

# CITY OF ASHLAND

February 25, 2019

Kerri Cope  
Water Management and Conservation Analyst  
Water Resources Department  
725 Summer St. NE, Suite A  
Salem, OR 97301

Dear Ms. Cope,

Please find enclosed, the City of Ashland's Water Management and Conservation Plan (WMCP) five-year progress report detailing progress made toward implementation of the water conservation and supply benchmarks described in the City's WMCP that was approved in February 2014.

The requirements under OAR 690-086-0120(4) include an update on the City of Ashland's water conservation benchmarks, the average monthly and daily diversions under each water right held by the water supplier for the previous five years, a description of the results of the annual water audit required under OAR 690-086-0150(4)(a) and a comparison of quantities of water used in each sector for the previous five years.

Please do not hesitate to contact us if you have any questions.

Sincerely,



Julie Smitherman  
Water Conservation Specialist



Paula Brown, PE  
Public Works Director





<b>WMCP Element 2014 Benchmark</b>	<b>2019 Benchmark Status</b>
<p><b>Water Audit</b></p> <p>The City documents water production and consumption on a monthly basis to monitor the City's water demands. The City conducts an annual year water audit, comparing monthly system demand to plant production, as well as stream flow and reservoir storage. The City uses billings-based spreadsheet to estimate system leakage by comparing billed usage to plant production. The City of Ashland will improve its audit system to increase report accuracy. The City is developing procedures to account for valid unbilled water uses, to further reduce unaccounted for water rates, and better identify actual water losses due to leakage, as outlined in the American Water Works Association (AWWA) manual titled Water Audits and Leak Detection (M-36, AWWA 1990).</p>	<p>The City continues to document water production and consumption on a monthly basis to monitor the City's water demands. The City conducts an annual year water audit, comparing monthly system demand to plant production. The City had historically used billings-based spreadsheet to estimate system leakage by comparing billed usage to plant production. The City continues to work on improving the water audit process to increase report accuracy.</p>
<p><b>Metering</b></p> <p>The City is fully metered.</p>	<p>The City is fully metered.</p>
<p><b>Meter Testing &amp; Replacement</b></p> <p>The City's water meter maintenance and replacement program is focused on replacing mechanical meters with radio read meters. This approach yields the greatest conservation cost/benefit ratio. Water meters not recording within the manufacturer's specifications are repaired in the field or replaced as needed. For smaller meters, the City replaces meters that are determined to be inoperable by inspection as part of the meter reading process. Out of a total of 9100 meters, about 1200 radio read meters have been installed, and approximately \$50,000 per year has budgeted for meter replacement. The City also maintains a number of source production meters to monitor treatment plant flows, as well as to verify TID supply and demand. At the water treatment plant, multiple redundant meters are installed and cross checked to verify reasonable accuracy. Measurements are routinely compared to verify flows. TID flows are manually measured as weir structure readings made separately by City Staff and TID staff.</p>	<p>The City of Ashland continues to test and replace water meters that are deficient in order to minimize water loss. In addition the City is planning to calibrate some of the larger meters within the system to ensure better demand accuracy. Radio read meters are installed to replace older analog meters when necessary.</p>
<p><b>Rate Structure</b></p> <p>The City's rate structure is based on the quantity of water consumed through metered connections and, therefore, encourages conservation. In addition the rates are scheduled to be increased by 10% in 2014, and significant increases will continue annually until 2018. The City plans to conduct a cost of service rate study in the next couple of years.</p>	<p>The City's four tier rate structure is based on the quantity of water consumed through metered connections and, therefore, encourages conservation. Additionally, there is a fifth tier that is implemented in the summer months, which encourages conservation as well as decreases peak usage. Rate increases have occurred each year since 2014. The City also completed a cost of service study in 2016 resulting in a higher base rate/customer charge for services to help cover fixed system costs.</p>
<p><b>Leak Detection Program</b></p> <p>The City monitors water audit results based on a 5-year running average. City policy is to begin leak detection measures if the average exceeds 10 percent. Based on the most recent Water Audit Report (February 2008), the current 5- year average is 8.4 percent. Visual leaks reported by the public or public works personnel are investigated. Leaks are repaired immediately.</p>	<p>Visual leaks reported by the public or public works personnel are investigated immediately and repaired. The City is currently below the State requirement of 10% or less water loss. If City water losses ever exceed the 10% or less requirement, then the city will take steps to create an additional leak detection program.</p>

### Leak Repair

Despite the fact that its system unaccounted-for (or nonrevenue) water percentage is less than 10 percent, the City currently is conducting various programs to reduce unaccounted-for water within the distribution system. These programs include small pipe replacement and meter assembly replacement. Numerous leaks have been identified and corrected through this program, which has been effective in reducing system water losses. Ashland also has a policy to adjust the leak portion of a customer's bill, if the customer repairs the leak within 10 days after being notified of the leak. The program is designed to encourage customers to identify and repair leaks in a timely manner.

