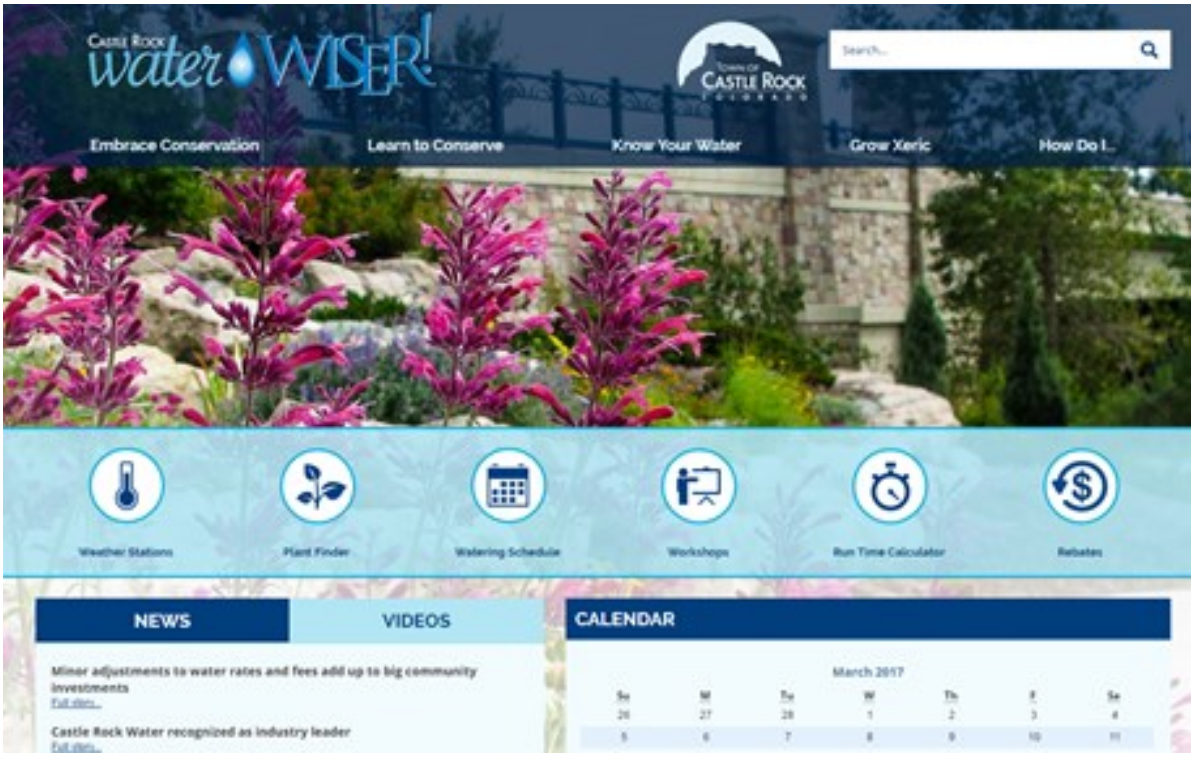
CASTLE ROCK water
Securing our future drop by drop
MARCH 2017

New Look and Features on CRconserve.com

By: Sandi Aguilar, Customer Relations Program Manager

As part of our continued efforts to reduce per capita consumption through customer education, the seven -year old CRconserve.com was updated this year. Not only are there tips on how to be efficient and conserve water indoors, outdoors and with irrigation, but the site explains that conservation is like a new source of supply.

To increase the usefulness of CRconserve.com, we incorporated several interactive features. The weather station provides the data from our four weather stations. Residents can enter their address for the station nearest to them and also find historic weather data from 7 to 90 days. A Run Time Calculator calculates how long to run your sprinkler based on plant type and sprinkler type. The Plant Finder identifies 275 plants that do well in our arid environment, encouraging customers to reduce turf and add more plant variety. Information also found on the site includes how to check for leaks, the importance of cycle and soak, the water schedule, workshop registration and rebate applications.



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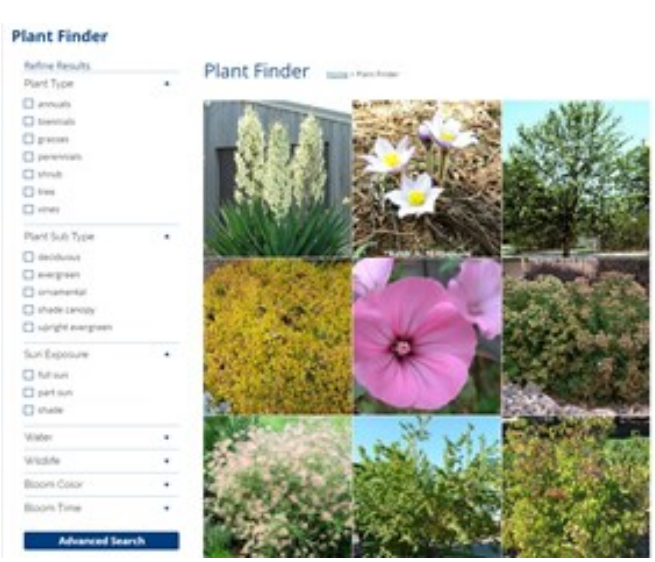
OUR VISION

We will be a national leader among water utilities focused on customer satisfaction and delivering outstanding quality and value.

CRconserve.com, continued

Thanks to the Caste Rock Water team, Sandi Aguilar, Carolyn Richards, Rick Schultz, Linda Gould, Ruth Stadler, Sheri Scott, Melinda Pastore, and Community Relations KerriAnne Mukhopadhyay and DoIT John Kilman for all their work.



Pursuing Excellence

By: Sandi Aguilar, Customer Relations Program Manager

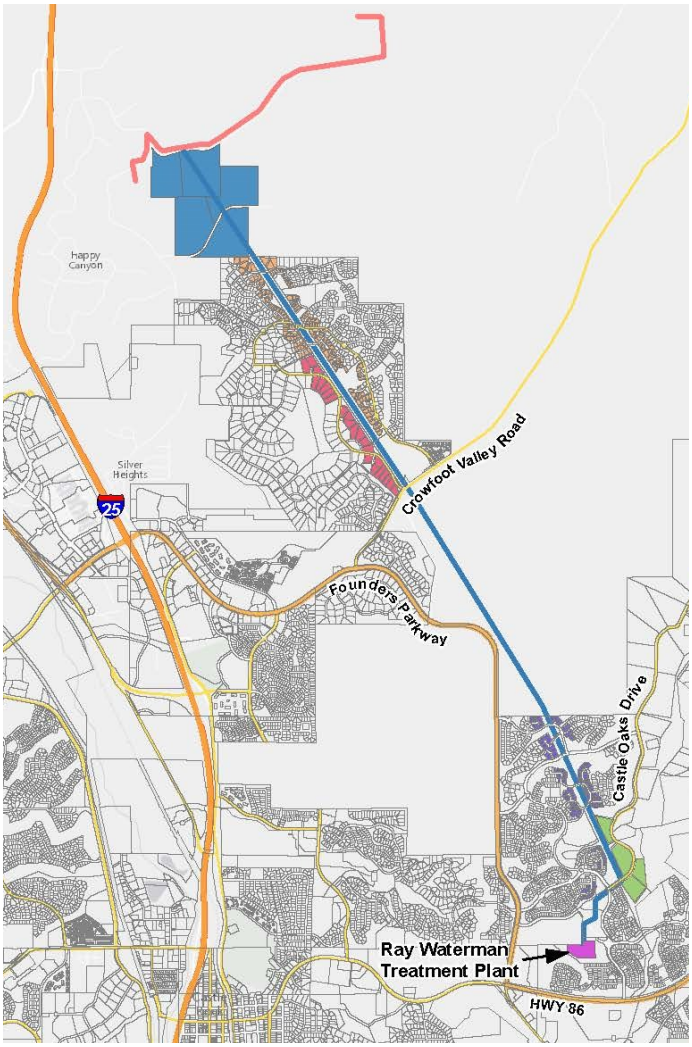
Castle Rock is committed to providing high quality water to our customers and sharing best practices and advancing water technologies across the state of Colorado. In March, Castle Rock Water was awarded the Gold Tier in the Pursuing Excellence Program, for the second year in a row. The Colorado Department of Public Health and Environment recognizes systems that go above and beyond regulatory compliance and helps systems collaborate and learn from each other.

