Water Management and Conservation Plan

City of Independence

June 2024

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A. Letters to Affected Local Government
B. Current Water Rates
C. Water Conservation Tips Flyer

1. Municipal Water Supplier Plan Elements

This section satisfies the requirements of OAR 690-086-0125.

This rule requires a list of affected local government to whom the plan was made available, and a proposed date for submittal of an updated plan.

1.1 Introduction

The City of Independence (City or Independence) is located in central Willamette Valley, approximately 8 miles southwest of Salem on the west bank of the Willamette River, between river miles 94 and 95. The City operates a public drinking water system under Oregon Public Water System Identification Number OR1400399. The City serves approximately 2,471 customers (service connections) within its service area. Approximately 92 percent of the City's customers are categorized within the City's residential customer class, with the remaining classified within the City's non-residential customer categories. The City's population in 2021 was estimated at 9,961 according to the U.S. Census. The City experienced significant growth from 1990 to 2010, recording an average annual growth rate of over 3 percent during this 20 year period, and nearly doubling its population. Growth cooled from 2010 to 2020, slowing to average annual growth rate of 1.4 percent.

The City currently relies on groundwater as its source of supply, which is appropriated through wells in the Polk Street and the South wellfields. The City maintains a bi-directional interconnection with the City of Monmouth to temporarily provide water in the event of a water supply shortage. The City also holds surface water rights authorizing the use of water from the Willamette River, which are expected to provide the City's with an additional source of water to meet its need for long-term supply.

1.2 Plan Requirement

The City is submitting this Water Management and Conservation Plan (WMCP) to meet a condition of Oregon Water Resources Department's (OWRD) final order approving an application for an extension of time for Permit G-17868. This order includes a condition requiring the municipal water provider to develop and submit a Water Management and Conservation Plan (WMCP) within three years after the issuance of the final order. The WMCP must provide justification for access to the undeveloped portion of the permit through a requests for green light water. In addition, the final order issued for Independence's 2015 WMCP placed a development limitation of 0.46 cfs on Permit G-17868 (formerly G-13015) out of the total of 1 cfs. In order for OWRD to lift this limitation and the City to gain access to the undeveloped portion of Permit G-17868, the City must provide justification for use beyond the authorized rate of 0.46 cfs in an updated WMCP.

This WMCP fulfills the requirements of the Oregon Administrative Rules adopted by the Water Resources Commission in November 2018 (OAR Chapter 690, Division 86). It describes water management, water conservation and curtailment programs to guide the wise use and stewardship of Independence's water supply.

The plan is organized into the following sections, each addressing specific sections of OAR Chapter 690, Division 86:

Section	Requirement
Section 1 – Introduction	OAR 690-086-0125
Section 2 - Water Supplier Description	OAR 690-086-0140
Section 3 - Water Conservation	OAR 690-086-0150
Section 4 – Curtailment Plan	OAR 690-086-0160
Section 5 - Water Supply	OAR 690-086-0170

Concurrent with the development of this WMCP, the City developed its Water System Master Plan (WSMP) with Westech Engineering. The City ensured that the information common to both plans align between these plans, such as forecasts, the system maps, and water rights.

1.3 Affected Local Governments

OAR 690-086-0125(5)

The following governmental agencies may be affected by this WMCP:

- Polk County

Thirty days prior to submitting this WMCP to the OWRD, the draft plan was made available for review by each affected local government listed above along with a request for comments relating to consistency with the local government's comprehensive land use plan. A sample of the letters requesting this input, and any responses received are provided in Appendix A.

Independence also submitted a draft of this WMCP to the following entities as a courtesy:

- City of Monmouth

1.4 Plan Update Schedule

OAR 690-086-1025(6)

Independence anticipates submitting an update of this plan within 10 years of plan approval. As required by OAR Chapter 690, Division 86, a progress report will be submitted within five years from the approval of this plan.

1.5 Time Extension for Metering

OAR 690-086-0125(7)

The City is not requesting additional time to implement metering as required under OAR 690-086-150(4)(b).

2. Municipal Water Supplier Description

This section satisfies the requirements of OAR 690-086-0140.

This rule requires descriptions of the water supplier's water sources, service area and population, water rights, and adequacy and reliability of the existing water supply. The rule also requires descriptions of the water supplier's customers and their water use, the water system, interconnections with other water suppliers, and quantification of water loss.

2.1 Terminology

The following terminology is used in this WMCP.