Current programs to minimize water loss include small pipe replacement and water meter assembly replacement when needed. Customers in the Ashland community are very aware of water issues and notify the city whenever there is the possibility of a leak within the system. The City of Ashland also continues the policy to adjust the leak portion of a customer's bill, if the customer repairs the leak within 10 days after being notified of the leak. The program is designed to encourage customers to identify and repair leaks in a timely manner.

### Pipe Replacement

The City currently is conducting various programs to reduce unaccounted-for water within the distribution system. These programs include small pipe replacement and meter assembly replacement.

Pipe replacement is outlined in the City's Capital Improvement Projects and includes tracking the location and year of replacement. The Capital Improvement projects are adopted as part of the budget process and approved by Council.

### Public Education

The City's conservation program includes a significant public education element. The Conservation Division spearheads a program that includes North Mountain Park Nature Center in its outreach. The center provides a wide variety of activities, including in-class presentations, videos, interactive games, and booths at various festivals to promote water conservation and water quality. The City's conservation analyst provides a display of conservation information and/or a related activity as well as program promotions. The conservation program will provide staff and materials as needed for events in general. The City's website contains seasonal conservation articles, indoor and outdoor conservation tips, instructions on how to water lawns 1 inch per week, a frequently asked questions (FAQ) section, a downloadable application for the reimbursement programs, and an information request form for materials regarding water conservation and water quality.

The City's water conservation program continues to include a large public outreach and education component, which includes but is not limited to the following:

- Water Wise Landscaping Website and Water Conservation Webpage
- Online Watering Calculator and Watering Hotline
- Articles written for the City Source newsletter and are delivered in monthly utility bills.
- Provide presentations to local schools, civic groups, and homeowners associations.
- Regularly participate in community events, in particular we staff booths at Science Works on Earth Day and the Salmon Festival in the fall at North Mountain Park.
- Handouts and brochures have been created and include the following: example watering schedules, indoor water use guide, tips for using water indoors and outdoors, how to read your water meter, graywater, rainwater catchment, drought, how to water trees etc.

Water conservation displays are set up at the Ashland Library and Public Works Building. These seasonal displays provide informational brochures depending on the time of the year. During peak water use periods, brochures on the reimbursement program and outdoor water conservation tips are available. During the wetter months, the conservation calendar and indoor conservation information are available. The conservation program has produced a utility bill insert to inform customers about the importance of water conservation throughout the summer.

Water conservation materials are available in displays at the Public Works & Community Development building as well as in City Hall and North Mountain Park. In the past five years we have advertised our programs in local newspapers, during television interviews, on the radio, multiple public presentations, K-12 and College level school presentations. For the past three years we have also advertised our programs and resources before each movie that plays at two local movie theaters during the summer months.

## Technical and Financial Assistance

The City provides technical assistance to residential and multi-family residential customers in a variety of ways to encourage and assist with implementing water conservation measures. This technical assistance is advertised in multiple ways and includes the following services:

**Indoor Water Analysis** - to evaluate plumbing fixtures and giveaway showerheads, aerators and toilet leak tablets.

**Irrigation Analysis** - Evaluations are offered during the summer months and consist of an assessment of the design, operation/management of sprinkler systems. Assistance with sprinkler controllers and watering schedules will also be provided.

**Landscape and irrigation plan reviews** - for new commercial industrial and residential developments. The City's Water Conservation Analyst reviews and provides comments on landscape and irrigation plans submitted to the Planning Division. Direction for meeting water efficiency standards is provided through the plan review process and also directly to landscape designers.

### Additional Programs:

- Water Wise Landscaping Website
- Watering Hotline
- Water Conservation Web Page
- Landscaping and Irrigation Plan Review
- Earth Advantage Home Review
- Brochures on selecting a landscape and/or irrigation systems
- Articles are written for the City's newsletter, and the annual Water Quality Report

### The City will provide other technical and financial assistance programs in the future

- Continue irrigation and indoor water audit program, expand to commercial and industrial
- Add live weather data transmitted from a nearby weather station to the City website
- Enhance the Water-Wise Landscaping website by adding more features
- Develop a water use calculator for customers to evaluate their own water use.
- Implement a "Smart" irrigation controller incentive program
- Add the weekly watering hotline to the City's Conservation Division webpage.
- Add a sample water schedule, water savings tips for outdoors and indoors

The City will continue to provide technical assistance to residential and multi-residential customers, which comprise the majority of the City's water use. In the last five years, we have expanded our program to include providing technical assistance to commercial and institutional customers as well. Currently all customer categories are eligible for our free evaluations, rebates and/or giveaways. We continue to work with trade allies to encourage production and installation of water efficient fixtures and products in accordance with Oregon's plumbing code regulations and the Oregon Landscape Contractors Board.

**Irrigation Evaluations & Indoor Evaluations** - Every year water conservation staff offer free irrigation system evaluations and indoor water use evaluations for all Ashland customers. Evaluations are offered during the summer months and consist of an assessment of the design, operation/management of sprinkler systems. Assistance with programming sprinkler controllers and developing watering schedules is also provided.

**Indoor Water Evaluation** - evaluate water use on indoor plumbing fixtures, look for leaks and giveaway showerheads, aerators and toilet leak tablets.