In addition to providing the standard operational procedures for source water protection measures, treatment goals and distribution components, Castle Rock Water submitted four action plans. These included the large meter audit, lateral arm well placements, valve and hydrant maintenance program and chemical optimization.

- The large meter audit examined the five percent of customers that make up 30 percent of consumption. Although, only four percent of the meters audited were found to have discrepancies, the monetary value was significant from a future revenue stream and the capturing of non-revenue water.
- The innovative use of horizontal arms for vertical well production surpassed yield goals, producing more than double that of a vertical well.
- With a continuous valve and hydrant maintenance program in place, repair and emergency budgets are easier to estimate, customers are better informed of outages and confidence in the system is realized.
- Castle Rock Water took the chemical use for water treatment a step further by continually analyzing the chemical solution to ensure the highest quality water and lowest treatment cost.

Construction Begins on Major Pipeline Connection

By: Walt Schwarz, P.E., Project Manager



Securing the Town's long-term water future is a top priority for Castle Rock Water. The Water Infrastructure and Supply Efficiency (WISE) local infrastructure project is the final step in bringing WISE water to Castle Rock. Work for this pipeline connection project generally consists of installing, connecting, and testing a potable water pipeline as required to convey WISE water from Parker Water and Sanitation District infrastructure near Outter Marker Road in Douglas County to the Ray Waterman Regional Water Treatment Center (RWRWTC). Work includes installation of approximately 5.1 miles of 36-inch diameter water pipe and 1,300 linear feet of 24-inch diameter potable water pipes.

Garney Construction submitted the low cost bid and was awarded the $13,448,015 construction contract, and began site mobilization in mid-January 2017. Grading, Erosion and Sedimentation Control (GESC) measures have been installed and are being maintained along the entire alignment. Garney has completed connections and associated pipeline work at the RWRWTC so the facility can be brought back online this April. The project also includes sections where horizontal directionally drilled (HDD) pipe installation is used. The first HDD section in the length of 670 feet has been completed and the fused 36-inch diameter pipeline successfully pulled through the pre-drilled hole.

Typical 36" diameter pipeline with push-on joint connections being lowered into trench.

Garney is now mobilized on the north end of the project and making progress working in the southern direction. In May, Garney plans to bring a second crew on the project to assist with the more typical push-on joint pipeline installation. They are proceeding on budget and schedule to complete the project by late summer 2017.

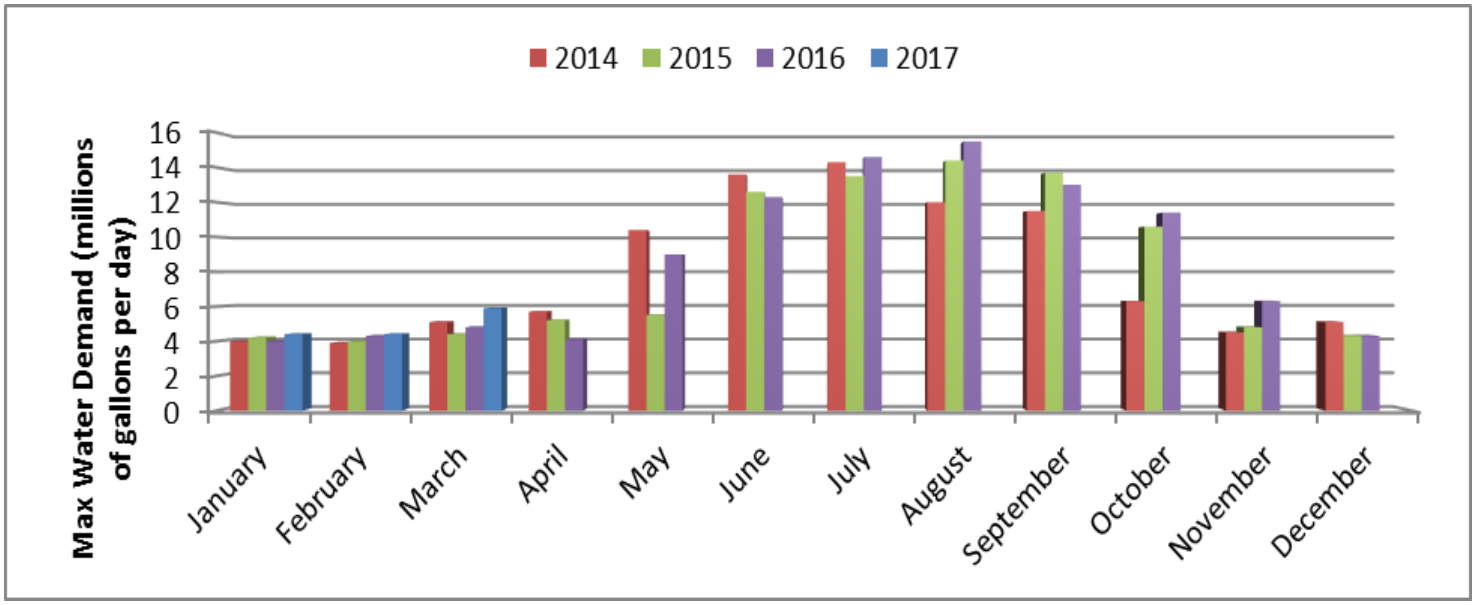
Fused pipeline being pulled towards lower right and through the HDD hole.

2017 Water Demands

By: Kurtis Cotten, Water Resources Program Analyst

The maximum daily water demands are plotted by month from 2014 to the current month. As observed by the data, the maximum demand for the month of March was 5.9 million gallons per day (MGD) which was about 23% more than the 5-year average maximum daily demand for the month. Summer time maximum demands inform us of the size of the infrastructure necessary to provide water service over short periods of time and help us to plan future water resources needs. The water demand total for March was 134.6 million gallons (MG), which was about an 8.7% increase from the February 2017 total of 123.8 MG, and an 11.3% increase from the March 2016 demand of 120.9 MG.

