Council Study Session

May 2, 2022

Agenda Item	2022 Water Resources Update	
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Item Type	Requested by Council ☐ Update ☒ Request for Direction ☐ Presentation ☐	

SUMMARY

Before the Council is a comprehensive update of the City's water resources, including an overview of the following:

1. Approved Drought Management Strategy
2. Water System Planning and Supply Analysis
3. Regional Water Planning
4. Current Water Supply Information
5. Conservation and Efficiency Programs

POLICIES, PLANS & GOALS SUPPORTED

Council Goals:

Essential Services

- Water

Value Services

- Address Climate Change

Department Goals:

- Maintain existing infrastructure to meet regulatory requirements and minimize life-cycle costs
- Deliver timely life cycle capital improvement projects
- Maintain and improve infrastructure that enhances the economic vitality of the community
- Evaluate all city infrastructure regarding planning management and financial resources

Plans:

- Water Master Plan - "Adopt an integrated water master plan that addresses long-term water supply including climate change issues, security and redundancy, watershed health, conservation and reuse and stream health."
- Water Management & Conservation Plan
- Climate and Energy Action Plan (CEAP)
  - Manage and conserve community water resources
  - Conserve water use within city operations

BACKGROUND AND ADDITIONAL INFORMATION

City of Ashland Water Management Strategy for Drought:

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As a matter of previous practice, recommended by AWAC and approved by the City Council, Public Works follows a specific strategy for drought management. That strategy is to recommend voluntary conservation from the community during the summer season, utilize the Talent Irrigation District supplemental (TID) source early to supplement Reeder Reservoir water, thus **protecting the Reeder supply for as long as possible**. If TID is unavailable or after water delivery ends for the season, the City has access to the Talent-Ashland-Phoenix (TAP) intertie system for additional treated water supply from the Medford Water Commission if needed. The TAP supply is available all year, but under the approved drought strategy it is utilized after TID becomes unavailable.

Due to the significant impacts of drought on the City's water rights associated with the TID supply and the inability to use this source for supplemental supply during the 2022 season, Public Works will begin using the TAP source as needed for supplemental supply during the 2022 season. Use of any supplemental source is typically instituted after the drawdown of Reeder Reservoir begins.

TAP 2021 Use

During the 2021 season the City pumped 550.6 acre feet of TAP water or 179 MG. Using this source during the 2021 season provided an additional benefit to the City related to "certifying" the Lost Creek water right permit. Water rights are issued in two stages: The first stage is the "water right permit," which serves as the initial authorization for a water user to develop the source and begin making use of water. The second stage is the final certificate, which is issued after the water use is fully developed and put to use. The certification date based on the acquisition of the original Lost Creek water right permit was September 7, 2021. This means the City must certify all or a portion of the use and/or request a time extension for the "development" of the remainder of the water right.

To certify the permit a "Claim of Beneficial Use" (COBU) must be developed that shows the water was put to use during a water year (October 1 – September 30). Public Works is working with GSI Water Solutions and was able to "certify" the use of 550.6 acre-feet and obtain a partial perfection water right certificate from the Oregon Water Resources Department (OWRD) on April 12, 2022. Partial perfection references only a portion of the total water right was perfected or shown to be used during the time period. Public Works has requested a time extension to certify the remainder of the Lost Creek stored water right.

Curtailment

In addition to voluntary water reductions and conservation program efforts, the City has a very well-developed curtailment ordinance that has been employed to various levels in the past to assist in managing water supply limitations due to drought conditions. Often the City requests a level of "voluntary" curtailment from the community before declaring a water shortage and formally activating mandatory curtailment measures. A copy of the complete curtailment code is attached for reference (#1). Curtailment restrictions can also be applied to the TAP system if the Medford Water Commission enacts its curtailment plan.

Water System Planning

The City has put significant effort into Water System Planning to ensure adequate supply, meet regulatory requirements and provide for overall system resiliency. Recent planning efforts include:

- 2012 Comprehensive Water Master Plan (Link)
- 2013 Water Management and Conservation Plan (Link)
- 2020 Water Master Plan Update (Link)
- 2020 TAP Master Plan (Link)

2011 Water Conservation and Reuse Study (Climate Impacts)
The City has proactively prepared for the impacts of climate change on its water resources. The City performed an extensive long-term water supply evaluation, "*Water Conservation and Reuse Study"* as part of the 2012 Water Master Plan development process. In the analysis, the City reviewed likely impacts of climate change on the City's main water supply: The East and West Forks of Ashland Creek. According to *Effects on Climate Change on Ashland Creek, Oregon* (Hamlet, 2010), climate change models predict less spring snowpack and lower flows in Ashland Creek. Numerous water supply options were reviewed for how to address the risk of climate change to the City's supply while still meeting growing demands. Final recommendations from the water supply evaluation were to implement water conservation and develop either the TAP Intertie to provide supply redundancy or construct a new WTP. Additional recommendations included moving more aggressively towards acquiring additional Ashland Creek or TID water rights, performing groundwater testing, and evaluating raw water storage options such as shading, snow fencing, and silviculture practices. Since completion of the 2011 water supply study, the TAP Intertie has been developed, the City is actively developing a new WTP, and the City continues to implement a successful water conservation program.

