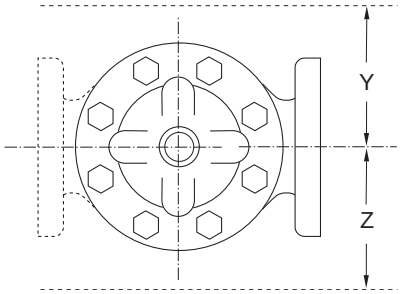
Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 24"	3" - 16"	3" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.
Cla-Val manufactures valves in more than 50 different alloys.

Dimensions
(In inches)





Valve Size (Inches)	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**24**
A 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	35.75	36.62	43.63	49.62	49.75
B Dia.	6.62	9.12	11.50	15.75	20.00	23.62	27.47	28.00	35.44	35.44	35.44
C Max.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00
D 150 ANSI	—	6.94	8.88	10.69	CF*	CF*	CF*	CF*	CF*	CF*	CF*
DD 300 ANSI	—	7.25	9.38	11.19	CF*	CF*	CF*	CF*	CF*	CF*	CF*
E 150 ANSI	—	5.50	6.75	7.25	CF*	CF*	CF*	CF*	CF*	CF*	CF*
EE 300 ANSI	—	5.81	7.25	7.75	CF*	CF*	CF*	CF*	CF*	CF*	CF*
F 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50	11.00	11.75	15.88	14.56	17.00
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.88	16.06	19.00
H NPT Body Tapping	.375	.50	.75	.75	1	1	1	1	1	1	1
J NPT Cover Center Plug	.50	.50	.75	.75	1	1	1.25	1.25	2	2	2
K NPT Cover Tapping	.375	.50	.75	.75	1	1	1	1	1	1	1
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	3.4	4.5	4.5
Approx. Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	1500	2551	2733
X Pilot System	13	15	27	30	33	36	36	41	40	46	55
Y Pilot System	10	11	18	20	22	24	26	26	30	30	30
Z Pilot System	10	11	18	20	22	24	26	26	30	30	30

*Consult Factory

Note: The top two flange holes on valve sizes 36 thru 48 are threaded to 1 1/2"-6 UNC.

98 Series Valve Selection

100-01 Pattern: Globe (G), Angle (A), **End Connections:** Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes

	Inches	1	1¼	1½	2	2½	3	4	6	8	10	12	14	16	18	20	24	30	36
	mm	25	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900
Basic Valve 100-01	Pattern				G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A					
	End Detail				T, F, Gr	T, F, Gr*	T, F, Gr	F, Gr	F, Gr*	F, Gr*	F	F	F	F					
Suggested Flow (gpm)	Maximum				210	300	460	800	1800	3100	4900	7000	8400	11000					
	Maximum Intermittent				260	370	580	990	2250	3900	6150	8720	10540	13700					
	Minimum				1	2	2	4	10	15	35	50	70	95					
Suggested Flow (Liters/Sec)	Maximum				13	19	29	50	113	195	309	442	530	694					
	Maximum Intermittent				16	23	37	62	142	246	387	549	664	863					
	Minimum				.06	.09	0.13	0.25	0.63	0.95	2.2	3.2	4.4	6.0					

100-01 Series is the full internal port Hytrol. **For Lower Flows Consult Factory** *Globe Grooved Only

698 Series Valve Selection

100-20 Pattern: Globe (G), Angle (A), **End Connections:** Flanged (F) Indicate Available Sizes

	Inches	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
	mm	80	100	150	200	250	300	350	400	450	500	600	750	900	1000	1200
Basic Valve 100-20	Pattern	G	G, A	G, A	G, A	G	G	G	G	G	G	G				
	End Detail	F	F	F	F	F	F	F	F	F	F	F				
Suggested Flow (gpm)	Maximum	260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500				
	Minimum	1	2	4	10	15	35	50	50	95	95	95				
Suggested Flow (Liters/Sec)	Maximum	16	37	65	145	258	403	581	581	1040	1040	1040				
	Minimum	.06	.13	.25	.63	.95	2.2	3.2	3.2	6.0	6.0	6.0				

100-20 Series is the reduced internal port size version of the 100-01 Series. **For Lower Flows Consult Factory**

Many factors should be considered in sizing pressure reducing valves including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

Not Recommended for Dead-end Service

Pilot System Specifications

Outlet Pressure Adjustment Range:

High Flow Pressure Setting:
200 psi (13.8 bar) Maximum

Low Flow Pressure Setting:
Up to 35 psi (2.4 bar) below high setting

Temperature Range
Water: to 180°F

Materials

Standard Pilot System Materials
Pilot Control: Bronze ASTM B62
Trim: Stainless Steel Type 303
Rubber: Buna-N® Synthetic Rubber

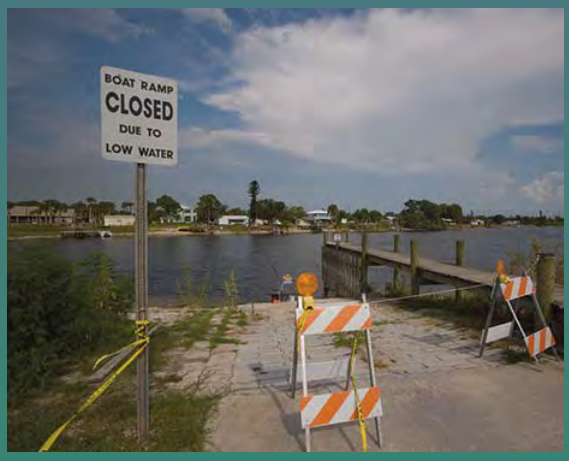
Optional Pilot System Materials
Pilot Systems are available with optional Aluminum, Stainless Steel or Monel materials.

