

SPANAWAY WATER COMPANY
2014 - 2019
WATER USE EFFICIENCY PROGRAM
&
WATER LOSS CONTROL ACTION PLAN
Adopted November 11, 2013

Spanaway Water Company Water Supply Characteristics

The Company's eleven wells tap groundwater in the A3, C, and E aquifers within the Chambers/Clover Creek Watershed, Water Resource Inventory Area 12. The watershed is designated as the sole source aquifer for the central portion of the County's urban growth area including all of the Company's service area. In 1979, under WAC 173-512, the Chambers/Clover Creek Watershed was closed to additional surface water diversions and any additional groundwater withdrawals must consider the natural interrelationship of surface and groundwater in any future water allocation decisions.

This closure of the basin to additional surface water diversions and the limited availability of additional groundwater is a driving factor in the Company's water use efficiency efforts. The Company holds annual water rights for 4,067.5 acre feet of water (1,325,308,644 gallons). The maximum water use occurred in 2009 when 1,108,680,076 gallons were pumped.

The reductions in un-accounted for water and reduced per capita consumption since 1994 have permitted the Company to provide service to 100% growth largely without increasing withdrawals from the watershed. Fortunately, because the water system exclusively uses groundwater we are less vulnerable to seasonal and yearly variations in precipitation and snow pack. However, potential long term changes in weather patterns could affect aquifer levels and wise stewardship of the resources is important to existing and future customers.

Historical Background

System Metering:

Spanaway Water Company initially provided service to customers at a fixed bi-monthly rate. Beginning in the late 1960's the Company began installing service meters for new construction and retrofitting existing service connections. Services were generally metered by the mid 1970's with the exceptions being the fire stations. The final service connection was completed in December 2005 with the addition of an 8" fire service meter to the Central Pierce Fire and Rescue training facility at 22nd Ave. E. and 176th St. E. The Company's on-going meter replacement program will be detailed below.

System Billing:

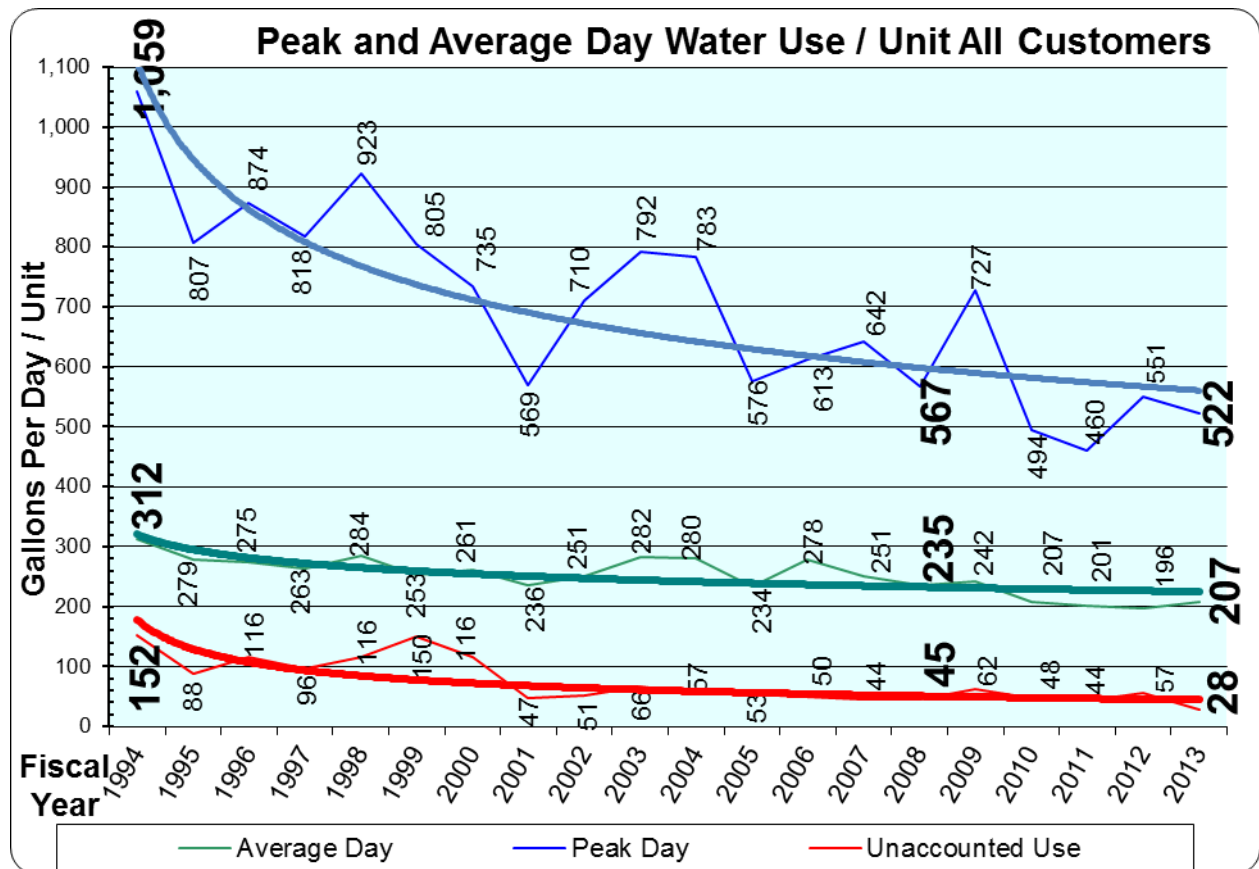
With the installation of meters in the late 1960's billing began to be based on a base rate that included 600 CF plus consumption. Additional consumption was billed at a flat fixed rate per 100 CF beyond the initial 600 CF included in the base. Billing was hand calculated and processed until November 1992 when the Company implemented its first computerized billing system. Rates in 1992 were still comprised of a base with 600 CF and excess consumption billed at a fixed rate. Prior to implementation of computerized billing, calculation of consumption rates, individually or system wide were at best very difficult and time consuming. In July 1994

the Company began billing water use on an increasing block rate structure which, with periodic increases, continues today.