Water Management and Conservation Plan
In 2013 the City developed as required a Water Management and Conservation Plan (WMCP). A Municipal Water Management and Conservation Plan provides a description of the water system, identifies the sources of water used by the community, and explains how the water supplier will manage and conserve supplies to meet future needs. Preparation of a plan is intended to represent a proactive evaluation of the management and conservation measures that suppliers can undertake. The planning program requires that municipal water suppliers consider water that can be saved through conservation practices as a source of supply to meet growing demands if the saved water is less expensive than developing new supplies. As such, a plan represents an integrated resource management approach to securing a community´s long-term water supply.

Staff will be coordinating a full update to the WMCP for 2023
This update is not only required on a five year basis, but also required because the City just received a partial perfection certificate for its Lost Creek Lake stored water right. The Oregon Water Resources Department requires an updated WMCP when the status of a municipalities water rights change.

The 2023 update will take a fresh look at the City's water supply sources including re-use, projected future demand and it will make recommendations for changes if necessary. The update will include the coordinated water rights management and sharing plan developed between the MWC Partner Agencies (see below). Also, staff expects to include climate modeling analysis in the update associated with the various supply sources in order to account for climate change impacts on our water supplies.

Coordinated Water Rights Management and Water Sharing Plan
In addition to master planning specific to the City's water system there is also regional water management planning done between the "Partner" communities who utilize the Medford Water Commission (MWC) source for treated water delivery. The Partner communities have been working with MWC on a regional water rights management and sharing plan. A one-page summary of the work to date is included as attachment #4.

The project initially started with developing a strategy between all the Partners on when to certify their own held water rights to ensure the total volume of rights does not exceed the capacity for production at the Duff Treatment Plant, this will help protect each community's formal water rights.

The City of Ashland has 1000 acre-feet of stored water right in Lost Creek Reservoir that utilizes the Duff Treatment Plant as the point of diversion for delivery of treated water through the TAP system. Not only does this regional planning outline a water right certification strategy for all Partners to follow, it also develops a water sharing plan. Under the water-sharing plan framework, the Partner Cities would retain ownership and control of their water rights and continue to use water under their own water rights from May 1 through September 30 each year. At the end of each year, Medford Water Commission would compare each city's water use to the volume of water authorized by its water rights. Any Partner Cities that used more water than authorized by their water rights would provide compensation to the other Partner Cities for use of water under their rights. This compensation relates directly to the Operations and Maintenance fees paid by each jurisdiction for water storage associated with their water rights.

Staff expects to present the Intergovernmental Agreement detailing the parameters of the coordinating water rights management and sharing plan at a future Council meeting for approval. The Medford Water Commission has reviewed the draft and recommended moving forward with the approval process by all Partner Cities.

2022 Water Supply & Storage Sources

The City has three (3) distinct sources of water, both raw and treated; Reeder Reservoir and Ashland Creek water, Talent Irrigation District (TID) via the Ashland Canal and the Talent-Ashland-Phoenix (TAP) Intertie from the Medford Water Commission (fully treated water).

Reeder Reservoir Source

Reeder Reservoir is the City's primary raw water source and has a storage capacity of **800 acre-feet or 260 million gallons (MG)**. The reservoir is feed from the flows of the east and west forks of Ashland Creek and during good water years typically supplies all the City's raw water required for residential and commercial use. Last year, Geographic Information Systems staff developed a Water Supply Dashboard as a public information tool, where the public can view Ashland's water supply and demands daily, reference figure 3 below.

Current Conditions (Reeder Reservoir)

Water Treatment Plant staff started filling Reeder in early April, due to the lower than average snowpack. Public Works felt it best to begin filling the reservoir in preparation for summer season. Typically, the reservoir reaches full capacity in May and spills through the spillway for some time before demand outpaces inflow at which time the reservoir begins the "**drawdown**". The drawdown can begin as early as June or as late as July. As of April 21st, Reeder Reservoir was 93.2% full and spilling through the spillway. In May, Water Treatment Plant staff will lower the spillway gates and fill the reservoir to 100%. Typically during supply impacted years the City has requested the community to enact voluntary water reductions measures and this year will be no different. The City has found a target of 4.5 million gallons per day beneficial with respect to a targeted consumption amount we can normally sustain during the summer season with what is expected to be a limited summer season.

Figure 1 below shows a graph of the annual water demand by the community with average day and wintertime demand thresholds. In general, one-billion gallons of water is treated and delivered to the community annually. Over ½ of the total water demand of the community occurs during the summer months (June-September).