CR-1, a new surface water diversion located near Plum Creek Water Purification Facility (PCWPF), came online on June 30, 2016, and is an important step in transitioning to a 75% renewable water supply. The temporary diversion was shut down on November 17, 2016, due to below freezing temperatures and is scheduled to start back up in April 2017. A more permanent solution is planned to be online in mid-2017. The Town's twelve alluvial wells produced a total of 22.0 MG of renewable water during March, which represents 15.3% of the total water supply for the month and 19% (74 MG or 227 acre-feet) of the water supply year to date. The renewable supplies used during March decreased from February because the Plum Creek Purification Facility was shut-down for annual maintenance for four days, and four alluvial wells in the Central Well Field were taken offline while a developer raises a portion of the raw waterline that conveys water from these wells to PCWPF. The total renewable water produced since the opening of the PCWPF has surpassed 1,119 MG, which represents 11.5% of the Town's total water supply since the alluvial wells began pumping in May 2013. Currently, the Town's renewable water rights surpass the capacity of the alluvial wells. The alluvial well projects as well as the permanent installation of CR-1 the Town is currently working on will help close this gap. The Aquifer Storage and Recovery (ASR) Pilot Study started in November and finished in March 2017. The ASR program will help us store renewable water during the off peak season without evaporative losses and helps to maintain the Denver Basin aquifers.



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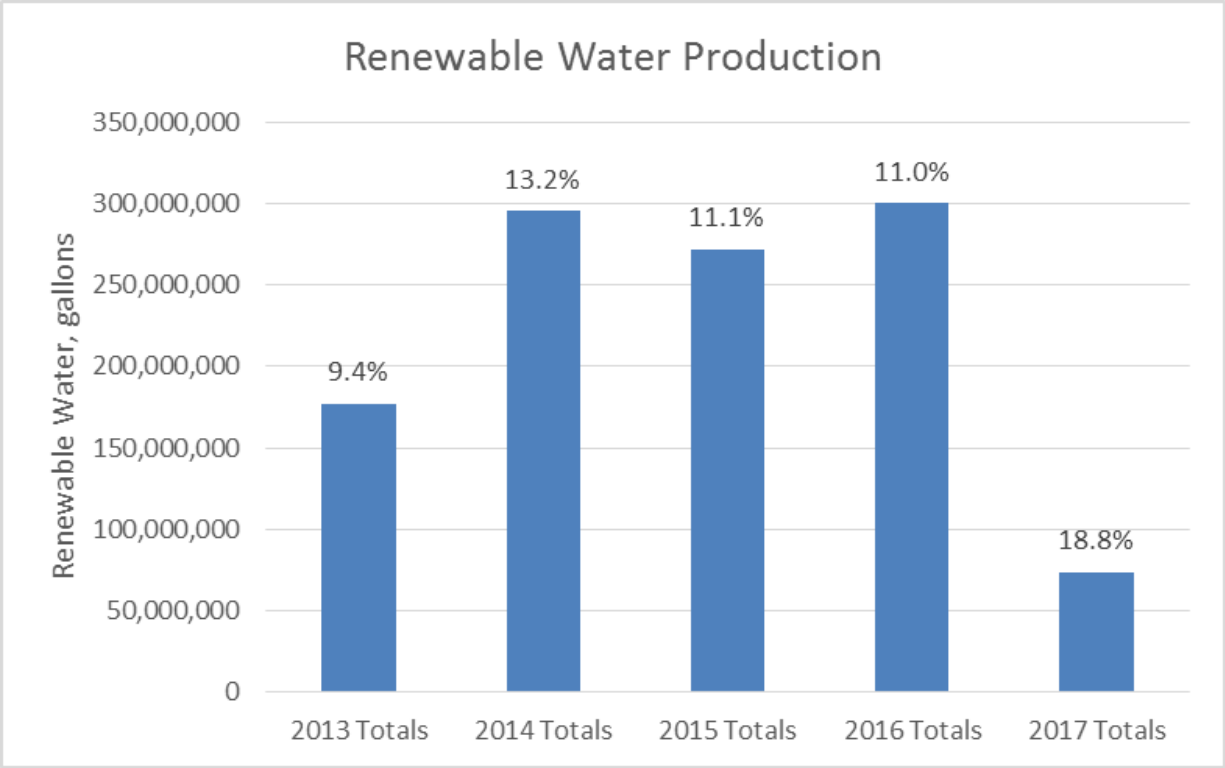
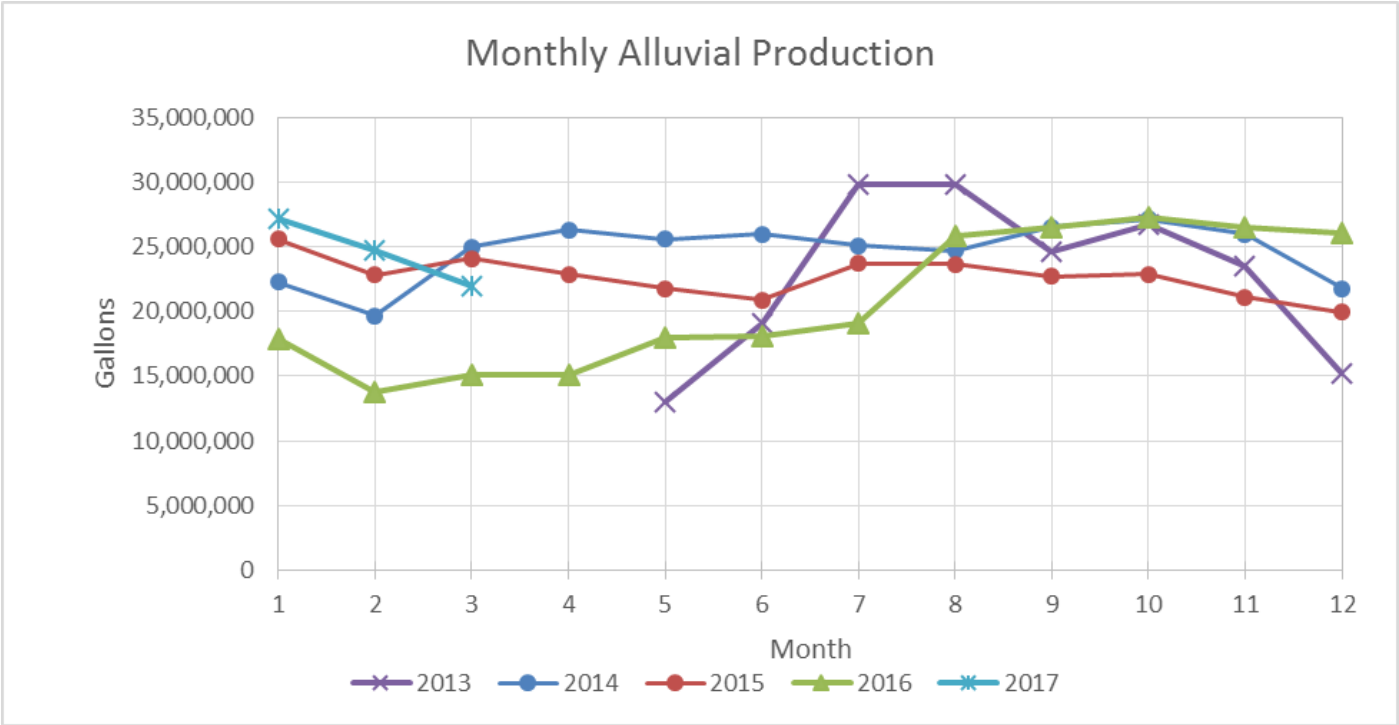
2017 Water Demands, continued



The percentage shown on top of the bars is the amount of renewable water relative to total water production.