Demand refers to the quantity of water delivered to the City's distribution system from its native groundwater wells. Demand is driven by metered consumption (for example, residential customers), unmetered public uses (firefighting, hydrant flushing, other), and water lost to leakage, reservoir overflow, and other factors.

Consumption is equal to metered and unmetered, authorized water uses (e.g., system flushing). Production minus consumption equals water loss. Water loss is equal to the sum of apparent and real losses. Apparent losses include unauthorized consumption and meter inaccuracies, among other loss types, and real losses include leakage.

Generally, production and consumption in municipal and quasi-municipal systems are expressed in units of mgd, but also may be expressed in cubic feet per second (cfs) or gallons per minute (gpm). One mgd is equivalent to 1.55 cfs or 694 gpm. For annual or monthly values, a quantity of water is typically reported in million gallons (MG). Water use per person (per capita use) is expressed in gallons per capita per day (gpcd).

The following terms are used to describe specific values of system demands:

- Average day demand (ADD) equals the total annual production divided by 365 days.
- Maximum day demand (MDD) equals the highest system demand that occurs on any single day during a calendar year. It is also called the one-day MDD or peak day demand.
- Monthly demand equals the total volume of water produced in a month divided by the number of days in the month.
- Maximum monthly demand (MMD) equals the highest demand in one of the 12 months of a calendar year.
- Peaking factors are the ratios of one demand value to another. The most common and important peaking factors are the ratio of the MDD to the ADD and the ratio of peak hour demand to MDD.

2.2 Water Sources

OAR 690-086-0140(1)

The City currently relies on groundwater sourced from wells at two separate wellfields, the South and Polk Street wellfields, for municipal water supply, The City uses groundwater from the Park Well only for irrigation of a park. The City also has wells at the Willamette River wellfield, however the City does not currently use these wells for municipal water supply. The locations of these wells are identified in Exhibit 2-1, System Schematic. All of the wells that supply water to the City are constructed in the unconsolidated alluvium (sand and gravel) formation (aquifer). Independence has an emergency source of supply via a bi-directional interconnection with the City of Monmouth.

The WMCP rules require the City to identify additional sources of water including storage and regulation facilities. The City has neither storage nor regulation facilities, only in-line distribution system reservoirs as described in Section 2.10.

2.3 Current Service Area Description and Population

The City's service area includes the entire City of Independence. The City's municipal boundary is largely contiguous with the City's urban growth boundary (UGB) as shown in Exhibit 2-1. The residential population within the City's service area was estimated to be 10,170 in 2022 and 10,274 in 2023, according to Portland State University's Population Research Center.

2.4 Interconnections with Other Systems

OAR 690-086-0140(7)