Snowpack:
The current snowpack conditions lend themselves to a below average water year with respect to the Reeder Reservoir supply. As of April 21st, 2021, there was 49 inches of snow with a Snow Water Equivalent (SWE) of 15.1 inches, recorded at the Big Red Mountain SNOTEL site just southwest of Ashland (60% of the 30-year average). There are also three additional sites on Mt. Ashland that are measured manually at the end of each month by the Jackson County Water Master. These SNOTEL sites provide valuable snowpack information and related climate data that allow us to analyze the City's water supply conditions for the year.

Table 1: Mount Ashland Snowpack

	Snow Depth (inches)				Snow Water Equivalent (SWE) inches			
Snow Course/Aerial Marker Sites	**2019**	**2020**	**2021**	**2022**	**2019**	**2020**	**2021**	**2022**
*** Big Red Mountain SNOTEL Site 6,050 ft.**	**49**	**19**	**34**	**49**	**24.2**	**11**	**17.8**	**15.1**
Caliban 6,500 ft.	**66**	**26**	**45**	**31**	**30.2**	**11.2**	**20**	**12**
Mt. Ashland Switchback 6,430 ft.	**59**	**18**	**28**	**21**	**27.5**	**8.3**	**13**	**7.8**
Ski Bowl Road 6,070 ft.	**31**	**2**	**18**	**13**	**15.1**	**.8**	**7.3**	**6.3**

*** Big Red Mountain SNOTEL Site is an automated site that provides daily snowpack data. The three additional sites are measured manually by the Jackson County Water Master at the end of each month (March 31, 2022). The Big Red Site information for 2021 was taken on April 21nd, 2021.**

Figure 1: Annual Water Use Patterns (2020)