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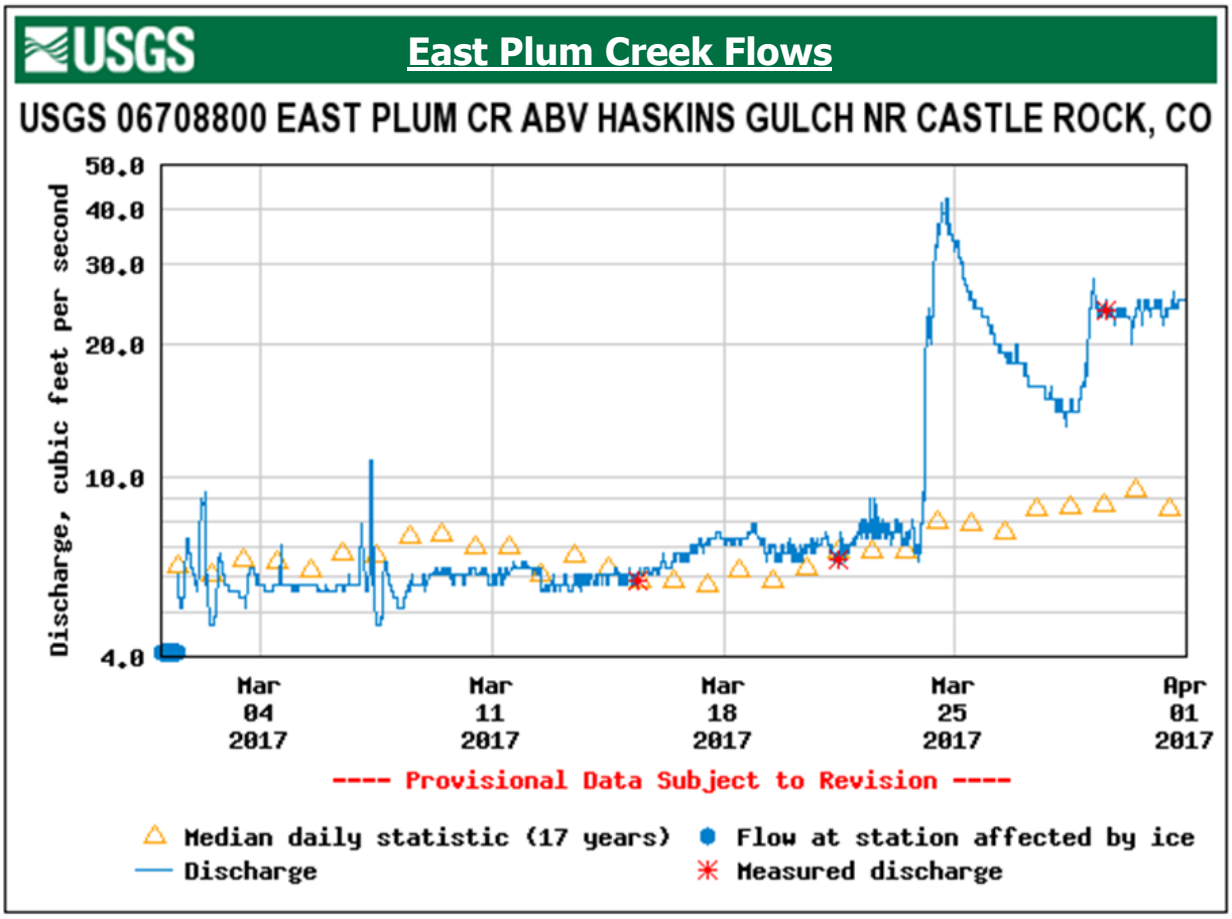
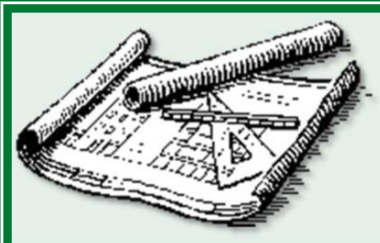
2017 Water Demands, continued

The flow hydrograph represents stream flows in East Plum Creek taken from the stream gauge located above Haskins Gulch. The hydrograph shows that flows in the East Plum Creek basin ranged between 4.7 to 42 cubic feet per second (cfs) during the month of March, with flows averaging around 10 cfs for the month. During March, there have been active calls on the South Platte River. Some of the active calls have had a more senior water right than our Meadows Alluvial Wells located in our Central Well Field and the Castle Rock Surface Diversion #1. This means that those diversions are out-of-priority, so the stream depletions will be covered by non-tributary return flows and/or more senior native water rights along East and West Plum Creek. This also means that the Town will have slightly less reusable water going down Plum Creek during an active call. The priority date on a river call may change each day depending on the stream flow available and the seniority of the diversions that need water on that day. According to the U.S. Drought Monitor from USDA, we are currently experiencing moderate drought conditions. The NRCS Colorado SNOTEL report generated on April 4, 2017, shows the precipitation for the South Platte River Basin is at 115% of average for the 2017 water year.





Plan Review Update *By Mark Mantua, Plan Review Engineer*

Castle Rock Water reviewed 86 applications this month which compares to 93 during the same time period in 2016. The average assigned due date by Development Services was five days, and we completed the reviews in an average of five days, which included:

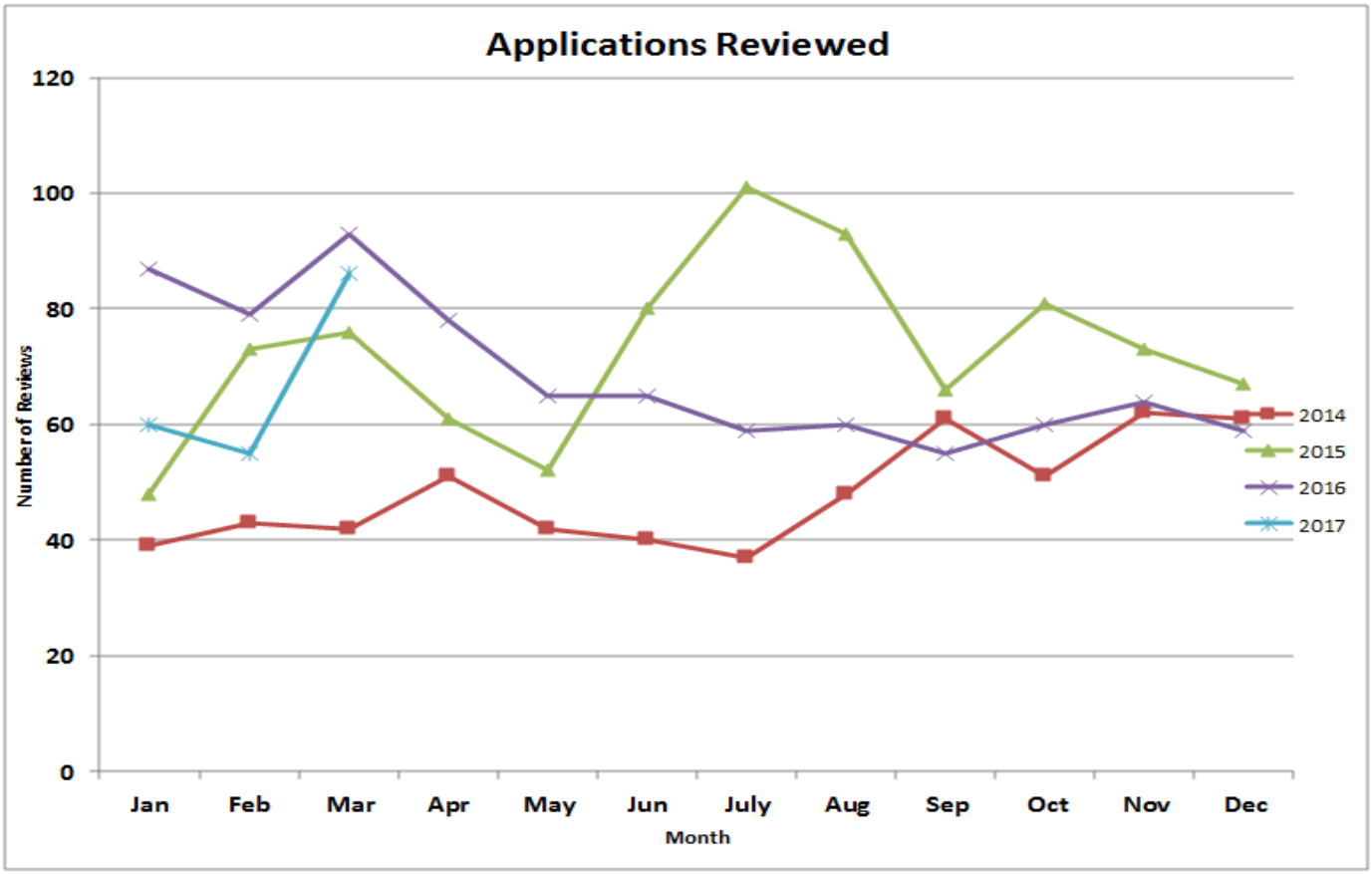
The applications reviewed consisted of:

- 47 1st Submittals
- 21 2nd Submittals
- 18 Special reviews
- 3 Completed late
- 83 Completed on-time as scheduled

- 4 Agreements
- 1 Lot Line Adjustment
- 17 Construction Drawings
- 2 County Referrals
- 17 Field Change Orders
- 11 Site Development Plans
- 8 Preliminary Project Applications
- 7 Grading, Erosion and Sediment Control (GESC) Plans
- 1 Planned Development Plan
- 8 Technical Criteria Variances

In addition to completing the above listed applications as scheduled, Castle Rock Water completed 98 building permit reviews and associated system development fees.

Castle Rock Water provides plan review for all water, wastewater and stormwater projects submitted through the development review process. The line graph (below) shows development activity data (by month and year) since 2014.

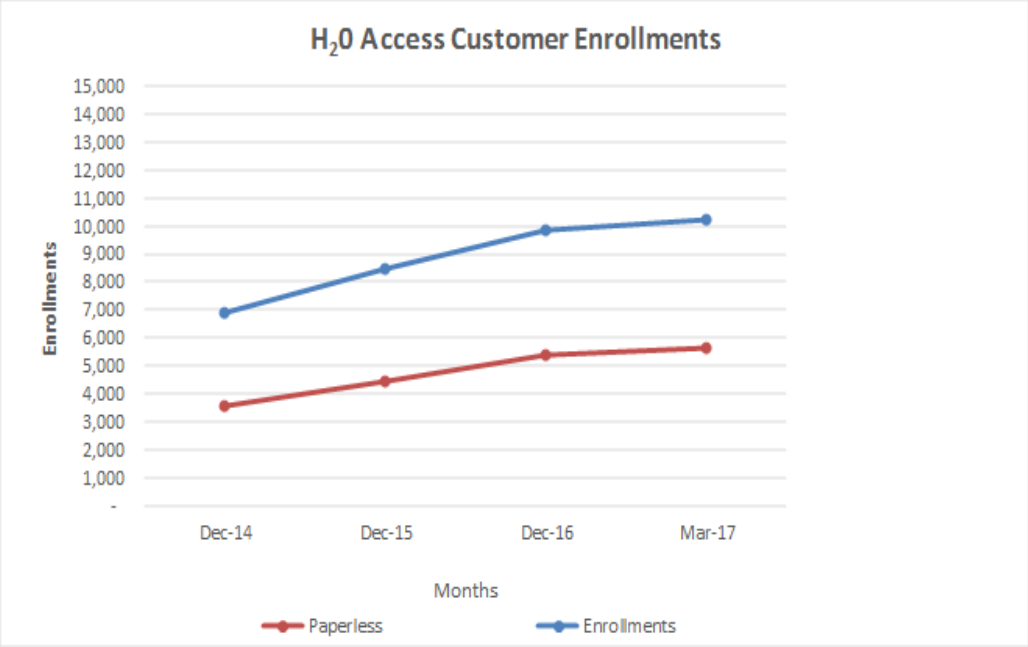


Business Solutions

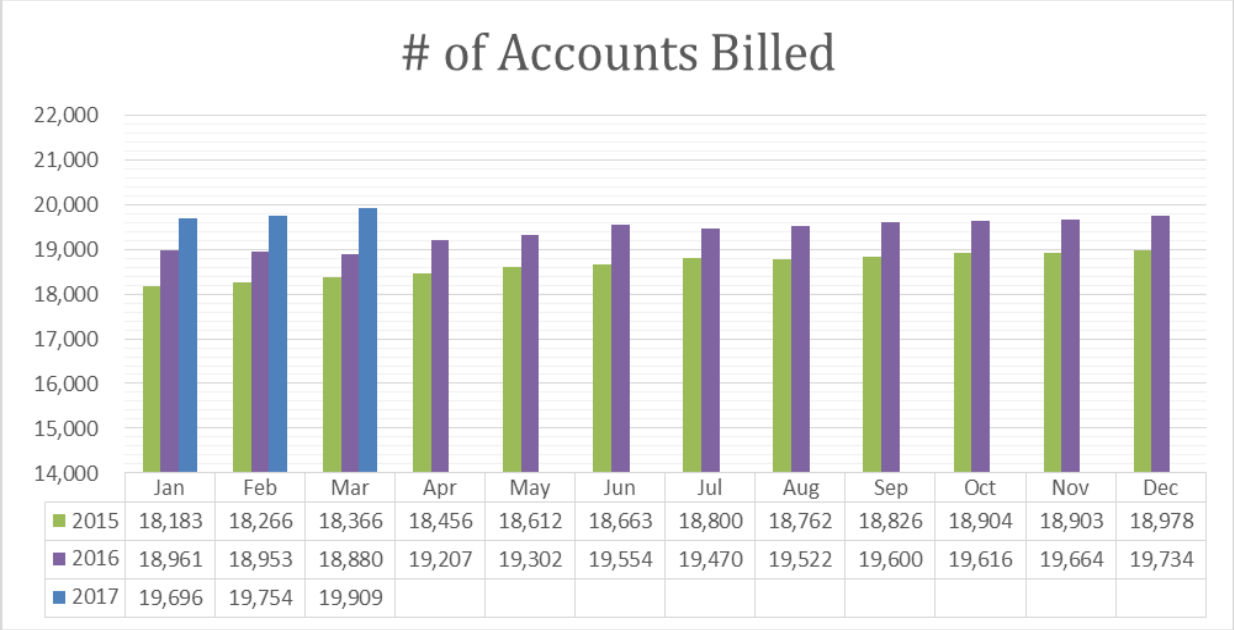
Customer Statistics

By: Anne Glassman, Business Solutions Manager

Our Business Solutions Team continues to track a host of statistics and data as we continue to evaluate our levels of service and look for efficient ways to improve on these levels.