Historical Impact of Conservation and Leak Detection Programs

Leak detection and the increasing block rates have historically proven to be the most effective means to reduce water demand. The Company will continue its leak detection program and monitor its influence on total water demand.

The impacts of many conservation measures are generally difficult to quantify due to conditions that effect water use, the greatest being variability in annual weather patterns. However, trends are identifiable with distinct reductions notable for some conservation measures. Please refer to the following charts for reference.



In 1994/5 two major conservation efforts combined for a substantial reduction in all types of water use. These conservation efforts included: 1) the Company’s first leak detection survey; and 2) the implementation of increasing block rates. The impact of the leak detection study resulted in a reduction of 64 GPD/unit (42%) in un-accounted for water use. The impact of the rate increase and the public education related to the individual customer’s water bill is seen in the metered ADD reduction of 33 GPD/unit (10.6%). The net effect of both these efforts was a 252 GPD/unit (23.8%) reduction in peak day use.

The response seen in the 1999/2000 - 2001 period was similar to that seen in 1994/5. In these years the major factors in the reductions were: 1) the Company’s leak detection survey, and 2) the 2001 governor’s drought declaration and multiple public education efforts. Again the leak detection efforts over the two year period resulted in a reduction of 103 GPD/unit (68.7%) in un-

accounted for water use. The Governor’s drought declaration and public education resulted in a 17 GPD/unit (6.7%) reduction in metered water use. Like 1995, the combine effect of these efforts reduced peak day demand by 206 GPD/unit (26.8%).

The 2004/6 leak detection effort continued to reduce un-accounted for water use by 7 GPD/unit (12.3%). This lower level of reduction reflects the continued tightening of the water system. As in 2001, the Governor declared a drought in 2005. Unlike 2001, the weather proved to be relatively moist through the 2005 summer, this combined with the drought declaration led to a reduction in metered ADD of 46 GPD/unit (16.4%) with a peak day reduction of 207 GPD/unit (26.1%).

Additional leak detection surveys were completed in 2009/10 and 2012 when unaccounted for water use began to rise. These efforts have resulted in a decrease of un-accounted water of 34 GPD/unit (54.8%) to the lowest level ever seen in the Company at 28 GPD/unit or 11% of total production for fiscal year 2013.

Consumption trends have continued to decline since 1994. Variations are seen year to year dependent on weather conditions including temperature and rainfall. During this nineteen year period, peak day demand has been reduced 537 GPD/unit (50.7%) 10,59 to 522 GPD/unit, ADD metered demand reduced 105 GPD/unit (33.7%) 312 to 207 GPD/unit, and un-accounted for water by 124 GPD/unit (81.6%) 152 to 28 GPD/unit.

2008 - 2013 Water Use Efficiency and Water Loss Control Plan Impacts on Water Use:

The goal of the 2008-2013 plan was to reduce the rolling six year average day pumping demand per unit (ADPD/Unit) served by ½ percent per year for a total reduction of at least three percent over the six year planning period. This goal and the Water Use Efficiency Program was discussed and adopted at the Company’s annual meeting held November 12, 2007.

At the end of Spanaway Water’s fiscal year 2007 the rolling six year average was 330.2 ADPD/unit with the goal for the end of FY 2013 being 320.4 ADPD/Unit. Over the 2008-2013 planning period actual six year rolling average water use was reduced to 275.4 ADPD/Unit, a reduction of over 16.6 percent and well below the 320 GPD/unit WUE goal established for 2013 in the adopted 2007 WUE plan. Over 611 million gallons of water were saved during the planning period as a result of the 2008-13 conservation and leak detections efforts of the Company’s customers and the Company itself.

Washington Department of Health 2008 - 2013 Water Use Efficiency Report Data

The following information on the Company’s Water Use Efficiency program was provided to the department on an annual basis:

Year:	Total Production	Authorized Use	System Leakage:	Goal ADPD:	Actual ADPD
FY 2007	999,012,060	853,050,769	145,961,291	N/A	330.2
FY 2008	981,035,336	826,470,458	154,564,878	328.6	324.8
FY 2009	1,105,923,916	887,594,857	218,329,059	326.9	317.0
FY 2010	949,043,416	778,372,891	170,670,525	325.3	301.2
FY 2011	950,373,872	791,412,250	158,961,622	323.7	294.7
FY 2012	1,002,161,516	791,568,756	210,592,760	322.0	283.7
FY 2013	972,059,824	865,117,303	106,942,521	320.4	275.4

2014 - 2019 Water Use Efficiency Program & Goal

2014 - 2019 Conservation Measure Implementation and Impact on Water Use:

The intent of this plan for the 2014 to 2019 period is to continue the significant reduction in the ADPD/Unit seen in the last planning period. The historic conservation measures and the additional plan elements that follow will be presented in chronological order. In those areas where water use efficiency impacts of conservation measures are clearly quantifiable they will be identified and historic use patterns presented in graphic form.