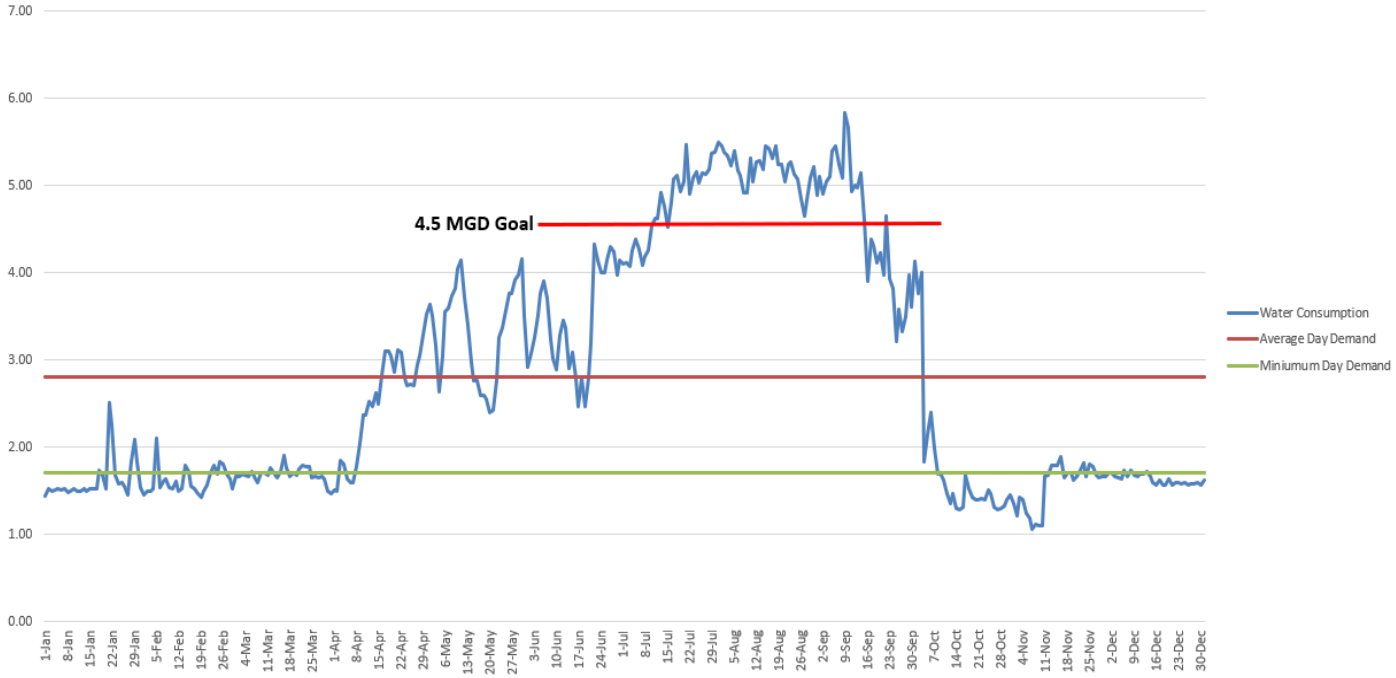

Figure 2: 2021 Reeder Reservoir Drawdown

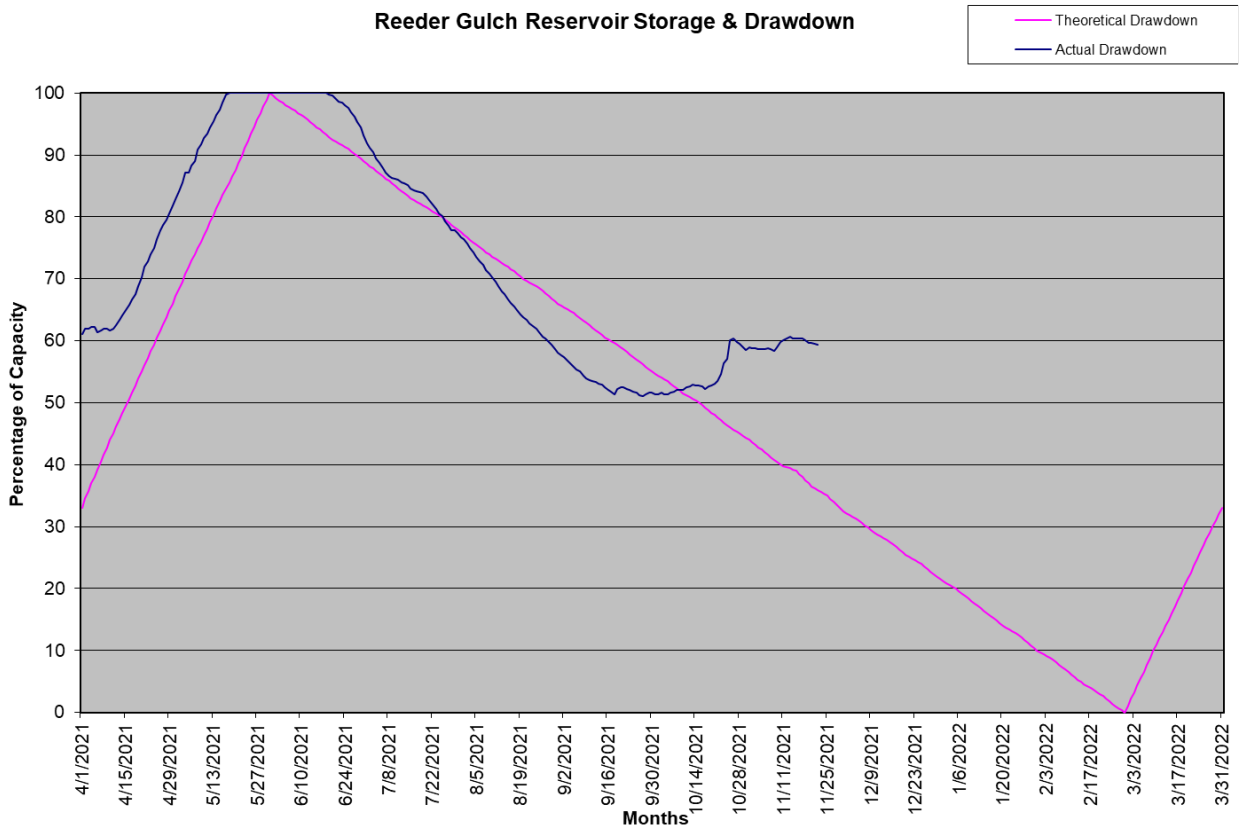

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Figure 3: Water Supply Dashboard April 20, 2022

Talent Irrigation District (TID) Source

The City has a total of **1369 acre feet or 446 MG** of domestic/municipal and irrigation water rights that are delivered through the TID canal system to the Ashland Canal. The City has the ability to pump this water source to the Water Treatment Plant as a supplemental water source during drought years. This source is only available during irrigation season, which typically runs from May to October. Due to persistent drought conditions the TID source has been impacted severely and use reductions have been implemented the past few years.

Current Conditions

Staff expects the TID source to be severely diminished this year. TID recently posted an update on their website regarding the 2022 irrigation season: April 11, 2022 TID Update. This update describes that, based on water supply they expect to only run around 25 days this irrigation season. Similar to last year staff does not expect to have access to the TID source as a raw water source to supplement Reeder Reservoir water. The TID Board will make the decision on when to begin the irrigation season at their May meeting.

Talent-Ashland-Phoenix (TAP) Source

The City has the rights to **1000-acre feet or 325 MG** of water for municipal use from Lost Creek Lake delivered from the Medford Water Commission through the TAP intertie.

Current Conditions

Currently Lost Creek Reservoir is at 60% (April 20th) of capacity and Public Works expects to have the full availability of the 1000-acre feet of stored water rights from Lost Creek this year for use as supplemental treated water after the drawdown of Reeder Reservoir begins. Staff has already begun coordination efforts with the Medford Water Commission, Phoenix and Talent regarding the use of the TAP source for the 2022 season.