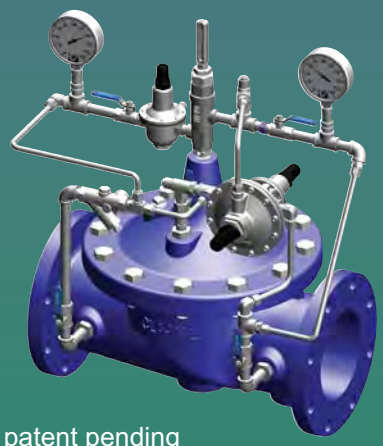
When Ordering, Please Specify

1. Catalog No. 98 Series or 698 Series
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Trim Material
7. Desired Options
8. When Vertically Installed

CLA-VAL™

Pressure Management Solutions





patent pending

Water Conservation
Pipe Break Prevention
Leakage Reduction
System Efficiency
Energy Savings

Defining Pressure Management

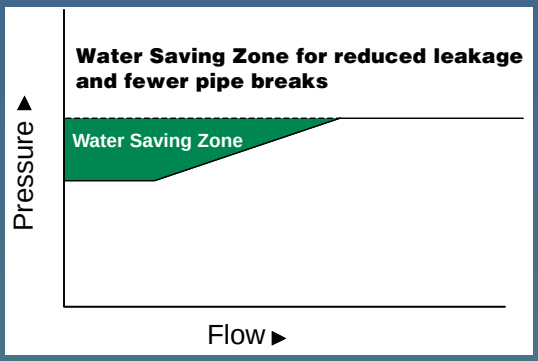
Water shortages are looming worldwide while scientists and utilities work around the clock to find a viable solution. Many industry experts believe that one of the simplest and most cost effective water conservation measures is managing distribution system pressures to reduce avoidable losses, help prevent pipe breaks and minimize leakage.

When Cla-Val Advanced Pressure Management Valves are integrated into a distribution system, these water conservation goals can be quickly achieved.

Available in standard hydraulic, advanced hydraulic or electronic configurations, pressure management control systems can also be retrofitted to existing, installed Cla-Val control valves. Additional benefits can be derived from using metering in conjunction with pressure management to identify areas where immediate improvements can be made.

Water savings begins when normal operating pressure is reduced in periods of low demand.
The solid line in the chart illustrates a desired pressure profile to reduce pressure during low demand periods. At low flows, a minimum pressure is maintained. As flow demand increases, the set point pressure automatically begins to increase. The pressure ramps up to a maximum pressure set point at a maximum flow. The zone below the maximum pressure is where benefits are realized in reduced water loss and pipeline breakage.

Pilot system adjustments allow changes to where the ramping pressure begins and ends to customize performance based on system demand.



The pressure management premise

- Reducing pressure reduces consumption across the board
- Off-peak periods, such as late night, are the ideal times to lower pressure because reduced demand leaves the pipeline over-pressurized and subject to increased background leakage and pipe breaks
- Even a small reduction in pressure can significantly minimize pipe breaks and leakage
- Reducing pressure lowers pumping costs and saves energy
- Managing pressure with standard hydraulic, advanced hydraulic or electronic control valves can help achieve operational objectives without impacting the ability to deliver adequate pressure, even in periods of extreme demand such as fire flow

Advanced Hydraulic Pressure Management

The Cla-Val 98 Series Advanced Hydraulic Pressure Management Valve employs cutting edge design with top quality workmanship to provide two-stage hydraulic pressure management for water distribution systems.

The unique design of the hydraulic pilot system automatically senses flow demand changes through the X78 Adjustable Stem Valve rather than restrictive devices such as orifice plates in the pipeline. The CRD2S pilot control works in conjunction with the X78 to automatically ramp the outlet pressure, taking hydraulic pressure control to the next level.

The valve's hydraulic control system adjusts pressure based on demand, lowering downstream pressure when demand falls and increasing it as demand climbs. This is done automatically without the need for outside intervention, electronic communication, or battery power of any sort throughout the system.

98 Series
patent pending

The 98 Series is designed to be simple to adjust and yet flexible enough to tailor valve performance to system pressure requirements. If system flow demands change in the future, the 98 Series valve may easily be adjusted to meet the new zone pressures, while still saving water. Available on Cla-Val Hytrol sizes 2 through 16 inch and 600 Series sizes 3 through 24 inch, pressure management controls can also be retrofitted to existing Cla-Val Pressure Reducing Valves without removal of the valve or adding orifice plates.

Standard Hydraulic Pressure Management

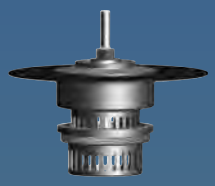
The Cla-Val 90 Series Pressure Reducing Valve is an excellent option for water distribution systems where active, hydraulic pressure management is desired.