**Giveaways** - Regularly giveaway low-flow aerators for bathroom and kitchen sinks, low-flow shower heads and soil moisture meters.

**Water Wise Landscaping Website** - [www.ashland saves water.org](http://www.ashland saves water.org) The Water Wise Landscaping website is designed to inspire the creation of landscapes that incorporate native species and other water wise plants that are not only attractive, but are capable of using less water than traditional lawns. It serves as a virtual demonstration garden that showcases examples from local residents as well as provides useful information and resources on water efficient gardening concepts.

### The City has added the following technical and financial assistance programs

- Expanded the indoor and outdoor water evaluations to commercial and institutional
- Added live weather data transmitted from a nearby weather station to the City website
- Enhanced the Water-Wise Landscaping website by adding more features
- Developed a water use calculator for customers to evaluate their own water use.
- Added the weekly watering hotline - phone recording
- Added a sample water schedule, water savings tips for outdoors and indoors
- Created a FaceBook page for Water Conservation

**Landscape and irrigation plan reviews** - for new commercial industrial and residential developments. The City's Water Conservation Analyst reviews and provides comments on landscape and irrigation plans submitted to the Planning Division. Direction for meeting water efficiency standards is provided through the plan review process and also directly to landscape designers.

### Additional Technical Resources:

- Water conservation website [www.ashland.or.us/conserv](http://www.ashland.or.us/conserv)
- Provide information and resources for customers on efficient landscape practices, local landscape contractors information, and guidance on plant watering needs and installing irrigation systems. Present this material at local garden clubs, landscape associations and master gardner conferences.

## Rebates for Replacement of Inefficient Fixtures

### Washing Machine Rebates

Rebates are given to customers who purchase ENERGY STAR labeled clothes washers. These machines use up to 40% less water and up to 50% less energy. Clothes washers qualify for up to \$80 City rebate if the home has an electric water heater and \$50 if the home has a gas water heater.

### Dishwasher Rebates

Rebates of \$25 are given to customers who purchase an ENERGY STAR labeled dishwashers. These models use up to 30% less water than standard models.

### Toilet Rebates

Rebates are given to customers who replace existing (3.0 gallons per flush or greater) with Water Sense labeled, 1.28 gallons per flush or less: \$75 for the first toilet, \$60 for the second and \$50 for the third all located in the same house or business.

Rebates are also given to customers who replace existing (1.6 gallons per flush) with Water Sense labeled, 1.28 gallons per flush or less: \$35 for the first toilet, \$25 for the second and \$15 for the third all located in the same house or business. These rebates can even apply to new construction.

### The city may implement or consider the following for future programs:

- A turf replacement program or incentives for new water-efficient landscapes
- A weather based irrigation controller incentive program is currently being reviewed
- Hotel and motel incentives on toilets, showerheads and bathroom aerators.
- Restaurant incentives for commercial kitchen appliances such as air cooled ice machines.

The City of Ashland will continue with the current appliance rebates for replacement of inefficient toilets and washing machines provided a cost benefit analysis confirms the effectiveness of the program. The dishwasher rebate was discontinued to free up the budget for other more cost effective programs. Additionally, retailers are almost exclusively selling Energy Star Dishwashers.

**Toilet Rebates** -We continue to offer rebates for replacing older toilets with more efficient WaterSense labeled toilets

**Washing Machines** - We offer rebates for replacing older washing machines with more efficient Energy Star washers.

**Lawn Replacement Program Rebate** - for new water-efficient landscapes - Customers can apply for a rebate for the removal of live, maintained and irrigated lawn that is replaced with climate appropriate, low water use landscape and efficient irrigation systems. Incentive Amounts: \$1.25 per square foot for the first 1,000 ft<sup>2</sup>, \$1.00 per square foot up to 2,000 ft<sup>2</sup> and \$0.75 per square foot up to 3,000 ft<sup>2</sup>. Projects of more than 3,000 ft<sup>2</sup> will be considered on a case by case basis. [www.ashland.or.us/lrp](http://www.ashland.or.us/lrp)

**Giveaways** - We regularly giveaway 1.0 gpm low-flow aerators for bathroom and kitchen sinks, low-flow showerheads (1.5 gpm) and soil moisture meters at our home evaluations. Customers are also able to pick these items up at our office. We advertise in the monthly newsletter and many customers take advantage of these free devices and fixtures.

We have expanded our programs to include commercial customers including schools and businesses. We have also expanded our programs to include restaurant incentives for commercial kitchen appliances such as air cooled ice machines and pre-rinse spray valves. We are currently exploring a commercial washing machine rebate, a smart controller rebate and a pressure reducing valve rebate as well.

## Reuse, Recycling, and Non-potable Water Opportunities

The City uses reclaimed water for landscape irrigation at the wastewater treatment plant. The City has extensively investigated using reclaimed water for other uses, but DEQ has been resistant to permit this use of reclaimed water because of its need to meet in-stream flows during the peak irrigation season. The availability of TID has been limited by proximity to the canal, as well as water availability, but the **City has embarked on a program to pipe its portion of the TID canal, which will reduce evaporation and seepage losses** as well as allow for more efficient means of piping TID water greater distances. Capital improvements projects planned for the next five years include piping TID canals to serve irrigation water to more residents within the City. In response to public interest, the City has also developed information about grey-water and rainwater catchment systems. **A water use evaluation guide will be offered** to help customers determine how much graywater they produce using plumbing fixtures such as showers and washing machines.