City of Ashland Total Supply:
Figure 4 below represents a comparison of the storage associated with the City's water supply sources. The total combined storage supply is 3169 acre feet or just over 1 billion gallons. Figure 5 shows the relationship between storage reservoirs in the Rogue Valley.

Figure 4: City of Ashland Raw Water Storage Supply

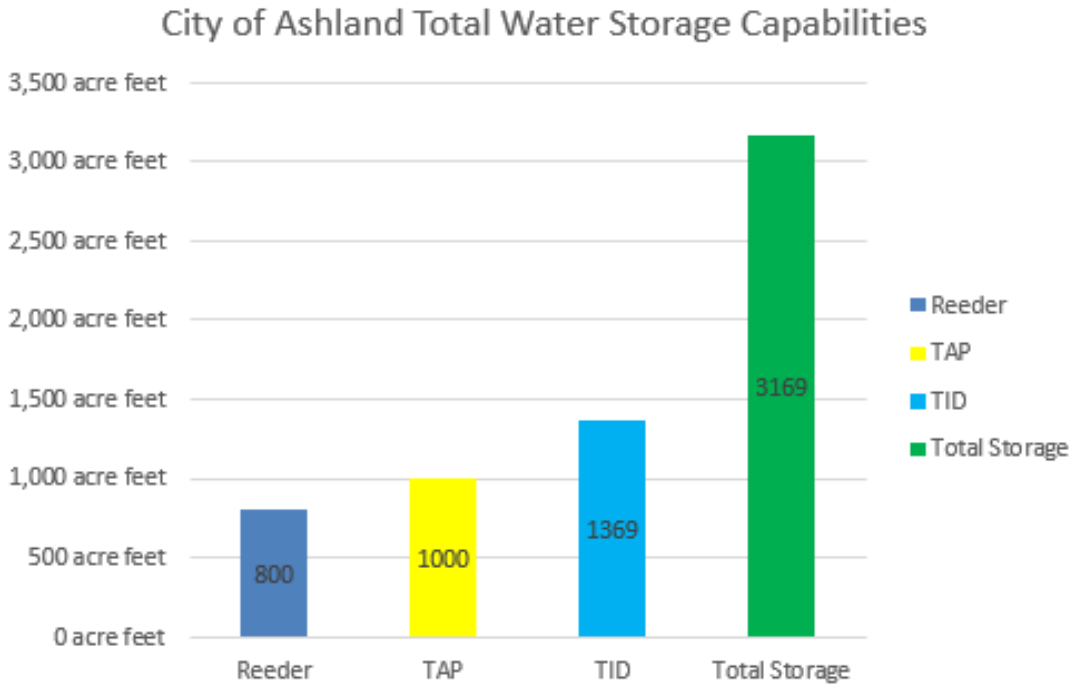


Figure 5: Reservoir Storage Comparisons (4/20/2022)

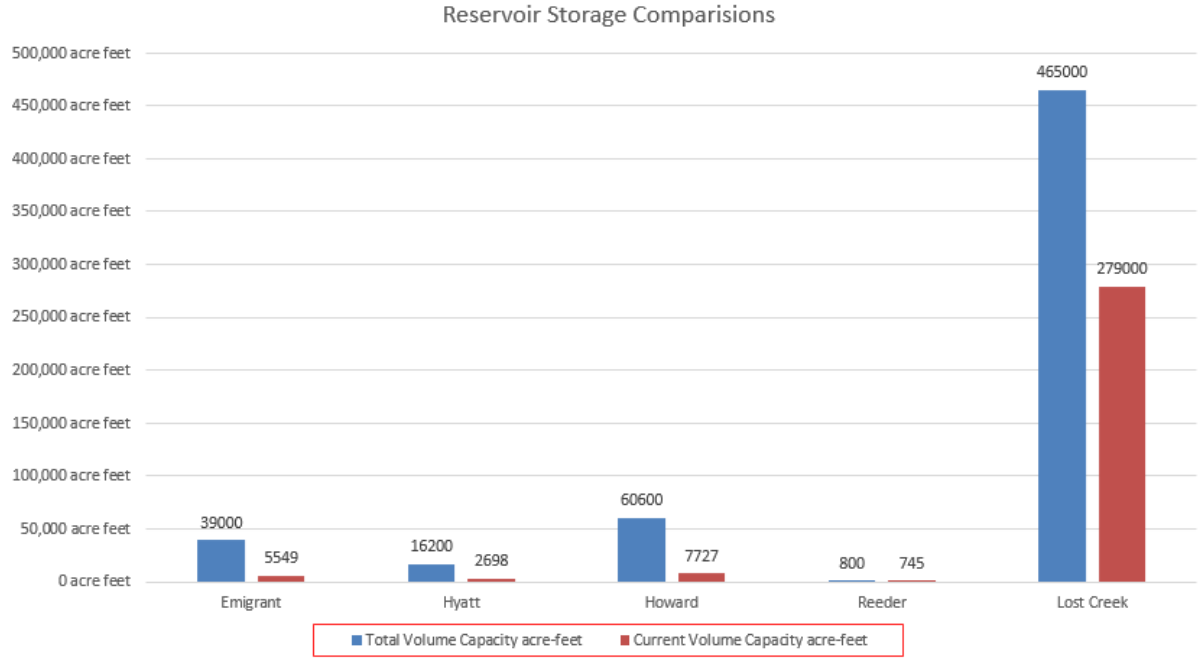


Figure 5: Irrigation Reservoirs T-Cup Diagram (2022)