Adopted Goal and Public Meeting Process:

The following conservation goal for the 2014 to 2019 planning period was adopted by the Spanaway Water Company Board of Directors at the November 21, 2013 meeting. The information contained herein was presented for discussion and comment at the Company's annual meeting held November 11, 2013. Notice of this meeting was given customers and non-occupant property owners in a newsletter mailed on October 23, 2013. The meeting was also posted on October 16, 2013 to the Department of Health website for advertisement to the general public including time, place, and purpose of the meeting. The meeting included a presentation of the information presented herein including past conservation and leak detection efforts, the results of the 2008-2013 goal planning period, and a discussion of the proposed 2014 - 2019 goal. No comments were received from either the members or public attending the meeting.

The overall goal of the Company's conservation program is to continue the reductions in water use on a per unit basis in the following areas: metered water, un-metered water, and total pumped water. The specific goal of the company for this planning period is to maintain an ongoing minimum reduction in the rolling six-year pumped average day demand per unit of at least 0.5% per unit per year. This should reflect general reductions of usage at a rate of 0.25% per year in both the metered ADD/Unit and un-metered water ADD/Unit per year over the next six years. The usage of the rolling six-year pumped average day demand is to dampen the impacts of any given year being particularly warm and dry or cool and wet. Due to the inordinate levels of conservation in years when the governor declares a drought, those years are excluded from the calculation of the rolling six-year pumped average day demand. The trend line as used in this conservation planning period is presented graphically on the following page with maximum target values on the following spreadsheet.

No specific goals are set related to reducing peak day demand (PDD). This decision was made due to the on-going historic reductions PDD and the volatility of peak day demand as a result of rainfall and temperature conditions. However, efforts directed at larger summer water users, specifically irrigation systems, are an element in this planning period and should assist in the Company's efforts to reduce both peak day and average day demand.

Specific 2014 – 2019 Goal Values:

The chart on the next page presents the historic changes in the rolling six-year average day demand per unit for the periods beginning in 1994 through 2013. Goals are then calculated and presented through 2019, the six year planning period. The goal for the end of the 2008 - 2013 period was 220 ADPD/unit served. Due to the actual reductions in use through the 2008 – 2013 period the starting point for the 2014-2019 period was further reduced by ten percent, from 320 to 288 ADPD/unit. Based on this lower 2014 starting point the ADPD/unit goal at the end of the 2014-2019 period is 279.5 ADPD/unit. This represents the 0.5% reduction per year for the planning period. It is estimated that, as a minimum, 129 million gallons will be saved as a result of the 2014-2019 planning period goals.

SWC - 2008-13 CONSERVATION Update & 2014-19 GOAL @ 288 GPD START (2013 end minus 10%)

Pumped Average Day Demand:

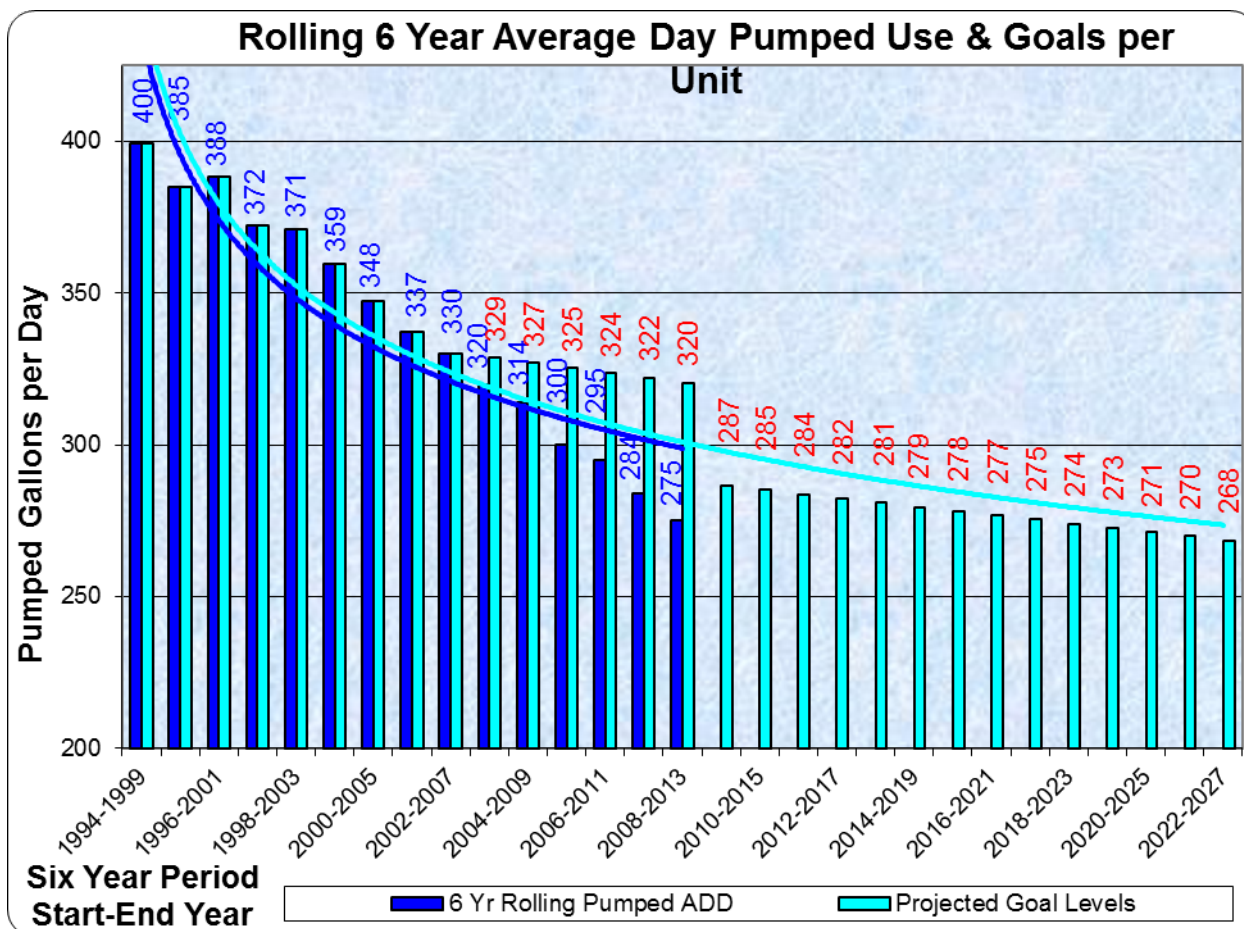
YEAR	Historic Pumped ADD/unit	*Actual Rolling average of prior 6 years	** Rolling 6 year average goal	% of prior 6 year average	% Change from prior 6 year average	Rolling Average % change through Goal Period	Use w/o WUE measures
1994	464.00	464.00	464.00				464.00
1995	368.00	416.00	416.00				416.00
1996	392.00	408.00	408.00				408.00
1997	359.00	395.75	395.75				395.75
1998	407.00	398.00	398.00				398.00
1999	407.00	399.50	399.50	100.38%	0.38%		400.00
2000	377.00	385.00	385.00	96.37%	-3.63%		385.00
2001	284.00	388.40	388.40	100.88%	0.88%		388.00
2002	312.00	372.40	372.40	95.88%	-4.12%		372.00
2003	352.00	371.00	371.00	99.62%	-0.38%		371.00
2004	349.00	359.40	359.40	96.87%	-3.13%		359.00
2005	295.00	347.50	347.50	96.69%	-3.31%		348.00
2006	335.00	337.00	337.00	96.98%	-3.02%		337.00
2007	303.00	330.20	330.20	97.98%	-2.02%		330.00
2008	285.00	324.80	328.55	98.36%	-1.64%		330.00
2009	316.00	317.60	326.91	97.78%	-2.22%		330.00
2010	267.00	301.20	325.27	94.84%	-5.16%		330.00
2011	262.00	294.67	323.65	97.83%	-2.17%		330.00
2012	269.00	283.67	322.03	96.27%	-3.73%		330.00
2013	253.37	275.40	320.42	97.08%	-2.92%	16.60%	330.00
2014	274.02	274.02	286.56	99.50%	-0.50%		330.00
2015	272.65	272.65	285.13	99.50%	-0.50%		330.00
2016	271.28	271.28	283.70	99.50%	-0.50%		330.00
2017	269.93	269.93	282.28	99.50%	-0.50%		330.00
2018	268.58	268.58	280.87	99.50%	-0.50%		330.00
2019	267.24	267.24	279.47	99.50%	-0.50%	2.96%	330.00
2020	265.90	265.90	278.07	99.50%	-0.50%		330.00
2021	264.57	264.57	276.68	99.50%	-0.50%		330.00
2022	263.25	263.25	275.30	99.50%	-0.50%		330.00
2023	261.93	261.93	273.92	99.50%	-0.50%		330.00
2024	260.62	260.62	272.55	99.50%	-0.50%		330.00
2025	259.32	259.32	271.19	99.50%	-0.50%		330.00
2026	258.02	258.02	269.83	99.50%	-0.50%		330.00
2027	256.73	256.73	268.48	99.50%	-0.50%		330.00

* Rolling six year pumped average day demand excludes years with governor declare droughts.

** Goal established/adopted for the six year planning period 2008-2013, at the 11/12/07 annual meeting

Indicates six year water use efficiency goal planning periods

Graphic Presentation of Rolling Six Year Average Day Pumped Demand and Goals:



Customer Conservation Education:

Company customers will continue to be informed of both the conservation goals and water use efficiency measures through “Newsletters”, “News Notes”, billing statement notices, and the Company’s website.

Historic and Current Conservation Program Elements

Element 1. Public Education: (indoor and outdoor water use – residential and commercial)

Customer Newsletters, News Notes, Customer Information Sheets, and Web Site Information

The Company produced its first customer newsletter in the spring of 1992. A portion of this newsletter was devoted to water conservation in the form of “One inch per week” lawn watering information. Since 1992, the Company has produced at least two newsletters per year, generally in the spring/early summer and the mid fall. These News Letters are mailed to customers independently from routine water bills. Nearly every letter has at least some water savings information including:

- “One inch per week” lawn watering information;
- Indoor water saving tips;
- Outdoor water saving tips;
- Winterization tips to save water and plumbing;
- Minimizing peak day water use;

- Checking for toilet tank leaks;
- Water rates, the effects of increasing block rates, and their impact on your water bill;
- Lawn maintenance, fertilization, and irrigation as recommended by WSU for western Washington;
- Efficient timing for lawn watering;
- Information on “Water Wise Landscaping” seminars;
- Information on “Water Smart Open House” seminars;
- How to use your water meter to check for leaks;
- Peak use impact on need for additional sources and water rates;
- Water conservation to aid in salmon recovery efforts;
- Home water conservation check lists;
- DOH conservation regulation development due to Municipal Water Law;
- DOH “Water Use Efficiency Rule” requirements.