**Irrigation Water - "Right Water Right Use"** The City will continue to replace potable water irrigation with Talent Irrigation District (TID) irrigation water where feasible. The City is also considering piping a two-mile portion of the TID canal, which will reduce evaporation and seepage losses as well as improve water quality. The project is currently in the public input process and a report to council is scheduled in April 2019.

**Graywater System Education** - In response to public interest, the City has also developed information about graywater and rainwater catchment systems. A water use evaluation guide is now offered to help customers determine how much graywater they produce using plumbing fixtures such as showers and washing machines. The City has offered 4 workshops in the past two years on Graywater and Rainwater Catchment. We plan to continue to offer workshops in the future. More information can be found at [www.ashland.or.us/graywater](http://www.ashland.or.us/graywater)

## Other Measures

### 1) Shave Peak Period Consumption

Target: Residential Turf Watering-Utilize Incentive-based Water Rates: Provide an economic incentive to reduce water consumption.

Current water rates are based on the costs of treatment and maintenance of the system. These rates do not reflect the cost of new supplies. When water demand begins to approach the available supply for an agency, modifying water rates closer to the cost of new water supplies is indicated. Higher rates, and rates that provide signals to decrease certain types of peak usage can be very effective in providing conservation rates in the summer season, when water consumption is high due to landscape irrigation encourages conservation. The program recommends rate modifications for all sectors.

**A Lawn Replacement Program-** for new water-efficient landscapes - Customers can apply for a rebate for the removal of live, maintained and irrigated lawn that is replaced with climate appropriate, low water use landscape and efficient irrigation systems. Incentive Amounts: \$1.25 per square foot for the first 1,000 ft<sup>2</sup>, \$1.00 per square foot up to 2,000 ft<sup>2</sup> and \$0.75 per square foot up to 3,000 ft<sup>2</sup>. Projects of more than 3,000 ft<sup>2</sup> will be considered on a case by case basis. [www.ashland.or.us/lrp](http://www.ashland.or.us/lrp)

**Irrigation Evaluations** - Every year water conservation staff offer free irrigation system evaluations for all Ashland customers. Evaluations are offered during the summer months and consist of an assessment of the design, operation/management of sprinkler systems. Assistance with programming sprinkler controllers and developing watering schedules.

## Other Measures Continued

**Public Information and Education:** The City will continue sponsoring events and will explore opportunities to provide additional customer services, both among customers and in schools, to encourage water conservation.

**The City may implement the following to educate the public on water efficiency:**

- Continue to enhance the City's Conservation Division webpage.
- Presenting to local schools to educate students
- Future outreach efforts will also include internal education.
- Send out high use letters to highest water users.
- Continue to participate in events such as Earth Day and the Spring Garden Fair.
- Increase outreach to developers and builders to encourage water efficient development practices, particularly with landscape designs.

**Target: Summer Water Use of Largest Non-residential Consumers**

The target audience is the City's largest customers. Depending on the intensity of the audit, either City staff volunteer or an engineering consultant would conduct the audits.

Large Customer Audit: Provide water audits to provide suggested measure for more efficient water usage among the largest customers. These large customers are all non-residential and include the City itself, Southern Oregon University, and several large hotels and apartments.

A consumer visit and brief audit, or an extensive inspection and analysis of water using processes, can determine process or operational changes that may be more water efficient, or suggest implementation of measures that lead to more efficient use of water. Irrigation audits can provide landscape managers with information for more effective water usage.

**Target: Commercial and Residential Baseload Use**

Showerhead Kit Retrofit: Encourage conservation by providing households with an inexpensive set of measures that reduce leakage and usage in the home.

In this program, the City provides door-to-door drop-off or optional audit and installation of a set of three conservation devices, including: 1) a toilet leak detection tablet; 2) 1.5 gallon per minute showerhead; and 3) 1.0 gallon per minute faucet aerator. These measures are very cost effective and yield significant water conservation benefits. This program is targeted for the residential sector.

**Landscape Regulation:** Revise Ashland's current landscaping regulations to significantly reduce the water use of most landscapes.

Landscaping plans are required for new apartment, commercial, and industrial developments. While the City encourages saving water, current regulations do not require water efficiency in plant selection or irrigation systems. Significant reductions in water usage can nevertheless be achieved through voluntary utilization of principles such as good landscape planning and design; limiting turf areas; use of low water use plants to reduce transpiration; efficient irrigation systems and scheduling; soil improvement where necessary; use of mulches to reduce evaporation; and appropriate maintenance.

**Website:** Continue to enhance the website by adding more information and resources including a watering schedule based on type of sprinklers being used, tips for saving water indoors and outdoors, a water use evaluation guide, a link to live weather data, graywater use and rainwater catchment as well as current program information.