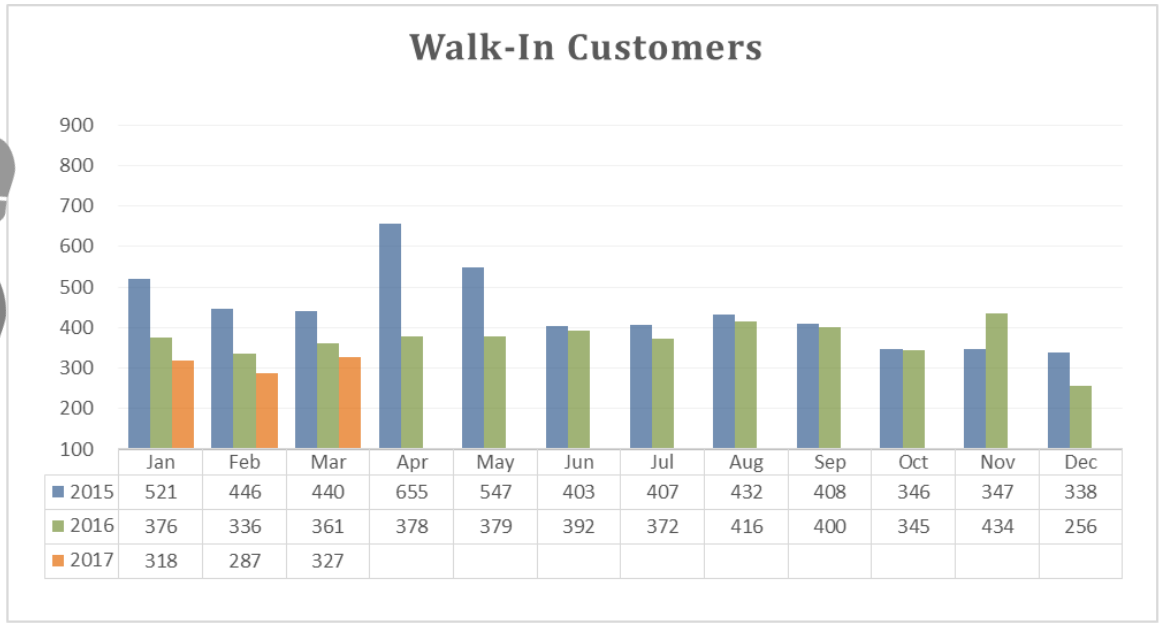


Fifty-five percent of the customers enrolled in H_20Access have also chosen to “Go Paperless.”



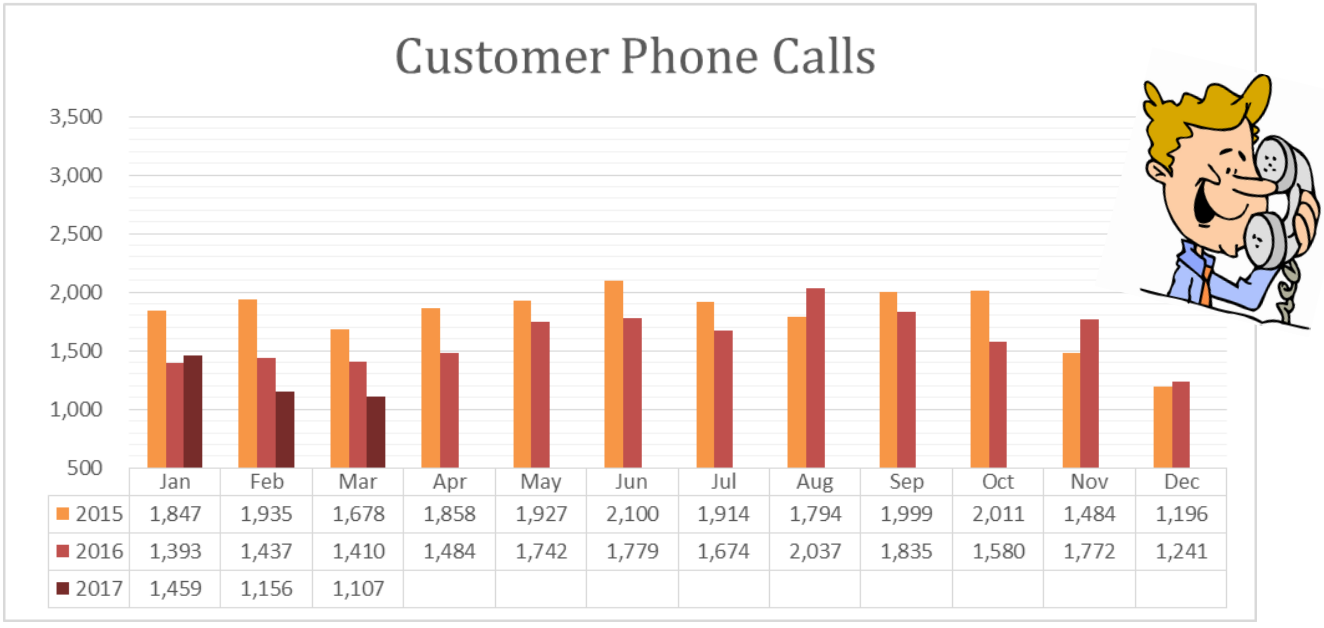
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	18,183	18,266	18,366	18,456	18,612	18,663	18,800	18,762	18,826	18,904	18,903	18,978
2016	18,961	18,953	18,880	19,207	19,302	19,554	19,470	19,522	19,600	19,616	19,664	19,734
2017	19,696	19,754	19,909									

The number of accounts billed continues to increase year over year due to new residential and commercial growth.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	521	446	440	655	547	403	407	432	408	346	347	338
2016	376	336	361	378	379	392	372	416	400	345	434	256
2017	318	287	327									

Walk-in customers are down from the previous two years. There is a great deal of information on the new web site released last year.



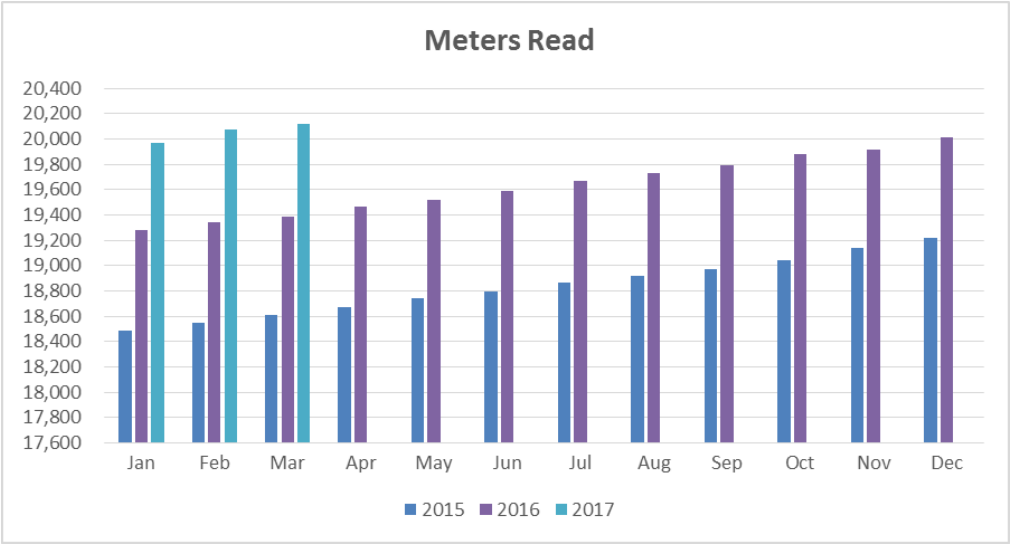
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	1,847	1,935	1,678	1,858	1,927	2,100	1,914	1,794	1,999	2,011	1,484	1,196
2016	1,393	1,437	1,410	1,484	1,742	1,779	1,674	2,037	1,835	1,580	1,772	1,241
2017	1,459	1,156	1,107									

Customer phone calls seem to be declining as well, possibly due to customers utilizing our online services.