News Notes are bill stuffers that provide customers with information related to water rates, water conservation measures for property owners/renters, emergency preparedness, summer water use and its cost impacts to the customer, and lawn care and wise water use.

Customer Information Sheets are tri-fold discussion sheets related to water rates, yard care (6 subjects), “call before you dig”, cross connection control, irrigation systems, Water leaks and tips, thermal expansion tanks, payment policies, wellhead protection and Program, and emergency preparedness.

Spanaway Water Company’s web site provides links to all of the above information, consumer confidence reports, and multiple conservation links.

The reduction in water use resulting specifically from public education of customers is difficult to determine. However, raising public awareness is of benefit and efforts have been made to inform customers of the impacts of their water use. These impacts include system demand, the need for additional source and storage capacity, potential effects on salmon and the natural environment, regulatory issues, water rates, water rights, and their individual water bills.

Governor/State/Large Utility Initiated Water Messages:

Though not part of the Company’s conservation efforts, actions taken by the Governor and/or state agencies and/or large regional utilities (Seattle, Tacoma, and Everett) do have an impact on water use. In both 2001 and 2005 the governor declared droughts for the state. In 2001 the larger utilities generated public awareness notices of possible water shortages. For 2001 our public education efforts also placed extra emphasis on the need to conserve both due to weather conditions and the growing implications of the listing of salmon under the Endangered Species Act. In both of those years we saw a marked reduction in water use compared to 2000 and 2004 respectively in actual metered average day demand (2001 – 9.6%, 2005 – 16.5%), production peak day demand (2001 – 22.6%, 2005 – 26.4%), and total annual production (2001 – 22.2%, 2005 - 12.2%). The reduction in actual metered average day demand was likely due to these messages by the Governor, larger utilities, and the Company. Though no droughts were officially declared and large surface water utilities had adequate snow packs and surface water supplies during the 2007-13 planning period, we are aware of the potential impacts of drought declarations. Encouragingly, this impact provides both an indication of potential additional water conservation and the ability of the public to reduce water use should water supply be restricted by source limitations as a result of natural or man-made events

Element 2. Billing Information (indoor and outdoor water use – residential and commercial)

When the Company began computerized billing in November 1992, the bills mailed to customers included a bar chart that indicated the water use for the current and prior five billing periods (one year). This chart showed individual customers how their use varied through the year. Because these charts had a fixed usage scale, those customers with consistent usage, very little, or high usage could not clearly see variations in usage. This is no longer an issue.

Currently, bills have individualized consumption charts. Two major changes were made; the first is the utilization of usage for the past two years. The current year's bi-monthly usage is shown as a solid bar located adjacent to the same period from the prior year shown in box form. Second, the usage scale now has a scale of "0" to the highest usage in the past two years rounded up to the nearest 100 cubic feet. This provides users a scale that reflects even minor changes should their use be relatively consistent. These consumption charts are also presented to customers who view a copy of their bill online.

Computerized bills also provide an efficient means to recognize unusual usage which helps to identify possible customer leaks or "stuck" meters. Variance reports run by the staff now allow the bill to include a note "Usage appears high-check for leaks". Alternatively if usage is unusually low, staff can be sent to check the proper operation of the meter.

Computerized billing information provides a means to effectively monitor and report metered water usage at a number of different levels such as system total, cycle total, customer class, meter size, etc. This ability allows analysis of water use that was not possible prior to the computerized billing system.

Like public education the impacts of presenting water use information on water bills is difficult to determine. In those situations where unusual usage is noted the use of billing information is helpful in quickly identifying and providing notice to customers of the leak in their portion of the system. Ultimately this reduces overall water use.

Element 3. Leak Repair Incentive: (indoor & outdoor water use – residential and commercial)

Historically the Company did not provide incentives for customer repair of leaks other than lower billings due to the return to normal water usage. Often the cost of leak repair exceeded the increase in water bills. This was partially addressed in 1994 when the Company adopted the increasing block rate structure. To further encourage a customer to repair identified leaks the Company adopted a leak repair policy.

Beginning in May 1997 when a customer leak was identified and repaired by the customer in a timely manner, the customer could receive a leak adjustment equal to one half of the increase in water use that was measured as a result of the leak. Thus the Company was willing to absorb one half of the excess water use in exchange for the prompt leak repair of the customer's water system. This policy has resulted in the active repair of leaks within the customers' plumbing systems. It is difficult to determine the total effect of this program due in part to the fact that most leaks will eventually be repaired when the water bills increase to the level where repair is mandatory from the customer's economic perspective. The Company believes that this policy does provide a positive incentive for leak repair especially when coupled with the incentive created by the increasing block rate structure.

Element 4. Increasing Block Water Rates: (indoor & outdoor use–residential & commercial)

Beginning on July 1, 1994 the Company began using an increasing block rate structure for all consumption (the first 600 CF was no longer included in the base). The Figure on the next page presents the evolution of this rate structure over the years including increases in individual block rates, additional blocks, and other fees.

When the increasing block rates were initially started the Company experienced some very strong objections and protests, including inquiries from federal congressional representatives. These protests were based both on the utilization of increasing block rates and the actual size of the resulting rate increase. An analysis of the rate structure in place at that time clearly identified that fees charged for new growth were subsidizing existing customer rates needed to address normal operation and maintenance requirements. Correction of this situation required the rate increase. Implementation of the increasing block rate was designed with two goals in mind; first to encourage conservation; and second, to minimize the impact on lower water users while insuring that larger water users contributed at a higher rate to maintain and operate the additional source and storage required to meet their higher water demands.