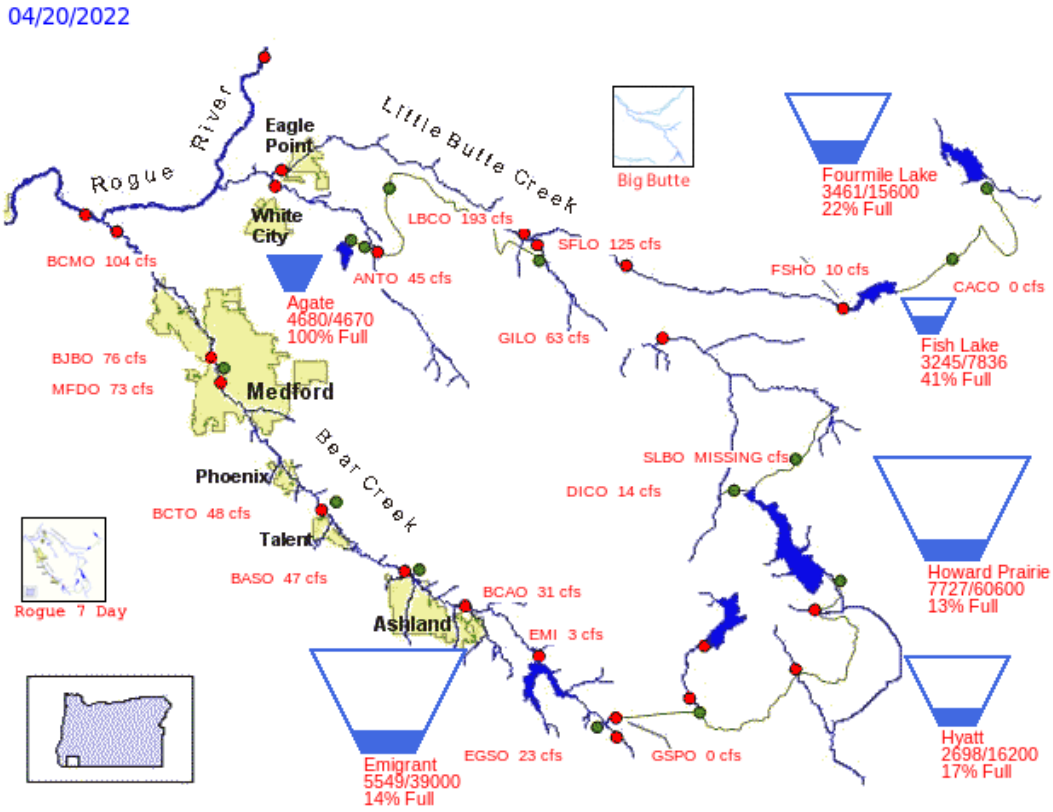
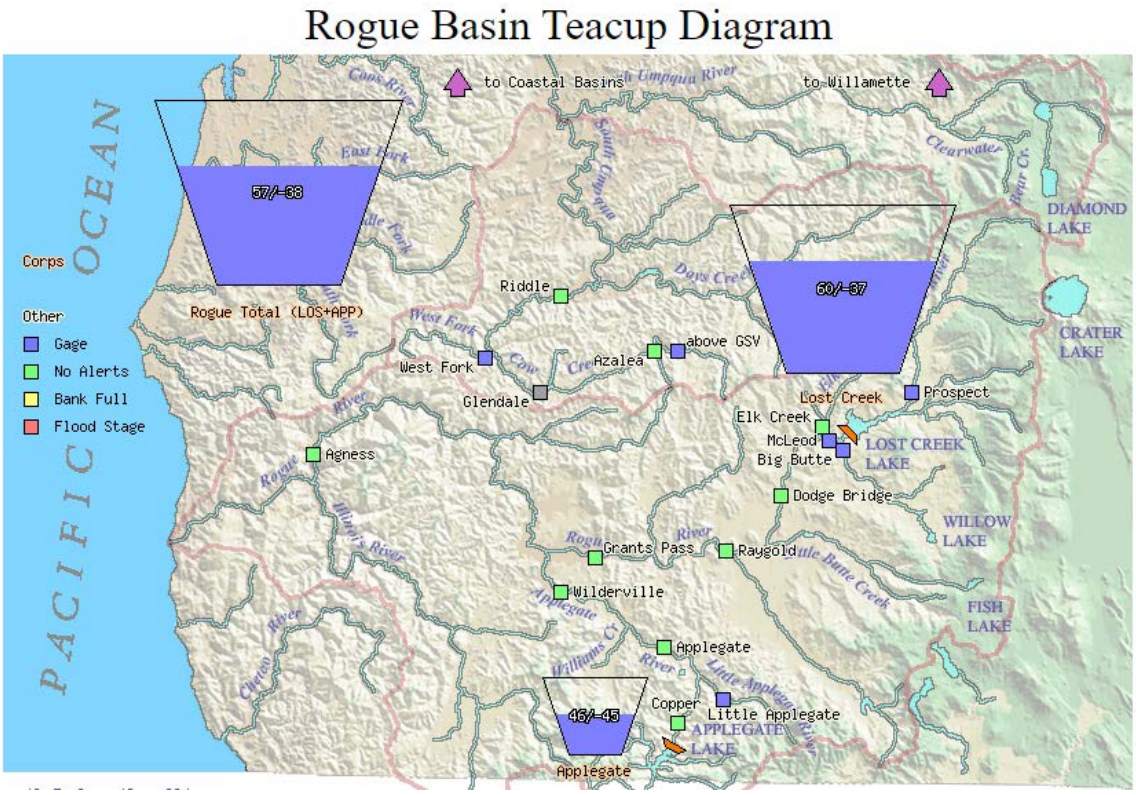