For example, pipelines in hilly areas are often over-pressurized in order to deliver adequate pressure at higher elevations. At lower elevations in the same system, however, delivery pressure can exceed what is actually necessary. This condition leaves the pipeline vulnerable to pipe breaks, background leakage, surges and cavitation.

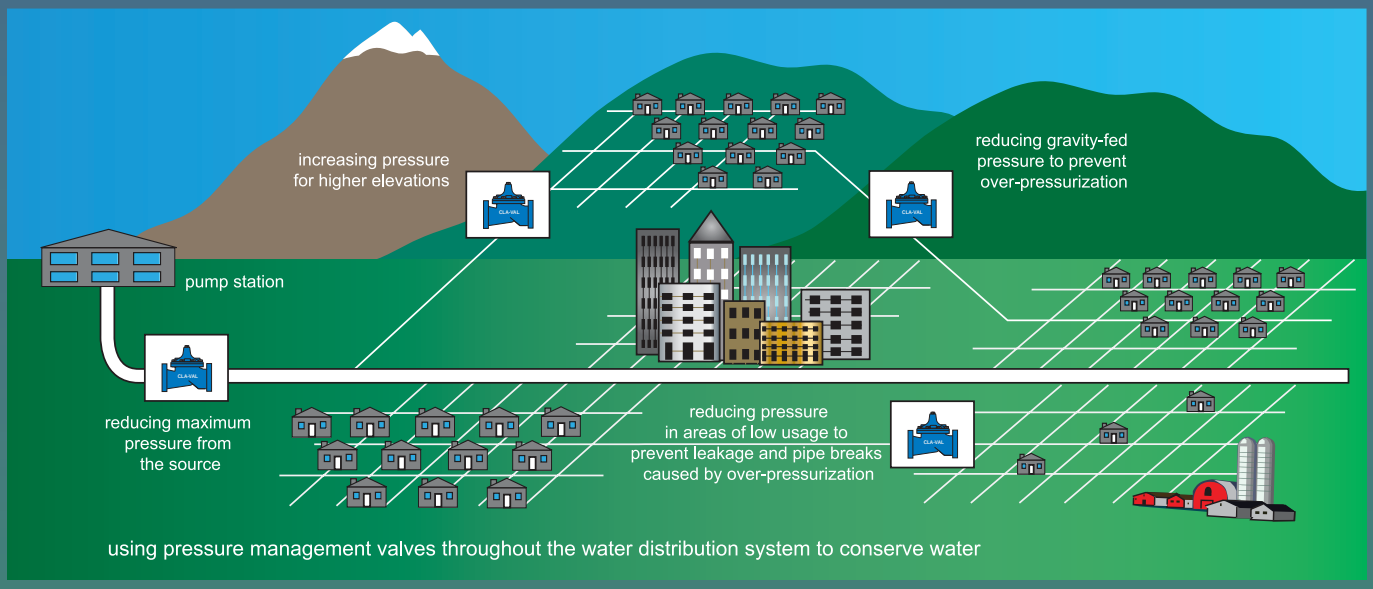
Regardless of the terrain, the 90 Series Pressure Reducing Valve can control pressure at certain points within a system to a fixed outlet pressure while maintaining the pipeline's flow requirements. It provides sensitive and accurate pressure control and is easily adjusted to respond to changing system requirements.

To further enhance performance, 90 Series valves can be provided with Cla-Val's patented KO anti-cavitation trim to eliminate the potential for damage caused by extreme pressure differentials. An electronic metering kit can also be added for applications where flow measurement is desired.

90 Series



KO Anti-Cavitation Trim



using pressure management valves throughout the water distribution system to conserve water

Electronic Pressure Management

The 300 Series valve is ideal for pressure management. It can be easily integrated into SCADA systems and can be programmed to deliver minimum night time and optimum daytime pressures, helping to reduce pipe breaks and minimize background leakage.

The Cla-Val 300 Series Electronic Actuated Pressure Reducing Control Valve combines the precise control of field proven hydraulic pilots and remote control functionality of the 33 Series Electronic Actuator. Designed and manufactured by Cla-Val, the submersible 33 Series actuator maintains constant system pressure or flow rates with a set point that can be changed remotely.

The 33 Series actuator, which operates off 12VDC or 24VDC, is well suited for solar power. It is available with any new Cla-Val control valve and can be field retrofitted to existing, installed Cla-Val automatic control valves.

Because pressure can be changed from a remote location, it is also an effective solution for lowering costs and eliminating safety hazards associated with "confined space" entry.

390 Series

33 Series Electronic Actuator

visit www.cla-val.com/savewater to calculate your savings using Advanced Pressure Management Valves

Global Capabilities. Local Expertise.

Cla-Val manufactures superior quality automatic control valves in production facilities located around the world. These facilities, coupled with sales offices and distribution centers in the US, Canada, Switzerland, United Kingdom and France, enable Cla-Val to provide world-class product support to our customers wherever they are, whenever they need it.

In addition to our state-of-the-art manufacturing and foundry facilities in the US, Cla-Val Canada also supports North American customers in a diverse array of industries with superior quality products and services and is one of the continent's leading high volume OEM suppliers.