METERS

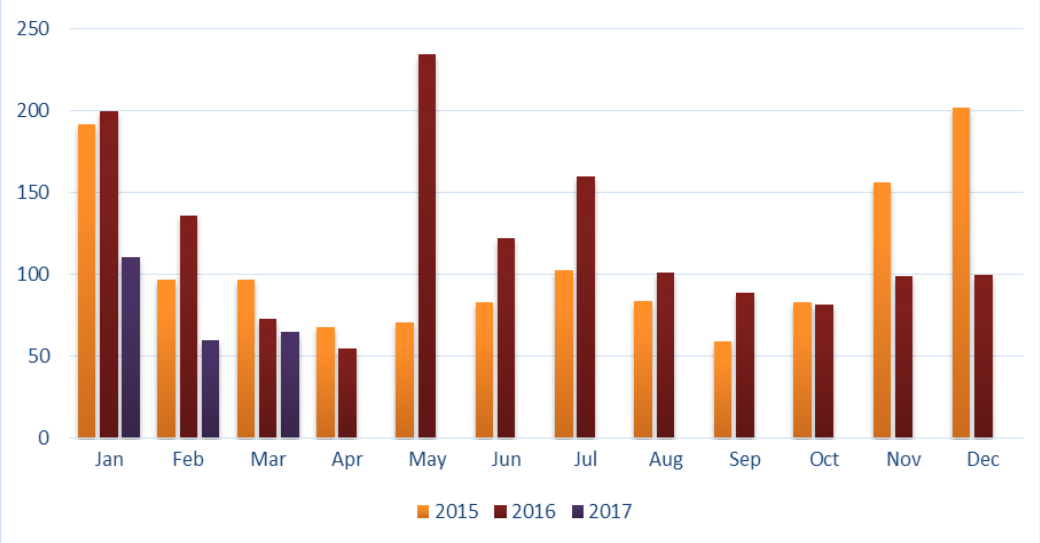
Meter Sets

Month-to-Date 87
Year-to-date 202



The meters read continues to increase month-to-month due to new residential and commercial accounts, with an increase year-over-year.

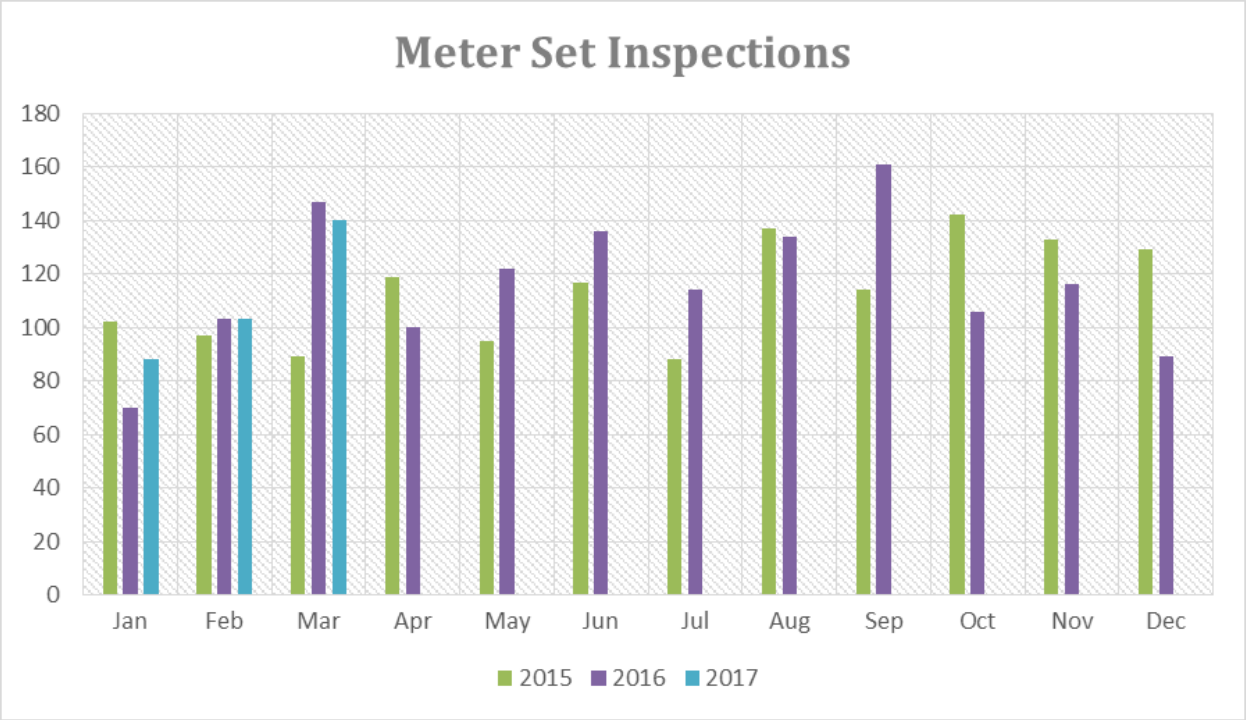
Skipped Reads



The American Water Works Association (AWWA) standard for skipped reads is 2 percent, so at 0.32 percent, we still continue to stay below the industry average. This is a result of continued maintenance and repair efforts on meter infrastructure.

WHY IS THIS IMPORTANT?

It is a strong indication of the level of preventative maintenance being done by our team. A skipped read is indicative of a problem with the meter. Less skipped reads means more properly working meters, which is good for all our customers.



Meter set inspections are performed when a new house or business is constructed to make sure that the meter has been installed properly and is working. These inspections are fairly consistent with prior years at this same time.

Stormwater Update

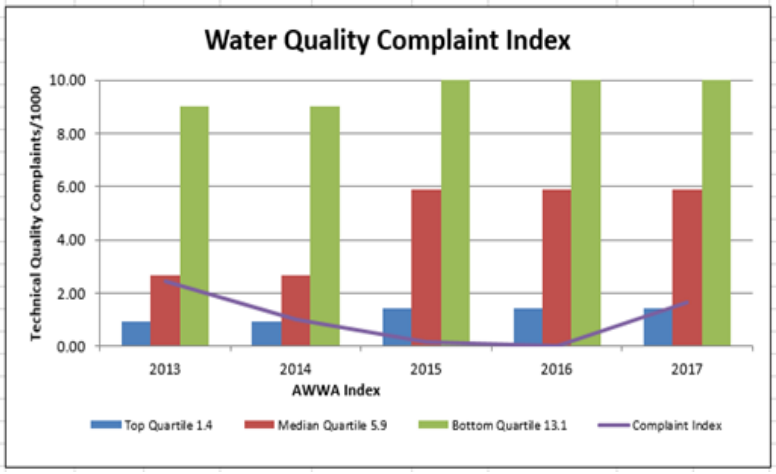
Our team of four "storm troopers" maintains over 138 miles of pipe and drainageways, 110 detention ponds and 4,439 inlets as well as completing special projects designed to improve water quality.

The Stormwater team conducted maintenance on the outfall at Sellers Gulch, clearing the area of cattails and debris, which will allow the water to drain freely.

Our team maintains about 780 miles of water, wastewater and stormwater pipeline, enough to run from Castle Rock to Las Vegas, Nevada.