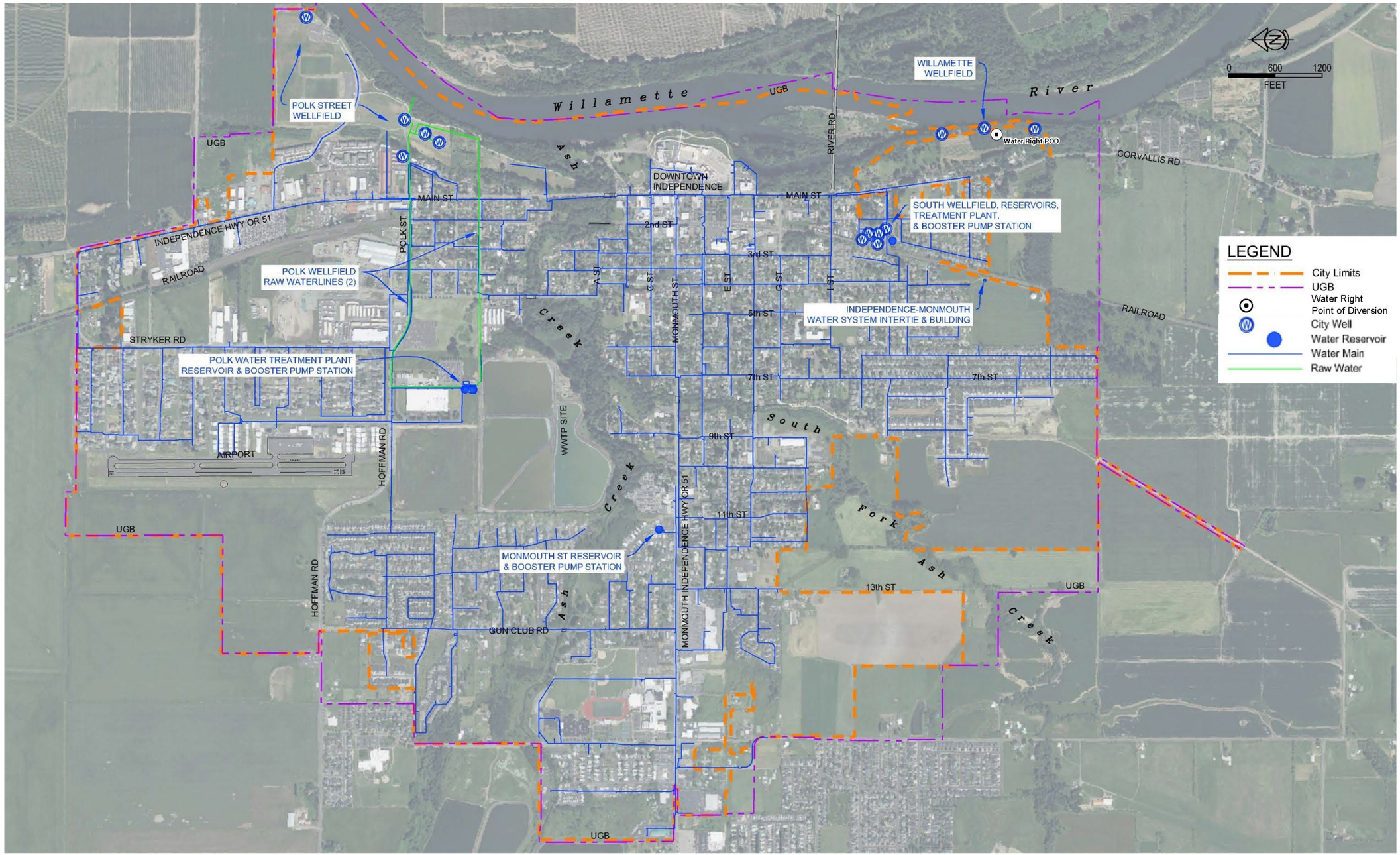
The City's water system is interconnected with the City of Monmouth's water system, as shown in Exhibit 2-1. The connection is located on South 4th Street, at the site of the City of Monmouth's 4th Street Pump Station and Reservoir. Independence benefits from this interconnection because it allows for the exchange of water for use as a source of emergency supply.

2.5 Intergovernmental Agreements

The City of Independence has an Emergency Water Agreement with the City of Monmouth. The agreement was signed January 19, 2010, and allows either city to supply water to the other during emergency situations when it will not hinder or harm the water delivery of the municipality supplying the water.

The Cities of Independence and Monmouth also have an agreement that was executed in 2016 to jointly seek the full development and operations of the Willamette River Wellfield. The Cities have constructed the wellfield, however these wells are not currently in use.

Exhibit 2-1. System Schematic



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2.6 Historical Water Demands

OAR 690-086-0140(4)

Exhibit 2-2 summarizes the City's demands for the previous five fiscal years (FY 2016/17 through 2020/21) and FY 2010/11, FY 2011/12, and FY 2013/14. (Demand data for FY 2012/13, 2014/15, and 2015/16 were not available.) Measures of demand are presented in Exhibit 2-3, including average day, maximum day, and maximum month demands and annual demands and peaking factors. Data for FY 2010/11, FY 2011/12, and FY 2013/14 were obtained from the City's previous WMCP. Data for FY 2016/17 through FY 2020/21 were derived from daily meter readings from the City's wells. Demand data presented here for FY 2016/17 through 2019/20 are slightly different than the values presented in the City's WMCP progress report. Therefore, the updated demand data obtained during development of this WMCP are used instead.

The City's total annual demand averaged 355.2 MG over the previous five-year period with a range from 338.7 MG (FY 2019/20) to 379.8 MG (FY 2020/21). Total demand was relatively consistent from year to year, with the greatest annual demand occurring in fiscal year 2021. Because ADD is derived from annual demands (annual demand divided by 365 days), changes in ADD mirrored the changes in annual demands. Demands in the most recent five years were similar to demands previously reported, as shown in Exhibit 2-2, however demand from FY 2010/11 was significantly higher than demands reported for subsequent fiscal years.