**School Presentations:** We have been offering presentations to local schools K-12 and college level to educate students about where the City of Ashland's water comes from and why it is important to use water resources wisely. Staff regularly partners with North Mountain Park to give classes, tours and presentations and provide educational materials to their volunteer instructors.

**Internal Outreach Efforts:** Continue communication with staff and public officials within other departments to educate and encourage implementation of water-efficient guidelines within development standards. Specifically, we have been working with our Parks Department on a sprinkler replacement pilot project for City owned irrigated properties.

**Outreach to developers and Builders:** As a partner with EPA WaterSense program, the City of Ashland will promote WaterSense products, including improving awareness of these products through newsletters, the website, and working closely with developers and builders. Current landscape regulations require some water efficiency measures.

**High use customers:** We offer indoor and outdoor water evaluations to our high use customers. We have been working closely with Southern Oregon University, the local School district, the hospital, several hotel and motels and Home Owners Associations. We provide rebate forms and other educational materials as needed and monitor water usage before and after implementing any changes to verify water savings.

**Giveaways** - We regularly giveaway 1.0 gpm low-flow aerators for bathroom and kitchen sinks, low-flow showerheads (1.5 gpm) and soil moisture meters at our home evaluations. Customers are also able to pick these items up at our office. We advertise in the monthly newsletter and many customers take advantage of these free devices and fixtures. We also giveaway toilet dye tablets for customers to check their toilets for leaks, sponges, stickers and other water conservation related materials.

**Landscape Regulation:** We continue to work with the Planning Department to develop landscaping regulations that will reduce water use on most landscapes. Currently, we provide helpful resources and information to customers and developers on water efficient irrigation system practices and climate appropriate plantings.

**Landscape and irrigation plan review:** for new commercial industrial and residential developments. The City's Water Conservation Specialist reviews and provides comments on landscape and irrigation plans submitted to the Planning Division. Direction for meeting water efficiency standards is provided through the plan review process and also directly to landscape designers.

## Other Measures Continued

**Acquisition of Water Rights: Investigate extending the City's access to Talent Irrigation District (TID) water to relieve the municipal water system's summertime residential irrigation load.** The City currently has water rights for 1,400 acre feet of water per year from the Talent Irrigation District (TID). Ashland has over 2,000 households that irrigate with TID water delivered through a series of ditches. However, new subdivisions have not been permitted to extend this system. This source could provide significant relief from City resources during the summertime residential irrigation loads. The City can lobby for extending access to this water for subdivisions; purchasing land with existing TID allocations before the land is subdivided; or investigates the possibility of purchasing TID allotments alone without the land. In addition, this water may be able to be diverted to the water treatment plant when it is needed in severe droughts. This program will be targeted at residential and non-residential customers with TID allotments.

**Density Bonus:** Ashland's current density bonus that allows additional houses or apartments if the design meets water and energy efficiency criteria to allow additional units only if the design meets both energy and water conservation criteria. Since 1980, Ashland has included a density bonus for energy efficient housing. This program offers a 15 % increase in the number of houses or apartments permitted by the zoning code if the housing is designed to exceed building code minimums. Under this program, the City would tie the density bonus to both energy and water efficiency. System Development Charge rebates would also be available to new buildings meeting water efficiency standards. The new housing constructed would be required to exceed state code in energy and water efficiency, and install low water-use landscaping.

### 2.) Reduce Base load Consumption

#### Target Unaccounted-for- Water in City System

**System leak detection and repair:** Reduce system losses through investigation and mitigation of system leaks and other measures.

To reduce the amount of Unaccounted-for- Water and to make more efficient use of water production, the City can investigate the feasibility of undertaking a program to reduce system leaks. Recommended actions include: calibrating water treatment plant flow meter; continued monitoring of municipal uses of water (street washing and fire department uses); setting up a meter testing program for meters larger than one inch; monitoring Unaccounted-for-Water annually through a system audit; minimizing overflows at the Granite Street Reservoir, and documenting/metering the overflows; obtaining estimates for a leak detection survey prioritizing and implementing recommendations from the survey.

**Acquisition of Water Rights:** The City continues to acquire municipal water rights. In addition to the Talent Irrigation District water rights, the City has also acquired several water right transfers along Ashland Creek.

**Irrigation Water - "Right Water Right Use"** The City will continue to replace potable water irrigation with Talent Irrigation District (TID) irrigation water where feasible. The City is also considering piping a two-mile portion of the TID canal, which will reduce evaporation and seepage losses as well as improve water quality. The project is currently in the public input process and a report to council is scheduled in April 2019.

**Density Bonus:** We continue to offer the density bonus where applicable - Ashland's current density bonus that allows additional houses or apartments if the design meets water and energy efficiency criteria to allow additional units only if the design meets both energy and water conservation criteria. Since 1980, Ashland has included a density bonus for energy efficient housing. This program offers a 15 % increase in the number of houses or apartments permitted by the zoning code if the housing is designed to exceed building code minimums. Under this program, the City would tie the density bonus to both energy and water efficiency.

#### Target Unaccounted-for- Water in City System

**System leak detection and repair:** We continue to reduce system losses through investigation and mitigation of system leaks and other measures.