Our manufacturing operation in Lausanne, Switzerland, backed by an expert team of engineers and customer service professionals, provides outstanding product and technical support to customers throughout Europe and the Middle East.

Cla-Val UK Ltd. serves the United Kingdom with an unparalleled level of customer service and technical expertise. Primary markets include waterworks, fire protection, aviation fueling and industrial processing facilities. Cla-Val products can be found in nearly every waterworks distribution system throughout the UK.

Cla-Val France, with headquarters in Lyon, is one of the leading suppliers of automatic control valves in France. Serving diverse markets ranging from aviation fuel truck manufacturing to water utility companies, Cla-Val France brings a unique combination of industry experience, technical expertise and product know-how to customers in the French marketplace.

A World of Applications

In addition to serving the waterworks industry for more than seventy years, Cla-Val has significant experience in the following industries.

Industrial/Wastewater: Our extremely versatile automatic control valve, so prevalent in the waterworks industry, can also be customized to meet the demands of virtually any industrial fluid handling or wastewater application.

Fire Protection: Cla-Val fire protection products are specified by engineers and architects around the world and perform with reliability and precision in fire suppression systems on offshore oil platforms, and in high-rise structures and industrial facilities.

Aviation Ground Fueling: Cla-Val ground fueling products are installed in commercial airports and military facilities around the world. Our products, originally introduced to meet the demands of military aircraft in World War II, have become the standard in present-day aviation.

Marine: Cla-Val's marine products are designed to meet the exacting requirements of military and commercial shipboard applications including fire protection systems, aircraft fueling and seawater service. Their rugged construction and top quality materials help to ensure long life, minimal maintenance and precision performance.

CLA-VAL

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E-mail: cla-val@cla-val.fr

Appendix D

NPV Calculations

Town Irrigation System

$8,000 + $200 (P/A, 4%, 10) = $9,622
8.1109

Bleeder Automation

$33,000 + $1,000 (P/A, 4%, 10) = $41,111
8.1109

Leak Detection and Repair

$16,000 (P/A, 4%, 6) = $83,874
5.2421

Water Savings Fixtures

$1,500 (P/F, 4%, 5) + $1500 (P/F, 4%, 10) = $2,246
0.8219 0.6756

Customer Meter Testing & Replacement

$1,000 (P/A, 4%, 3) = $2,775
2.7751

Third Stage

$584,000 + $1,460 (P/A, 4%, 25) = $606,800
15.6221

Appendix E

Copy of Public Notices for Public Review and Comment

PUBLIC NOTICE OF WATER CONSERVATION PLAN
TOWN OF ESTES PARK

PUBLIC COMMENT PERIOD: SEPTEMBER 19 – NOVEMBER 19, 2012

TOWN BOARD APPROVAL, NOVEMBER 27, 2012

Notice is hereby given that the Town of Estes Park is updating its Water Conservation Plan. The Town is seeking public comment over the next 60 days, and will present the plan for approval during the Town Board meeting on Tuesday, November 27, 2012. The Town Board meeting will be called to order at 7:00 p.m. in the Town Boardroom at the downtown Municipal Building, 170 MacGregor Avenue.

The Town's Water Conservation Plan is designed to promote the efficient usage and consumption of water by residents, businesses, and local governments. All people wishing to comment on the plan should submit written comments to the Town Clerk's Office **no later than 5:00 p.m. on Monday, November 19, 2012.**

The point of contact for the Water Conservation Plan is Diana Beehler, Water Quality Manager, who can be reached at 970-577-3624.

The Water Conservation Plan is available for review by the public at Suite 100 in the Municipal Building during regular business hours. To view a copy of the updated Water Conservation Plan online, visit www.estes.org/Utilities. On the left side of the page, navigate to the Water Department and then onto the Water Conservation page to find the draft of the new plan.

Town of Estes Park, Larimer County, Colorado, November 27, 2012

Minutes of a Regular meeting of the Board of Trustees of the Town of Estes Park, Larimer County, Colorado. Meeting held in the Town Hall in said Town of Estes Park on the 27th day of November, 2012. Meeting called to order by Mayor Pinkham.

Present:	William C. Pinkham, Mayor Eric Blackhurst, Mayor Pro Tem Trustees Mark Elrod John Ericson Wendy Koenig Ron Norris John Phipps
Also Present:	Frank Lancaster, Town Administrator Lowell Richardson, Assistant Town Administrator Greg White, Town Attorney Jackie Williamson, Town Clerk
Absent:	None

Mayor Pinkham called the meeting to order at 7:00 p.m. and all desiring to do so, recited the Pledge of Allegiance.

PUBLIC COMMENTS.

Jim Cope/League of Women Voters stated the deadline for utilizing the grant funds for recycling containers is June 30, 2013 including full installation. The LWV would need the support of the Town in order to take advantage of the grant.

Curt Gleaves/ Estes Performance Incorporated (EPIC) member stated EPIC was incorporated as a non-profit in 2011 and secured the Park Theater Mall property in March of 2012. Supporters of the Performing Arts (SOPA), a 501(c) 3, formed in December 2006 and EPIC merged in 2012 with SOPA as the surviving entity. SOPA then changed its name to EPIC. The MOU between SOPA and the Town was dissolved because SOPA determined a theater at the fairgrounds was not feasible and at the time requested the FOSH funds.