The impact of the increasing block rates appears to be a major contributor to overall reduction in metered water use. The most specifically identifiable drop in consumption occurred between 1994 and 1995, the first year the new increasing block rate structure was in place. For that year, metered average day demand per unit (ADD) water use dropped from 312 to 279 GPD – over a ten percent reduction. Since that time the decline in metered ADD has generally continued but at a much slower rate, and is influenced by both annual weather patterns and regional/statewide drought alerts.

Over time, as revenue requirements have increased the Company has maintained the conservation incentive increasing block rates. The tiered rates have been increased to reflect both conservation goals and revenue requirements. Care has been exercised to balance needed conservation incentives and revenue stability as increases have occurred in the base rate, water consumption rates, and capital projects fees. The need to address replacement of aging infrastructure is being addressed through the capital projects fee which will also assist in the water loss control plan.

Insert Spreadsheet with Rate History

Water meters began to be used by the Company in the late 1960's without consideration of the need for periodic replacement or testing of the meters. While the water provided by the Company has minimal "grit", water meters over time wear and generally accepted practices include replacement every ten to twenty years. Beginning in 1991 an active meter replacement program was implemented utilizing Precision Multi-Jet meters. In 2004 the Company moved to Master Meter radio read meters and all meters up to two inch were replaced with these radio read meters by early 2012. Currently all meters up through 2" are no more than ten years old (installed in 2004 on). The intent of this program is to ensure that the low flow registration of these water meters is not lost over time with wear in the meters, to provide radio readable leak alarms from meters registering continuous flow, and to greatly reduce labor time related to meter reading and re-reads.

The Company is now investigating the possibility of a fixed automated read system that would provide daily leak, backflow, and no flow reports. The system being considered would utilize "mag" meter technology with no moving parts and excellent low flow registration. This system would provide much more timely notice of potential metering issues to the customer and the Company. The ultimate goal is to provide for automated meter reading from fixed locations for multiple purposes including normal billing, peak hour consumption patterns and volumes, and routine monitoring for meter leaks. This technology is just becoming available in a financially feasible manner.

The Company is replacing 3" to 8" meters during school construction projects with ultrasonic meters to improve low flow registration over turbine meter installations. Over this plan's six year period the Company anticipates the replacement of all turbine meters, some of which have been in place more than thirty years. Similarly, as 2 inch meter services with routine low flows (i.e. apartment application) will be replaced with ultrasonic meters as the existing meters reach the end of their useful life.

Element 6. Conservation Organizations: (indoor and outdoor water use – residential and commercial)

The Company has been a participating member in the Water Conservation Coalition of Puget Sound – Partnership for Water Conservation through its membership in the Pierce County Regional Water Association and Central Puget Sound Water Supplier's Forum. The Coalition and its successor Partnership actively work to provide public education and conservation programs and services on a regional scale.

The Company is also a member of the Alliance for Water Efficiency a national organization which works to address fixture and appliance efficiency, plumbing code standards, coordinates efforts with the EPA, maintains a conservation oriented consumer web site, actively promotes WaterSmart, and the "Household Water Calculator".

The Pierce County Health Department has established an annual "Water Festival" for school age children with emphasis on water quality, aquatic habitat, and water conservation. The Company has and will continue to participate in this program by providing volunteer services of Company employees, displays, and equipment for demonstration purposes. This program has been very successful and is enjoyed by our employee participants.

The following Additional Efficiency Measures will be Implemented for the 2014-2019 Plan:

Element 7. Toilet Tank Leak Detectors (2013 plan, indoor water use – residential and commercial)

Beginning in 2012 the Company made available toilet tank leak detection tablets. These tablets were made available to all customers in response to some customers with larger than normal water bills that proved to be the result of either leaking toilet bowl seals or leaking flush valves. This type of leak can be difficult to identify at the meter if the toilet bowl seal is slowly leaking and the fill valve opens intermittently. For this reason this type of leak can often continue unnoticed by customers for an extended period of time and result in a significant waste of water.

The availability of these tablets was announced through a note on routine water bill statements and will be announced in the fall 2013 News Letter. The costs for the initial purchase of the tablets and ongoing replacement shall be from the Company's normal operational budget and water sales revenue. The water savings for each toilet leak identified and repaired can be as high as 720 GPD (0.5 GPM) or 43,200 gallons for a two month billing cycle. Water system wide the quantification of the overall water savings is difficult to measure, however, for individual customers the savings in both water and costs are potentially substantial.

Element 8. Targeted Turf and Landscape Irrigation System Owner Education (2013 Plan, outdoor water use – residential and commercial)

Develop targeted guidance for owners of turf and landscape irrigation systems including installation of rain sensors, cycle time lengths, cycle frequency, cycle time of day to maximize benefits, and system maintenance. Water used by dedicated irrigation meters on a daily basis during the irrigation season, June through September, is more than five times that of the average single family home with daily usage during the irrigation season of 916 to 1,768 GPD per irrigation meter for the period 2007 through 2013. Irrigation systems without dedicated irrigation meters are to be included in this owner education program.

The Company's cross connection control data base will be used to identify customers that will receive this education information. Similarly, when new irrigation systems are installed this information will be provided. The costs for the developing, printing, and supporting this as an on-going program will be from the Company's normal operational budget and water sales revenue. Customer comments about irrigation systems operating when it is raining indicate the need for such a program.