Figure 6: Lost Creek Reservoir T-Cup Diagram (2022)



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2020 Water Master Plan Storage Criteria

Not only has the City evaluated its raw water supply sources, the 2020 Water Master Plan developed storage criteria for treated water within the City's system. The treated water storage criteria accounts for operational use, emergency use and fire flow. The storage criteria is evaluated for each defined water distribution system "zone" served by the City's treated water storage tanks.

The City has 4 treated water storage reservoirs or "tanks". These tanks store 6.7 million gallons of potable water.

- Crowson Reservoir (2.1 MG)
- Alsing Reservoir (2.1 MG)
- Granite Reservoir (2.0 MG)
- Fallon Reservoir (0.5 MG)

Table 1: Storage Criteria

Parameter	Criterion
Operational Storage	0.25 times MDD of the area served by each reservoir
Fire Flow Storage	Provide volume for single most severe required fire flow and duration for each reservoir service area. Systemwide, provide volume for two largest fires.
Emergency Storage	0.5 times MDD of the area served by each reservoir *Or* ES = (MDD – Firm Supply Capacity) (1 day)

Outside of operational storage the most critical storage need for the City is associated with fire flow. The fire flow storage requirements are developed per zone and provide storage for the largest fire within distribution system zone. The overall system storage also accounts for the two largest fire flow requirements citywide.

Wildland and urban structure fires rely on a predictable water supply for controlling fire spread and or limiting damage to property while protecting lives. Wildfires on the edges, or inside the city limits require water from either the City's hydrant system or access to ponds, streams, and reservoirs. Under the Reeder Reservoir water use agreement, the U.S. Forest Service routinely has helicopters dip from the reservoir to suppress fires in the watershed. The City's hydrant system is critical as a pressurized source for more routine structure fires as well as more serious interface fires.

Table 2: Fire Flow requirements.

Land Use Category	Fire Flow Requirement (gpm)	Flow Duration (Hours)
Single-family Residential	1,500	2
Multi-family Residential	2,500	3
Commercial/Industrial	4,000	4

The 2020 master plan evaluation concluded adequate storage for operational, emergency and fire flow use through the planning period if recommendations in the 2020 Master Plan are enacted. The recommendations included continued conservation efforts, replacement of the Granite Reservoir, and expanding the Alsing Reservoir service area.

Supply/Demand Capabilities

In addition to storage requirements for treated water, the City continuously treats water to maintain adequate reservoir levels and can increase production to meet increasing demand.

The water treatment plant is rated at 7.5 MGD (million gallons per day) or 5067 GPM (gallons per minute. The TAP system can provide 2.13 MGD or 1480 GPM.

Total combined supply between the two sources equals 9.63 MGD or 6506 GPM

TID water supplied to the treatment plant for treatment averages 1.5 MGD or 1041 GPM and would be part of the total production at the water treatment plant if TID is utilized.

To put that in perspective the maximum day demand from 2021 was 6 MGD or 4166 GPM.

Conservation and Efficiency

The City has a robust conservation and efficiency program that offers many rebates and incentives to the community to improve water use efficiency. The City itself also implements its own water conservation efforts to ensure supply sustainability.