Bruce Brown/Representative of Salud requested the Town consider a path along Dry Gulch from Hwy 34 to Stonegate Road for the safety of their clients.

Greg Carner/County citizen spoke in opposition of a sidewalk along Dry Gulch stating there are not enough people that would use the sidewalk to warrant the cost.

Blake Robertson/Town citizen spoke to the distribution of the FOSH funds and cautioned the Board there could be other valid interruptions of the FOSH agreement other than the one provided by Attorney White.

TOWN BOARD COMMENTS / LIAISON REPORTS.

Trustee Norris reported the Visit Estes Park Board met to finalize their 2013 budget and held the first meeting of the new Association Forum. The Economic Development Task Force has completed draft recommendations and would be discussing them with the Town and other community organizations. The Bear Education Task Force has established the key messages and target audience, and would meet Friday, November 30, 2012 to develop plans, timeline and responsibilities for information dissemination.

Trustee Koenig stated Sister Cities held their annual meeting and those interested in the program should contact Jim Thompson with any questions.

Mayor Pro Tem Blackhurst informed the public the Citizen Information Academy (CIA) would be held February 6 through March 20, 2013 and encouraged those interested to complete an application.

Trustee Ericson also encouraged the public to attend the CIA. He thanked the Town staff for a wonderful tree lighting ceremony.

Mayor Pinkham thanked staff for the efforts in producing the past two weekend's events including the tree lighting, parade and fireworks.

TOWN ADMINISTRATOR REPORT.

Update on the past weekend events: an estimated 30,000 attended the parade; the fireworks were cut short due to the dry conditions; and 740 skaters used the ice rink.

Police Commander Rose reviewed a task list developed after the Woodland Heights fire including a number of communication issues: applied for and received priority for governmental emergency telephone (GET) to allow numbers on the list priority during emergencies; AT&T has agreed to place a temporary tower to increase capacity during the peak season; coordinate and partner with the RMNP to formalize interagency crisis communication plan; identified grant opportunity for an AM radio station to broadcast recorded messages during an emergency; formation of joint communication center at the Visitor Center; planning Emergency Management training for the staff, local businesses, and lodges; establish information lines for the local media and social media and develop talking points during an emergency; and hold a tabletop exercise for staff to review operations during an emergency.

1. CONSENT AGENDA:

1. Town Board Study Session Minutes dated November 13, 2012, Town Board Minutes dated November 13, 2012.

2. Bills.

3. Committee Minutes:

   a. Community Development/Community Services, November 15, 2012.

4. Estes Valley Planning Commission Minutes dated October 16, 2012 (acknowledgement only).

5. Resolution #13-12 – Schedule public hearing date of December 11, 2012, for a new Hotel and Restaurant Liquor License Application filed by Cables Estes, LLC dba Cables Pub & Grill, 451 S. St. Vrain Avenue.

It was **moved and seconded** (Blackhurst/Koenig) **to approve the Consent Agenda Items** and it passed unanimously.

2. **PLANNING COMMISSION ITEMS.** Items reviewed by Planning Commission or staff for Town Board Final Action.

1. **CONSENT ITEMS:**

A. AMENDED PLAT, Lots 1A and 1C of the Replat of a Portion of Lot 4 and All of Lot 1, Stanley Meadows Addition, Estes Park Sanitation, Applicant. **Item continued to the January 22, 2013 meeting.**

B. AMENDED PLAT, Tract B, Booth Resubdivision of Lots 2, 3, 4, 5, 7, and a portion of Lots 1, 6, 8, & 9, Elkhorn Estates, Van Horn Engineering/Applicant.

C. LOCATION AND EXTENT REVIEW, Stanley Park Multi-Use Stall Barns & Multi-Purpose Event Center (MPEC), Lot 1, Little Prospect Addition (portion of Stanley Park, Norris Design/Applicant.

D. SUPPLEMENTAL CONDOMINIUM MAP #1, Stone Bridge Estates Condominiums, Phase II, Unit 1147; 1147 Fish Creek Road; Van Horn Engineering/Applicant.

E. SPECIAL REVIEW 2012-05, A.R.T. Used Vehicle Sales; Lots 16 & 17, Quasebarth Resubdivision; Blake Hornsby/Applicant.

It was **moved and seconded** (Blackhurst/Ericson) **to approve the Consent Agenda subject to the findings and conditions recommended by the Estes Valley Planning Commission**, and it passed unanimously.

3. **ACTION ITEMS:**

1. **MUSEUM SENIOR CENTER MASTER PLAN CONTRACT.**
   In April staff receive direction to develop a Request for Proposal (RFP) for the Museum and Senior Center Master Plan. An RFP was released and three proposals were received:
   - Anderson Hallas Architects, Golden, CO $80,383
   - OZ Architecture, Boulder, CO $83,120 plus survey costs
   - T.W. Beck Architects, Estes Park, CO $14,570 plus consultants at cost plus 15%

   The scope of work includes a program development phase and a site master plan phase. The program phase would study the programming and demographic needs as it relates to the Museum and the Senior Center for the next 20 years. The site master plan would determine if the current footprints would accommodate the anticipated growth in usage and visitation of the Senior Center and Museum. The plan would result in a final recommendation for site locations and building uses of the next 20 years. Based on evaluation of the proposals, reference checks, level of prior experience with museums and senior centers, public sector experience and degree of on-site involvement, a stakeholders committee unanimously agreed Anderson Hallas Architects, PC would provide the best product.