**Ongoing:** To reduce the amount of Unaccounted-for- Water and to make more efficient use of water production, the City can investigate the feasibility of undertaking a program to reduce system leaks. Recommended actions include: calibrating water treatment plant flow meter; continued monitoring of municipal uses of water (street washing and fire department uses); setting up a meter testing program for meters larger than one inch; monitoring Unaccounted-for-Water annually through a system audit; minimizing overflows at the Granite Street Reservoir, and documenting/metering the overflows; obtaining estimates for a leak detection survey prioritizing and implementing recommendations from the survey.

OAR 690-086-0120(4)(b): Average monthly and daily diversions under each right held by the water supplier for the previous five years.

Diversion of water under each of the City of Ashland's water rights for the previous five years is detailed below:

Source	2014		2015		2016		2017		2018	
	Average Monthly Diversion (MG)/month	Average Daily Diversion (MGD)	Average Monthly Diversion (MG)/month	Average Daily Diversion (MGD)	Average Monthly Diversion (MG)/month	Average Daily Diversion (MGD)	Average Monthly Diversion (MG)/month	Average Daily Diversion (MGD)	Average Monthly Diversion (MG)/month	Average Daily Diversion (MGD)
<b>City's of Ashland's "Key" Municipal Water Rights</b>										
Reeder Reservoir Cert. # 10843										
Ashland Creek Cert. # 10856	63,936,224	2,102,013	62,000,279	2,207,950	68,086,250	2,238,452	72,655,379	2,388,670	70,666,541	2,395,890
<b>TID/USBOR Water Rights Providing Water to Ashland</b>										
Keene Creek/ Hyatt Cert. # 79212 *	50,115,730	1,670,524	50,115,730	1,670,524	50,115,730	1,670,524	50,115,730	1,670,524	50,115,730	1,670,524
Multiple Reservoirs Cert. # 80462 *	28,544,460	951,482	24,634,260	821,142	6,451,830	215,061	2,118,025	70,601	17,856,580	595,219
<b>Additional Ashland Creek Water Rights</b>										
Ashland Creek Permit # 47628										
Ashland Creek Cert. #15999										
Ashland Creek Cert. #15998	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #16024	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #35922	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #35923	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #39241	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #39242	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #39243	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #41651	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #41652	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #41772	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #44474	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #44475	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #44573	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67618	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67619	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67620	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67621	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67623	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67624	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #67625	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #72371	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #46398	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #86353	0	0	0	0	0	0	0	0	0	0
Ashland Creek Cert. #16033	0	0	0	0	0	0	0	0	0	0
<b>Lost Creek Reservoir Water Rights</b>										
Lost Creek Reservoir Permit # S-54337	1,425,051	46,851	5,158,206	169,585	0	0	0	0	2,208,448	72,607
<b>City of Ashland's Currently Unused Water Rights</b>										
Sulphur Spring Cert. # 11090	0	0	0	0	0	0	0	0	0	0

\* Calculated for a five month period (May - September 150 days)