Water Quality Complaints

The Water Quality Complaint index shows that we are doing very well in this category; rating in the Top Quartile in 2015 according to the American Water Works Association. Our score was even better in 2016! There was one issue which resulted in 32 water quality complaints in March.



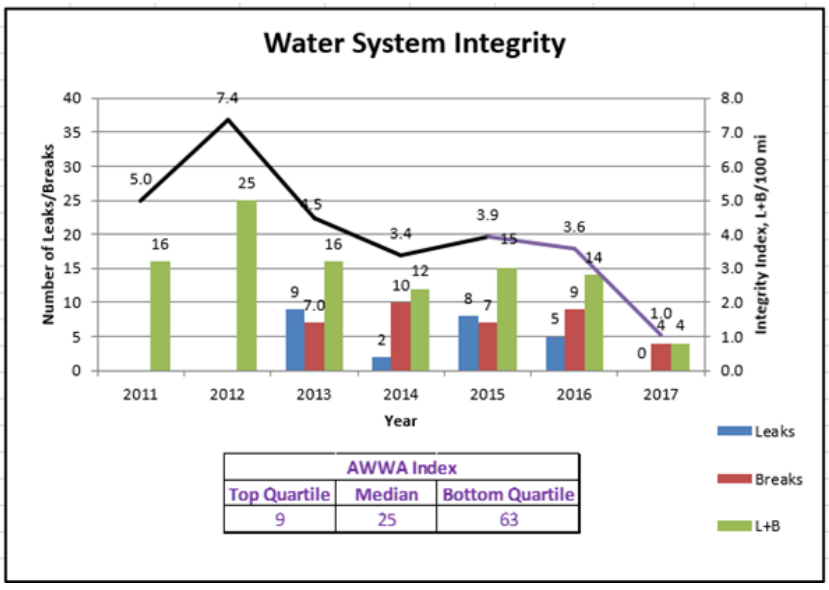
For more information, view the current water quality report at CRgov.com/**waterquality**.

There were 32 water quality complaints on March 16 from The Meadows neighborhood near Butterfield Park due to a single event.

An equipment malfunction at the Meadows Water Treatment Plant caused higher than normal chlorine levels, which affected the smell and the taste of the water.

This issue was identified in the evening on March 15 and teams were dispatched at which time the mains were flushed and chlorine levels were back to normal by 12:30 p.m. on March 16.

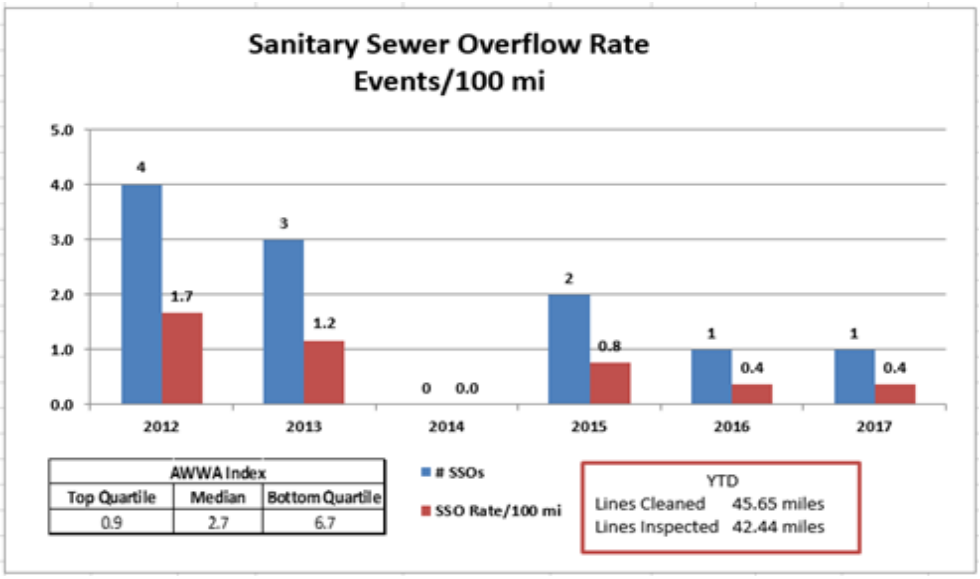
Water System Integrity



As the Water System Integrity chart indicates, our occurrence rate has generally decreased over the last four years. We have been in the top quartile, the top 25%, for water system integrity based on American Water Works Association benchmarking since 2011. There was one water system integrity issue in March.

Sanitary Sewer Overflows

We are also tracking in the Top Quartile in the Sanitary Sewer Overflow Rate since 2014, according to the American Water Works Association, showing one incident in 2017. There was one sanitary sewer issue in March.



How do we avoid overflows?

Our team runs a camera through the sewer mains to look for problems. When problems are identified they are cleared with a high pressure water jet. In 2015 and 2016, we inspected and cleaned 42.44 and 45.65 miles, respectively.

The goal this year is to clean and video 20 percent each of the collection system or about 264,000 feet of each.

March Levels of Service

Drinking Water Compliance
Castle Rock Water will deliver water that meets or exceeds both Primary Drinking Water Regulations and Secondary Maximum Contaminant Levels 100% of the time.
Seventy routine samples were completed. All samples were within the parameters set forth by the Federal Safe Drinking Water Act and Colorado Drinking Water Standards.

Pressure Adequacy
< 1% of our customers will experience less than 43 pounds per square inch (psi) of pressure at the meter during normal operations.
Pressure has been maintained at or above 43 psi throughout the distribution system.

Sewer System Effectiveness
<1% of our customers will experience a sewer backup caused by the utility's sewer system per year.
There was one sanitary sewer system issue in March. A three-inch force main near the Waterman Treatment Plant lift station burst at an elbow causing an overflow into a detention pond. The spill was cleaned up and treated with calcium hypochlorite and lime. No customers were affected by this incident.

Drinking Water Supply Outages
<5% of our customers will experience water outages for one or more events totaling more than 30 hours/year.
There was one main break in The Meadows subdivision caused by corrosion on a six-inch ductile iron pipe. Seventeen homes were without water for less than four hours. The total repair was completed within six hours.

Before you start a project, call 811. Whether you are planning to do it yourself, or hiring a professional, we'll help you do it safely. The local 811 Call Center will contact Castle Rock Water. We will schedule a time to come out to locate public water and wastewater lines in the road and in your project area.

The graphs below show our monthly utility locates and a chart showing the year-to-year comparison

ANNUAL UTILITY LOCATES

	2010	2011	2012	2013	2014	2015	2016	2017
January	577	475	617	1190	1289	1162	1199	1334
February	521	485	538	1094	1093	1383	1334	1378
March	660	552	818	1437	1349	1906	1625	1552
April	838	681	1025	1482	1552	1784	1631	
May	853	863	985	1541	1531	1609	1809	
June	969	844	982	1314	1399	1654	2075	
July	680	582	859	1350	1392	1477	1675	
August	901	723	1123	1476	1468	1494	1651	
September	880	723	1029	1240	1373	1343	1701	
October	715	688	1155	1501	1376	1314	1579	
November	536	518	1041	1072	866	1134	1131	
December	415	405	925	1005	1043	1063	1059	
Total	8545	7539	11097	15702	15731	17323	18469	4264
Difference from previous year's total	N/A	-1006	3558	4605	29	1592	1146	-14205

811 Know what's below. Call before you dig.

3-YEAR LOCATE TREND