   Trustee Ericson questioned the need for a 10% contingency with a consulting contract. Assistant Town Administrator Richardson stated the contingency would cover additional action items, desirable products or processes not covered by the RFP while producing alternative sites.

   It was **moved and seconded** (Norris/Koenig) **to approve the consulting services contract with Hallas Architects for the Museum and Senior Center Site Master Plan for a not to exceed amount of $89,000**, and it passed unanimously.

2. **EMPLOYEE PERFORMANCE REVIEW TIMEFRAME.**
   The current Town policy requires all employees to be evaluated at the first of the year and merit increases to be applied at that time; however, the policy has not been practices for several years. In 2006 an administrative directive required the evaluation of staff on their anniversary date and to award merit increases at that time. The Town's Leadership team considers the evaluation of employees on their anniversary date a more equitable model and a more practical method. The anniversary method is a common practice with local governments, including the County, Loveland and Fort Collins. Staff would recommend the proposed changes to the Town's Personal Policy Manual sections F, G, H, H.1 to allow performance reviews to be completed on the employee's anniversary date. It was **moved and seconded** (Norris/Phipps) **to approve modification to the Town's Personnel Policy Manual sections F, G, H and H.1,** and it passed unanimously.

3. **PUBLIC HEARING – 2013 BUDGET.**

Mayor Pinkham opened the public hearing and Finance Officer McFarland reviewed the budget adoption process and recapped changes to the budget that were requested by the Board at the November 13, 2012, Town Board meeting which are as follows:

a. The $81,000 Museum and Senior Center Master Plan was moved to the 2012 budget in the Community Reinvestment Fund.
b. The Stanley Park Sewer and Civil site work was increased to $350,000 in the Community Reinvestment fund and affects the fund balance for 2013.

Finance Officer McFarland discussed the Highway User's Trust Fund. He said the Fund consists of shared revenue, primarily derived from fuel tax and vehicle registrations, and estimated that in 2013 the Town will receive approximately $252,886. Funds will be utilized as part of the STIP overlay on projects such as street improvements, snow removal and plow blade work, vehicle and equipment usage, and traffic control items.

Kay Norton Haughey/Town citizen requested the budget contain funds to address the Reclamation Subdivision issue raised at the last meeting and funds appropriated to move the water filling station on Fourth Street to eliminate traffic and increase safety. Steve Nagl/Town citizen would also support the relocation of the water station to the other side of the fairgrounds. Lew Larek/Town citizen also requested the Board consider fixing the issues addressed by Mrs. Norton Haughey in the Reclamation District.

Finance Officer McFarland continued by presenting Resolution #14-12 to set the mill levy which is required in order to allow the Town to levy and collect property taxes. For 2013 the mill levy will be set at 1.822 mills, which will yield approximately $339,960 in property taxes. He said approval of Resolution #15-12 will adopt the 2013 budget, and Resolution #16-12 appropriates sums of money to execute the budget and states that revenues within each fund are sufficient to support expenditures.

Trustee Ericson requested the Community Reinvestment Fund be removed from the approval of the budget to allow further discussion of the items. Finance Officer McFarland stated the budget can be adopted as presented with re-appropriations approved by the Board during 2013.

Trustee Norris requested funds be appropriated for the Dry Gulch Road rebuild in 2014. Mayor Pro Tem Blackhurst stated it would be premature to add this commitment until the Board reviews all funding requests and capital projects. Trustee Norris stated an expectation the Board would discuss in full the capital needs of the Town early in 2013 in order to set priorities.

It was **moved and seconded** (Ericson/Phipps) **to approve Resolution #14-12 to set the mill levy, Resolution #15-12 to adopt the 2012 budget, and**

Resolution #16-12 to appropriate sums of money, and it passed unanimously.

4. **ORDINANCE #08-12 OPTION FOR EPIC TO PURCHASE TOWN-OWNED REAL ESTATE FOR PERFORMING ARTS CENTER.** Town Attorney White stated the Estes Performance Incorporated (EPIC) has secured the Park Theater Mall property to build and operate a performing arts center and related facilities. In order to design and construct the project, EPIC has requested the Town sell a portion of the Town's Riverside parking lot contiguous to the Park Theater Mall property. The Exclusive Option to Purchase Real Estate would grant EPIC the option to purchase the property on or before January 31, 2014. If the Option is exercised, the Town and EPIC would execute the Real Estate Sales Contract with a purchase price of $1 with EPIC responsible for all closing costs. The Town would receive a public access easement across the Park Theater Mall property; EPIC would design construct and maintain the Riverwalk across the Park Theater Mall property; and EPIC shall deliver a public access easement from the western side of the Mall property to Moraine Avenue. EPIC must complete a number of contingencies in order to close the Real Estate Sales Contract including: receiving all necessary approvals related to land use; delivery of the public access easement to the Town for the Riverwalk; delivery of the public access easement from the western side of the Park Theater Mall property to Moraine Avenue; negotiation of a Development Agreement between EPIC and the Town addressing construction of the project; receive approval of an Amended Plat for the Riverside Subdivision; prior to closing, EPIC shall acquire title to the Park Theater Mall property; and the Town and EPIC negotiate an agreement for the reversion of the Town's property in the event construction of the Project is not commenced within three years of the date of closing. The Ordinance would approve the Exclusive Option to Purchase Real Estate.