**2013 Water Management and Conservation Plan: City of Ashland Water Rights**

Application	Permit	Certificate	Decree	Type of Use	Priority Date	Source	V (AF)	Q (CFS)	Max.Inst (CFS)	Max.Vol. (MG)	MG per Month	MG per Day	Notes
<b>City's of Ashland's "Key" Municipal Water Rights</b>													
R-11489	R-596	10843		Municipal	5/20/1927	Reeder Reservoir	800 AF			260			
S-11518	S-7985	10856		Municipal	5/31/1927	Ashland Creek		15	15	1220	102	3.34	
<b>TID/USBOR Water Rights Providing Water to Ashland</b>													
multiple	S-1382	79212**		Domestic use City Ashland	9/6/1915 for Keene Creek portion	Keene Creek/ Hyatt Reservoir**	769		2.15	250	31.3	1.39	**Annual BOR contract
S-57846	S-44349	80462		Municipal Use	8/24/1978	Multiple Reservoirs	600		1.68	195	24.4	1.09	**Annual BOR contract
<b>Additional Ashland Creek Water Rights*</b>													
61057	47628			Hydropower	12/08/1980	Ashland Creek		30.0	30	7076			1463 THP (429.38 ')
		15999	***	Hydropower	12/31/1860	Ashland Creek		25.00	25	5897			25 HP
		15998	Rogue River Final Decree	Municipal, Domestic, Stock, and Irrigation	1854: 0.18 cfs, 1861: 5.0 cfs, 1864: 3.75 cfs, 1872: 2.50 cfs, 1882: 1.0 cfs	Ashland Creek		12.43	++++	++++	++++	++++	11.43 CFS included in segregation letter dated July 5, 1973
		16024	***	Municipal	12/31/1856	Ashland Creek		0.315	++++	++++	++++	++++	Transfer P-21
		35922	***	Municipal	12/31/1858	Ashland Creek		0.08	++++	++++	++++	++++	Transfer A-30
		35923	***	Municipal	12/31/1858	Ashland Creek		0.08	++++	++++	++++	++++	Transfer A-30
		39241	***	Municipal	12/31/1856	Ashland Creek		0.045	++++	++++	++++	++++	Transfer A-49
		39242	***	Municipal	12/31/1864	Ashland Creek		0.042	++++	++++	++++	++++	Transfer T-2338
		39243	***	Municipal	12/31/1864	Ashland Creek		0.16	++++	++++	++++	++++	Transfer T-2390
		41651	***	Municipal	12/31/1858	Ashland Creek		0.022	++++	++++	++++	++++	Transfer T-2701
		41652	***	Municipal	12/31/1864	Ashland Creek		0.073	++++	++++	++++	++++	Transfer #2595
		41772	***	Municipal	12/31/1858	Ashland Creek		0.04	++++	++++	++++	++++	Transfer T-2775
		44474	***	Municipal	12/31/1858	Ashland Creek		0.08	++++	++++	++++	++++	Transfer A-39
		44475	***	Municipal	12/31/1885	Ashland Creek		0.03	++++	++++	++++	++++	Transfer A-46
		44573	***	Municipal	12/31/1854	Ashland Creek		0.19	++++	++++	++++	++++	Transfer A-39
		67618	***	Municipal	12/31/1856	Ashland Creek		0.04	++++	++++	++++	++++	*Transfer T-3856
		67619	***	Municipal	12/31/1864	Ashland Creek		0.08	++++	++++	++++	++++	*Transfer T-3935
		67620	***	Municipal	12/31/1864	Ashland Creek		0.09	++++	++++	++++	++++	Transfer T-3965*
		67621	***	Municipal	12/31/1856	Ashland Creek		0.034	++++	++++	++++	++++	* Transfer T-5580
		67623	***	Municipal	12/31/1858	Ashland Creek		0.034	++++	++++	++++	++++	* Transfer T-5656
		67624	***	Municipal	12/31/1858	Ashland Creek		0.011	++++	++++	++++	++++	* Transfer T-5581
		67625	***	Municipal	12/31/1864	Ashland Creek		0.09	++++	++++	++++	++++	* Transfer T-5861
		72371	***	Municipal	12/31/1858	Ashland Creek		0.032	++++	++++	++++	++++	* Transfer T-6147
		46398		Municipal	12/31/1864	Ashland Creek	5.9	0.02	++++	++++	++++	++++	* Transfer T-11364
		86353		Municipal	12/31/1880	Ashland Creek	10	0.045	++++	++++	++++	++++	* Transfer T-11364
		16033		Domestic, Irr.	12/31/1881	Ashland Creek		0.34					Transfer T -
								14.403					
<b>Lost Creek Reservoir Water Rights</b>													
S-85733	S-54337			Municipal	8/11/2003	Lost Creek Reservoir	1000		0	0	0	2.13	C date: Sept 7, 2021
<b>City of Ashland's Currently Unused Water Rights*</b>													
S-15342	S-11243	11090		Municipal	4/25/1934	Sulphur Spring,		0.035	0	0	0	0	Trib. Of Neil Creek

\* indicates that the quantity of water diverted at the new POD shall not exceed the quantity of water at the old POD; limited to the irrigation season

\*\* information provided by Jim Pendleton, TID.

\*\*\*Rogue River (F) State Water Board

++++ indicates these transfers changed POD to match Ashland's key water right certificate #10856. Usage reporting is combined with certificate #10856, with shaded rights subject to OWRD allocation segregation letter dated July 5, 1973