In March of 2021 the City entered into an Intergovernmental Agreement with the Medford Water Commission to assist the City in delivering its water conservation and efficiency program to the community (Staff Report) . The City entered into this agreement due to the fact that a long time water conservation employee left employment with the City to join the MWC team. Under the agreement the City has the ability to utilize MWC conservation staff to perform indoor and outdoor audits associated with the conservation program. The City provides administrative staff support and office access as needed to support the audits and public education/outreach.

The first year implementation of this IGA worked well and Public Works is continuing to coordinate with MWC for ongoing conservation activities for the 2022 season. Public Works will be organizing appointments for community members who wish to receive an indoor or outdoor audit of their water use and systems. **Audits will be scheduled on a first come first served basis, please email conserve@ashland.or.us or call (541) 488-2062 for more information.**

This year Public Works plans to advertise the conservation programs in the Sneak Preview, in the Ashland Directory, on a banner across E. Main Street, and on digital Reader Boards using our “Use Water Wisely” slogan, and the “Ashlandsaveswater.org” website. Numerous resident volunteers have also contacted Public Works about volunteering to provide conservation related information and materials at community events including Earth Day. Public Works staff would like to thank community volunteers promoting water conservation programs.

Public Works is also in the process of creating a new updated webpage on the City’s website that will act as a repository for specific conservation and water related information that is adjusted seasonally:

ashland.or.us/watersupply

City Based Conservation Efforts:

- Sprinkler head replacements in the Siskiyou Boulevard median islands
- Drought tolerant landscaping upgrades
- Recycled water reuse for irrigation at the wastewater treatment plant
- Formal curtailment ordinance that outlines water reductions during certain levels of curtailment
- Review of development landscape plans
- Water rate tiered structure
- Operations switch from water pressure washing to compressed air for certain maintenance activities

Parks Department Conservation Efforts:

- Parks Department will have a new central control system to allow for improved water use and monitoring
- Reduced potable water for irrigation at City Parks
- Drought tolerant landscaping upgrades

Conservation and Efficiency Programs: We continue to encourage customers to use water efficiently and invest in long term conservation measures, not only to minimize the impact of future limitations, but to also ensure we have a sufficient supply to sustain our community for years to come.

In conjunction with water supply strategies, the water conservation team offers water customers the following programs:

- **Lawn Replacement Rebate** - for removal of irrigated lawns that are replaced with low water use landscapes and efficient irrigation systems.
- **Irrigation System and Indoor Water Use Evaluations** - free for residents and businesses. Evaluations of individual systems uncover ongoing water waste and leaks.
- **Smart Irrigation Controller Rebate** – to install a *WaterSense* labeled smart controller.
- **Appliance Rebates** - are also available for installing high efficiency *WaterSense* labeled toilets and *Energy Star* labeled washing machines.
- **Giveaways** - free low flow showerheads, faucets aerators and spray rinse valves for commercial dishwashing are available for residences and businesses.
- **Water Wise Landscaping Website** - www.ashlandsaveswater.org, to help people design landscapes with plants that use less water. The site includes a watering calculator and links to city's programs and rebates.
- **Public Presentations** - on long term water efficiency changes, as well as information on the City's drinking water system.
- **City Website** - with descriptions of programs, savings tips, weather data and watering recommendations, educational handouts, and more

Additional Measures:

- ***Love Your Water*** **Campaign** – Reusable bags and soil moisture meters for customers who sign up for a water evaluation, either indoor or outdoor.
- **Monthly City Source** newsletter articles in utility bills that discuss water savings tips and provides information about the City's water efficiency programs and rebates. Due to a lack of staffing this is currently not available as a resource.
- **Movie Theater Advertisement** - To help promote the efficient use of the community's resources, a combined water and energy conservation ad will play at both movie theaters during the months of July-September.
- **City Owned Property Irrigation Upgrades** – We continue to identify and replace inefficient sprinklers on City and Parks owned properties.
- **Waterwise and Firewise Demonstration Garden** - was installed in front of Fire Station #1 downtown. The garden also incorporates deer resistant and pollinator plants.
- **Southern Oregon Landscape Association** - provide education and resources to local landscape contractors on water efficiency in the landscape.
- **Ongoing Research** - of new technologies in water efficiency and continue to evaluate future programs and incentives to help our customers.

FISCAL IMPACTS

The water fund is appropriately funded for the remainder of the biennial budget.

DISCUSSION QUESTIONS

Does the Council have any questions regarding water resources?

SUGGESTED NEXT STEPS

None.

REFERENCES & ATTACHMENTS

Attachment #1: Water Curtailment Ordinance
Attachment #2: Oregon Water Conditions Report 4-19-2022
Attachment #3: State of Oregon Executive Order 22-06 "Drought Emergency"
Attachment #4: 2011 Water Conservation and Reuse Study Executive Summary
Attachment #5: 2010 Effects of Climate Change in Ashland Creek Oregon
Attachment #6: Coordinated Water Rights Management and Water Sharing Plan Draft Intergovernmental Agreement