   Administrator Lancaster stated the item was brought forward at the request of EPIC. It is staff's role to make sure items brought forward to the Board contain complete and accurate information and that staff is not a barrier in the public accessing the Board. The staff simply developed the information for the Board's consideration at the request of EPIC.

   Trustee comments: The Board has not discussed the proposed theater since EPIC submitted application for the height variance due to the quasi-judicial decision the Board may have to consider in the future, and therefore, does not have information on the project. The Board requested Town staff provide additional information on the proposed theater to allow the Board to make an informed decision. Trustee Elrod stated concern the Town does not have a policy on the purchase or sale of Town owned property; concerned with the value of the property to be sold and the value of the access easement; and the need for additional information before a decision on the sale of land to EPIC.

Curt Gleaves/EPIC Board President stated EPIC requires the Town's approval to sell the parking lot in order to move forward with the design review process and development plan process, which is estimated at a cost of $1 million and establishes a footprint for the building. He stated alternative layouts have been reviewed; however, they would not provide a building large enough to meet the required pro forma. The building requires the proposed width to accommodate the orchestra pit and loading dock area. He stated a formal appraisal may not be possible due to a lack of comparables for either the parking lot or the public access easement. The cost of the public improvements for the Riverwalk and the public restrooms are estimated at a cost of $500,000 to $750,000 with EPIC continuing to bear the cost of ongoing maintenance of the facilities.

Those opposing the Option included Tony Paglia/business owner, Hank Glover/business owner, Heather Stone/Town citizen, Steve Nagl/Town citizen and business owner, Paula Steige/business owner, Ty Nagl/Town citizen and business owner, Dave Callahan/Town citizen and business owner, Elaine Downing/Town citizen, and Marsha Hobert/Town citizen and business owner. Comments against the Ordinance have been summarized: The Town has a survey outlining the need for additional parking spaces; parking spaces are worth a lot to downtown businesses; the proposed theater would occupy all but 41 spaces if the theater was sold out, therefore, leaving very few spaces for customer parking for all other downtown businesses; the proposed theater complex would be too large, too tall and look out of place downtown; EPIC has not made contact with the local businesses and citizens about the development; Orlandos Steak House above the Wheel would lose the current views and look at the back of the theater building; as a shuttle bus driver downtown during the summer it is obvious there would not be adequate parking for theater goers during the peak season; the creation of the post office parking lot and dark horse parking lot increased sales tax collection downtown; with 200 parking spaces occupied for 3 hours during a performance there will be little turnover of parking space for patron of other businesses; the impact to the area of the proposed development is unknown; the 20 parking spots lost to the development would cost the local businesses $500,000 during the 120 days of the peak season; other businesses such as the Wheel Bar have provided easements to the Riverwalk at no cost and provided public bathrooms; the minimum 18 months to construct the proposed theater would affect the downtown businesses negatively; performing arts should be a park of Estes Park but not at the expense of the other businesses; the theater at roughly 700 seats is too large for Estes Park and would negatively affect downtown businesses; the loss of parking spaces with the construction of the Riverwalk along Wiest caused the businesses to loss income; customers do not want to walk or park offsite to patronized downtown businesses; the downtown does not have the infrastructure to accommodate a large theater; additional study sessions should be held to discuss the issue further before decisions on the project are considered; concerned the size of the theater may not contain a

stage large enough for the types of performances to be held; and stated concern the commercial ventures may not be able to support the theater.

Those speaking in favor of the proposed theater development included Charley Dickey/Town citizen and business owner, Dave Bowers/Town citizen, Stan Black/EPIC member, Greg Rosener/Town citizen, and Ellie Williams/County citizen. Comments have been summarized: the project would enhance the downtown; parking for the project would only be an issue for 90 to 120 days; the Transportation Visioning Committee identified the need for business owners and employees to park offsite to help alleviate parking congestion; parking permits for residential use in the downtown corridor also affects the number of available parking spaces; there are a number of no cost parking solutions that would improve parking downtown; the benefit to the town is three fold including the local businesses, local performers and a broader audience drawn to Estes Park; the proposed development would create the largest economic development the town has seen and be the launching pad for addressing the parking issue; and supports the theater, however, questions if the size is appropriate.

Stan Black/EPIC member stated the proposed theater complex would make a performing arts theater possible in Estes Park with the commercial venture within the building offsetting the cost of the theater operations; replace the largest anchor building in town at 48 feet high; the building would only be fully occupied 6 times a year for 3 hours based on the business plan; he stated EPIC spoke with over 500 people prior to the variance request and was in the paper 8 times including the Denver Post; the request only allows the project to move forward and does not approve the project; other building alternatives were reviewed and determined too expensive or fraught with pitfalls; EPIC approached the Town to determine the possibility of acquiring the land for the theater that would include a Riverwalk crossing and public restrooms built and maintained by EPIC with access 24/7; and this could be the last chance the town has to acquiring a performing arts theater at no cost to the Town.