**OAR 690-086-0120(4)(c): A description of the results of the annual water audit required under OAR 690-086-0150(4)(a)**

Sold	2014				2015				2016				2017				2018			
	Sold CF	Sold Gal	Produced Gal	Difference Gal	Sold CF	Sold Gal	Produced Gal	Difference Gal	Sold CF	Sold Gal	Produced Gal	Difference Gal	Sold CF	Sold Gal	Produced Gal	Difference Gal	Sold CF	Sold Gal	Produced Gal	Difference Gal
January	5,959,470	44,576,839	42,376,662	-2,200,177	5,578,741	41,728,981	53,731,976	12,002,995	5,884,245	44,014,149	48,570,824	4,556,675	5,746,060	42,980,526	52,928,298	9,947,772	5,562,301	41,606,011	49,259,092	7,653,081
February	5,280,268	39,496,406	37,364,138	-2,132,268	5,262,956	39,366,910	48,045,384	8,678,474	5,359,031	40,085,550	45,159,835	5,074,285	5,206,765	38,946,601	45,533,055	6,586,454	5,138,873	38,438,767	45,182,281	6,743,514
March	6,150,230	46,003,720	41,712,722	-4,290,998	6,158,134	46,062,845	54,400,619	8,337,774	6,119,422	45,773,280	48,012,907	2,239,627	5,864,481	43,866,315	52,377,915	8,511,600	5,822,768	43,554,305	48,781,815	5,227,510
April	7,878,458	58,930,865	56,411,196	-2,519,669	7,677,113	57,424,807	64,240,127	6,815,320	8,177,352	61,166,595	64,187,118	3,020,523	6,346,402	47,471,084	51,684,684	4,213,600	7,553,172	56,497,729	59,514,095	3,016,366
May	11,790,081	88,189,805	97,695,071	9,505,266	10,836,150	81,054,399	94,302,499	13,248,100	12,103,442	90,533,748	89,363,841	-1,169,907	10,502,865	78,561,427	88,744,281	10,182,854	11,269,035	84,292,381	93,275,497	8,983,116
June	14,806,208	110,750,439	119,262,345	8,511,906	14,541,844	108,772,992	126,541,708	17,768,716	15,801,841	118,197,774	123,187,289	4,989,515	15,268,471	114,208,161	121,506,787	7,298,626	14,545,889	108,803,248	118,246,942	9,443,694
July	16,907,732	126,469,839	137,165,487	10,695,648	16,729,211	125,134,497	130,673,956	5,539,459	18,469,261	138,150,075	136,132,717	-2,017,358	19,506,849	145,911,228	157,126,100	11,214,872	18,204,015	136,166,031	158,077,963	21,911,932
August	16,494,291	123,377,296	129,283,119	5,905,823	16,903,991	126,441,854	125,280,731	-1,161,123	19,302,702	144,384,213	151,534,196	7,149,983	19,472,745	145,656,131	161,856,467	16,200,336	19,608,216	146,669,455	157,840,050	11,170,595
September	13,727,682	102,683,058	116,046,445	13,363,387	14,875,502	111,268,757	104,572,030	-6,696,727	15,427,036	115,394,232	120,198,596	4,804,364	15,285,429	114,335,012	122,961,591	8,626,579	15,942,404	119,249,186	131,581,883	12,332,697
October	9,655,018	72,219,532	83,606,470	11,386,938	11,674,546	87,325,603	90,935,553	3,609,950	9,795,546	73,270,685	70,806,899	-2,463,786	11,082,387	82,896,257	94,884,804	11,988,547	11,437,300	85,551,006	85,736,841	185,835
November	6,343,162	47,446,854	55,397,068	7,950,214	6,827,514	51,069,807	46,864,454	-4,205,353	6,325,285	47,313,132	53,454,797	6,141,665	7,020,784	52,515,467	55,629,214	3,113,747	7,518,416	56,237,752	60,786,619	4,548,867
December	5,755,373	43,050,191	51,014,581	7,964,390	6,139,571	45,923,994	49,312,777	3,388,783	5,717,786	42,769,037	49,425,979	6,656,942	5,854,320	43,790,313	49,631,355	5,841,042	6,062,860	45,350,195	49,216,796	3,866,601
<b>Adjustments</b>	120,747,974	903,194,843	967,335,304	64,140,461	123,205,274	921,575,446	988,901,814	67,326,368	128,482,951	961,052,470	1,000,034,998	38,982,528	127,157,557	951,138,523	1,054,864,551	103,726,028	128,665,249	962,416,066	1,057,499,874	95,083,808
<b>Total</b>	1,242,392	9,293,095			-450,980	-3,373,330			389,065	2,910,204			830,200	6,209,896			1,075,737	8,046,513		
<b>Produced</b>	129,322,902		967,335,304		132,206,125		988,901,814		133,694,518		1,000,034,998		141,024,673		1,054,864,551		141,376,989		1,057,499,874	
<b>Over (under) sales</b>	7,332,536	54,847,366			9,451,831	70,699,699			4,822,503	36,072,324			13,036,916	97,516,132			11,636,002	87,037,295		
	94.3%				92.9%				96.4%				90.8%				91.8%			
<b>Loss</b>	5.7%				7.1%				3.6%				9.2%				8.2%			
<b>Accounted for change from prior year</b>					0.6%				5.0%				-0.7%				1.4%			
<b>Produced change from prior year</b>					2.2%				1.1%				5.5%				0.2%			

OAR 690-086-0120(4)(d): A comparison of quantities of water used in each sector as identified and described in OAR 690-086-0140(6) with the quantities of water used in each sector for the pervious five years.

**Water Use By Sector 2014-2018 (cubic feet)**

Year	Single Family	Multifamily	Commercial	Irrigation	Government	Municipal	Commercial/ Residential	Total Cubic Feet	Yearly Total Gallons
<b>2014</b>	55,150,087	18,198,981	16,795,444	21,389,668	8,352,082	894,697	1,206,387	121,987,346	<b>912,465,348</b>
<b>2015</b>	53,284,489	17,817,450	15,959,889	20,744,197	6,513,156	7,149,473	1,281,010	122,749,664	<b>918,167,483</b>
<b>2016</b>	55,763,466	17,719,717	16,476,016	24,681,560	4,000,773	8,817,709	1,331,538	128,790,778	<b>963,355,022</b>
<b>2017*</b>	56,035,330	17,557,664	16,604,910	22,607,728	3,444,422	10,310,762	1,344,109	127,904,924	<b>956,728,835</b>
<b>2018**</b>	61,553,160	19,526,876	18,711,975	18,915,114	3,893,235	5,643,555	1,411,156	129,655,072	<b>969,819,935</b>

\* Reclassified government and municipal accounts

\*\* Moved to a new billing system in July 2018