The water to be saved by this educational program is difficult to calculate and will be variable based on year to year weather patterns. However, this program directly targets unnecessary water use.

Element 9. Customer Account Audits (2013 Plan, outdoor and indoor water use for all classes of accounts)

In addition to meters with leak detection alerts we are auditing meter reads to note high reads indicating possible leaks in the customer's water system and low or no use reads indicating stuck, plugged or non-functional meters. Under this program all meter reads are reviewed to note reads above or below a SWC selected percentage of the previous billing cycle's usage. The program utilizes SWC selected percentages to allow adjustment for the normal increased use in the late spring and summer with the beginning of the irrigation season and the reduced usage with the return to normal fall weather patterns.

These audits have and will result in the active repair of leaks within the customers' plumbing systems in a more timely manner rather than waiting until bills are mailed to the customers. Similarly, these audits provide the Company with more rapid notification of inoperable or under registering water meters allowing their prompt repair or replacement. It is difficult to determine the total effect of these audits but does result in less water loss due to the

earlier repair of customer leaks and quicker response by the Company to address under or non-registering meters.

2014 - 2019 Water Use Efficiency Program Evaluation

Spanaway Water Company will annually calculate the water use by customer class and system wide to determine each class and overall average day metered demand, unmetered demand, un-accounted for water, and specifically for the Water Use Efficiency Program, average day pumped demand per unit (ADPD) served system wide. From the ADPD for each of the past six years the rolling average will be calculated. Information about the results of the Water Use Efficiency Program will be presented at least annually in the Company's Water Quality Report and at the annual meeting. Should the average six year rolling average goal established herein not be met, the Company shall considered addition conservation elements to improve the system's water use efficiency.

SPANAWAY WATER COMPANY

2014 – 2019

Adopted November 11, 2013

Water Loss Control Action Plan and Impact on Water Production

Leak Detection Program: While water system leak detection programs are not considered part of water demand management under the Department of Health Water Use Efficiency regulation, these programs can have major impact on the water required to maintain service through a water system. Details of Spanaway Water Company's leak detection and repair efforts are provided below.

The effect on water use through the combination of conservation and leak detection efforts is presented below.

1994/5 Leak Detection Survey:

The Company completed its first leak detection effort in late 1994. This survey was completed on the entire system with monitoring for leaks completed at all valves/valve clusters and fire hydrants. Identified leaks ranged in size from less than one GPM to over 100 GPM, none of which were apparent on the ground surface. Total cost for the survey and repairs was approximately \$50,000 resulting in a 20% reduction in system wide ADD (in conjunction with reduction due to the increasing block rates) of 529,000 GPD or 367 GPM. This is the equivalent to a small to medium sized well. The Board of Directors and Company staff were very pleased with this effort and found it to be very cost effective.

In the spring of 1995, the area was struck by a 5+ earthquake. Though no immediate impacts were seen at the time this certainly led to additional leaks that required an extended period to develop to noticeable levels.

1999/2000 Leak Detection Survey:

In response to increasing un-metered water demand, the Company completed a second more detailed leak survey in the winter/spring of 1999/2000. The work again included monitoring all valves/valve clusters and fire hydrants, but now also included all water service meter setters. This second survey resulted in a 1999 to 2001 system wide pumped ADD reduction of 702,600 GPD or 487 GPM. Of this amount, approximately 400 GPM was the result of the leak detection program, the balance being reduced water usage by customers as noted below. Though the cost of this work rose to \$80,000 the Company again found the effort to be very cost effective.

The results of the 1999/2000 leak detection and repair program were magnified in 2001 by the Governor's drought declaration and intense public education efforts by the Company and large utilities. This public education impact is shown by the reduction in metered ADD from 253 GPD/Unit in 1999 to 236 GPD/Unit in 2001. The resulting system wide metered ADD reduction of 123,488 GPD or 85.76 GPM contributed significantly to the 1999 – 2001 water use decrease.

Unfortunately, in the spring of 2001 the area experienced the 6.8 Nisqually earthquake. As with the 1995 earthquake, we noted no immediate impacts, however, unaccounted for water continued to be monitored.

2004/5 Leak Detection Survey:

By 2004 un-metered water use had again begun to increase to a degree justifying a third leak detection survey. This survey and related repairs were completed in early 2005 with a resulting 2004 to 2005 decrease in system wide pumped ADD of 348,058 GPD or 242 GPM. In 2005, like 2001, a drought had again been declared by the Governor. Metered water use as a result of the declared drought and ultimately cool damp summer dropped to 234 GPD/Unit the lowest ever recorded by the Company and contributed substantially to the reduction in total water pumped.

2007 Noise Logger purchase:

In April 2007 several members of the Co-op purchased 75 leak detection units with radio transmitters that are temporarily installed on valves and services within the water system. Under this effort each utility can use of all these shared units for a period each year proportional to the number of units purchased. Several of the utilities, including Spanaway Water, also purchased non-shared units. These “private” units allow each company to monitor suspected leaks independently at any time of year. In both these cases, when potential leaks are noted, Utility Services Association is asked to further investigate and correlate leaks for repair. Using this process we can maintain an on-going leak detection program.