Lew Larek/Town citizen stated a performing art theater could be built at the old elementary location.

Kay Norton Haughey/Town citizen stated the MPEC and Performing Arts Theater could be placed on the same corner at the fairgrounds if the stall barns were relocated.

It was **moved and seconded** (Norris/Phipps) **to extend the meeting to 11:00 p.m.**, and it passed unanimously. The Mayor called for a 10 minute break at 9:50 p.m. and resumed the meeting at 10:00 p.m.

Further Board discussion was heard: Mayor Pro Tem Blackhurst estimates the value of the parking lot spaces at a value of $450,000 to $925,000. He stated

the Town does not need the easement through the Park Theater Mall. He also suggested the Town could entertain discussion of a theater on Lot 4 with its own parking lot. Trustee Norris stated concern with the lack of facts, the traffic and the need to consider other locations to make the theater a success. Trustee Ericson commented the proposed theater complex could be a true economic driver for Estes Park for the next 20 to 30 years, and would be in favor of proceeding with the project. Trustee Koenig stated concern with the parking issue and the lack of information on the project. A vote in favor of moving forward would lead to $1 million spent by EPIC and set the Board up for further favorable votes on the project. Trustee Elrod stated he could not come to a conclusion on the adequacy of the contract with the information provided.

After further discussion, it was **moved and seconded** (Phipps/Norris) **to table the item to the January 22, 2013 meeting to provide additional public input and to provide further information**, and it passed with Trustees Elrod and Ericson voting "No". Staff would present a review of the project to the Board at an upcoming meeting in order to help the Board understand the scope of the project before the January meeting. Trustee Elrod requested staff quantify the value of the parking lot and easement.

5. **REAPPOINTMENT OF SCOTT WEBERMEIER TO LOCAL MARKETING DISTRICT BOARD.** The appointments of Scott Webermeier, Town appointment and Lee Lasson, County appointment, on the LMD Board expire on December 31, 2012. The positions were advertised jointly through the Town's Administrative Services department and interviews were held on October 17, 2012. An interview panel including Town, County and LMD representatives interviewed seven qualified candidates. The interview team recommends the reappointment of Scott Webermeier for an additional 4-year term. It was **moved and seconded** (Norris/Phipps) **to reappoint Scott Webermeier to the Local Marketing District Board for a 4-year term effective January 1, 2013 through December 31, 2016**, and it passed with Trustee Ericson voting "No" and Trustee Koenig abstaining.

6. **LOCAL MARKETING DISTRICT INTERGOVERNMENTAL AGREEMENT.** Assistant Town Administrator Richardson presented the proposed IGA for 2013 between the Town of Estes Park and the Local Marketing District (LMD). The 2013 IGA contains the following components: LMD shall pay for all costs associated with Town of Estes Park benefits offered to LMD employees; coordination of regularly scheduled meeting between both entities; the Town's Visitor Center would deliver guest services and provide recommendations regarding operations and service delivery; sale of items at the Town's Visitor Center and advertising sales by the Town; allow the LMD to use photos owned by the Town and collected for marketing and promotion purposes; and an audit of the LMD if required shall be paid for by the LMD. The IGA has been reviewed and approved by the LMD Board. It was **moved and seconded**

(Koenig/Elrod) **to approve the 2013 Intergovernmental Agreement with the Estes Park Local Marketing District**, and it passed unanimously.

7. **WATER CONSERVATION PLAN.**
Director Bergsten stated the water conservation plan was reviewed by the Public Safety, Utilities and Public Works Committee and presented to and adopted by the Town Board in April 2012. The Colorado Water Conservation Board requested the document be open for public review and comment for 60 days prior to final Board approval. The posted 60 day period ended November 19th and no public comment was received.

Kay Norton Haughey/Town citizen questioned if the plan contains provisions for the recapture of grey water for other uses such as landscaping. Attorney White commented the Town does not have a rainwater catchment right and the water augmentation would have to be reviewed because at this time the Town has the right to use water once and then release it.

After further discussion, it was **moved and seconded** (Koenig/Norris) **to approve the Water Conversation Plan**, and it passed unanimously.

8. **TEMPORARY POLICY TO EXTEND TIMEFRAMES FOR BUILDING PERMITS AND APPLICATIONS.** Director Chilcott stated in 2010 and 2011 the Board approved a temporary policy extending application and building permit dates due to the economic downturn. Without the extension, building permits are valid for 18 month from the date of issuance. The current extension expires on December 31, 2012. Staff has identified 500 open permits and has begun to contact homeowners and contractors to close permits. During the past 30 days 150 permits have been closed. Staff recommends extending the permits through March 31, 2013 with staff continuing to proactively reach out to property owners and contractors to close permits. In cases where permits were applied for, but not paid for, applicants have incurred and are responsible for fees. Staff recommends waiving the plan review fees, if the applicant chooses not to proceed with the permitted work. If approved by the Board, staff would provide monthly updates on the status of open permits at the Community Development/Community Services Committee meeting. It was **moved and seconded** (Koenig/Ericson) **to approve the extension of open building permits from December 31, 2012 to March 31, 2013,** and it passed unanimously.

Mayor Pinkham whereupon he adjourned the meeting at 10:55 p.m.

William C. Pinkham, Mayor

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Jackie Williamson, Town Clerk