2009/10 and 2012 Leak Detection Survey:

In 2009 un-metered water use showed a distinct increase to over 60 GPD/unit and triggered another leak detections survey in early 2010. Following this survey and resulting leak repairs water loss was reduced to 44 GPD/unit in 2011. However, in 2012, un-metered water was again rising. During this period the Company had located and repaired/replaced an unusually high number of service line leaks that had either surfaced or that had been identified by reduce water pressure to individual homes. These leaks were almost exclusively in the older 100 and 160 PSI poly service lines. With the rising un-metered water and volume of service line leaks, the Company completed another leak detection survey in late 2012. This survey and leak repair effort has lowered the un-accounted for water to 11% for fiscal year 2013, the lowest level ever seen within the company.

2014 and Beyond:

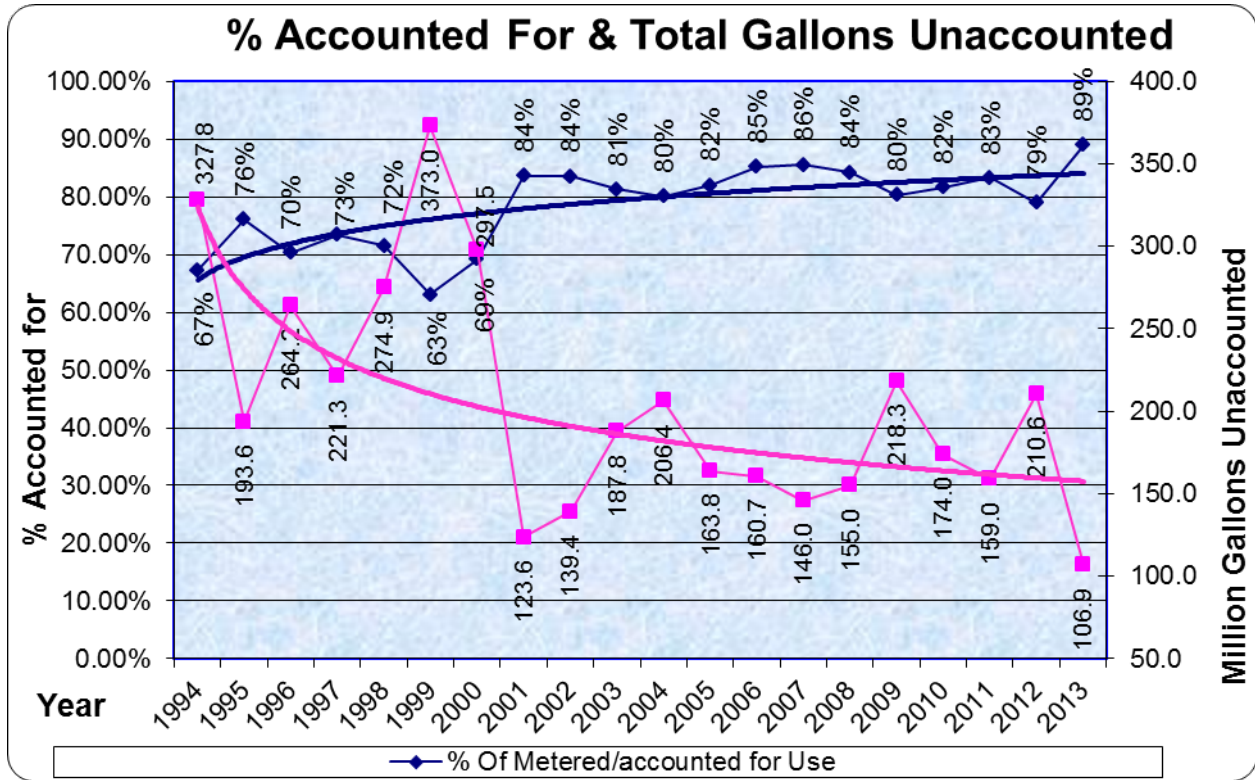
History has demonstrated that the ground materials, well-draining bank run soil, in which the water systems is located make the identification of leaks very difficult. The Company will continue to monitor un-accounted for water losses, utilize noise loggers, and as needed complete leak detection surveys to control water loss. The Company is and will continue to be very responsive when leaks are identified, normally completing repairs the day the leak is identified or within two business days if underground locates are required. With the water main replacement program, meter replacement program, and continued leak detection and repair efforts, the Company will continue to reduce the volume of un-accounted for water.

Water Main Replacement Program:

The Company has started a program of water system replacement. To date this has largely been related to Pierce County road projects. Beginning in fiscal year 2015 the Company’s thirty year goal is to rebuild approximately two miles of the water system each year, replacing A/C (asbestos/concrete) mains which has or is approaching the end of its useful life. This is also the portion of the system constructed with 100 and 160 PSI poly service lines and the portion of the system in which the majority of leaks have been located. In order to fund this on-going program the Company has implemented an increasing “Capital Project Fee”. These fees are directed to infrastructure replacement as that infrastructure reaches the end of its useful life.

The Company believes that a proactive approach to infrastructure replacement is the only responsible way to address this issue.

Presented below is a graphical representation of the percent of accounted for water and the total volume in gallons lost by year.



Conclusion:

Spanaway Water Company has long considered both water conservation and efficiency of use as key components in the Company’s demand management and water supply options. The Company has demonstrated a record of reductions in pumping required on a per unit basis for well over ten years. It is the intent of this plan to continue water use efficiency efforts and elements that have historically resulted in reductions in metered demand. Similarly, it is the intent of the Water Loss Control Plan to continue the reductions in unaccounted for water. The Company believes that continuing these efforts will allow the established goal to be met on an on-going annual basis. The results of these efforts will be presented annually in the consumer confidence report.