Exhibit 2-2. Historical Water Demand, FY 2010/11 – 2020/21

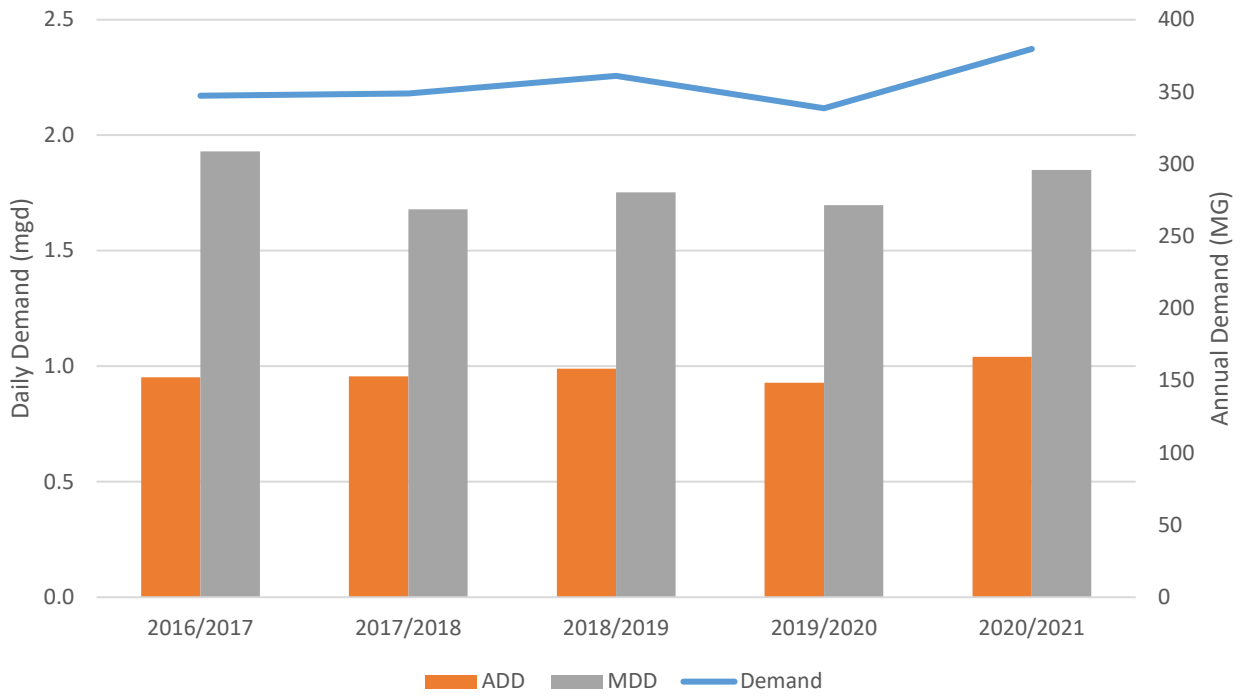
Fiscal Year	Demand (MG)	ADD (mgd)	MDD (mgd)	Peaking Factor (MDD:ADD)	MMD (MG)	Month of MMD
2010/11	417	1.1	-	-	-	-
2011/12	335	0.9	-	-	-	-
2012/13[1]	-	-	-	-	-	-
2013/14	320	0.9	-	-	-	-
2014/15[1]	-	-	-	-	-	-
2015/16[1]	-	-	-	-	-	-
2016/17	347.4	1.0	1.9	2.0	49.2	July
2017/18	348.9	1.0	1.7	1.8	46.0	July
2018/19	361.2	1.0	1.8	1.8	42.0	August
2019/20	338.7	0.9	1.7	1.8	44.1	August
2020/21	379.8	1.0	1.8	1.8	46.1	July
Average FY 2016/17-2020/21	**355.2**	**1.0**	**1.8**	**1.8**	**45.4**	**-**

[1] Data not available for these fiscal years.

Over the previous five years, the City's average MDD was 1.8 mgd, and ranged from 1.7 mgd (FY 2017/18) to 1.9 mgd (FY 2016/17). The City's peaking factor averaged 1.8 over the five-year period, which is within the range of some neighboring water systems, with a high of 2.0 in FY 2016/17. For comparison, the City of Salem's average peaking factor was approximately 1.9 from FY 2012/13 to 2016/17, and the City of Corvallis's average peaking factor was 2.1 from 2005 to 2009. Independence's MMD from FY 2016/17 to 2020/21 occurred in July or August of each year, which is a typical observation for water providers in western Oregon.

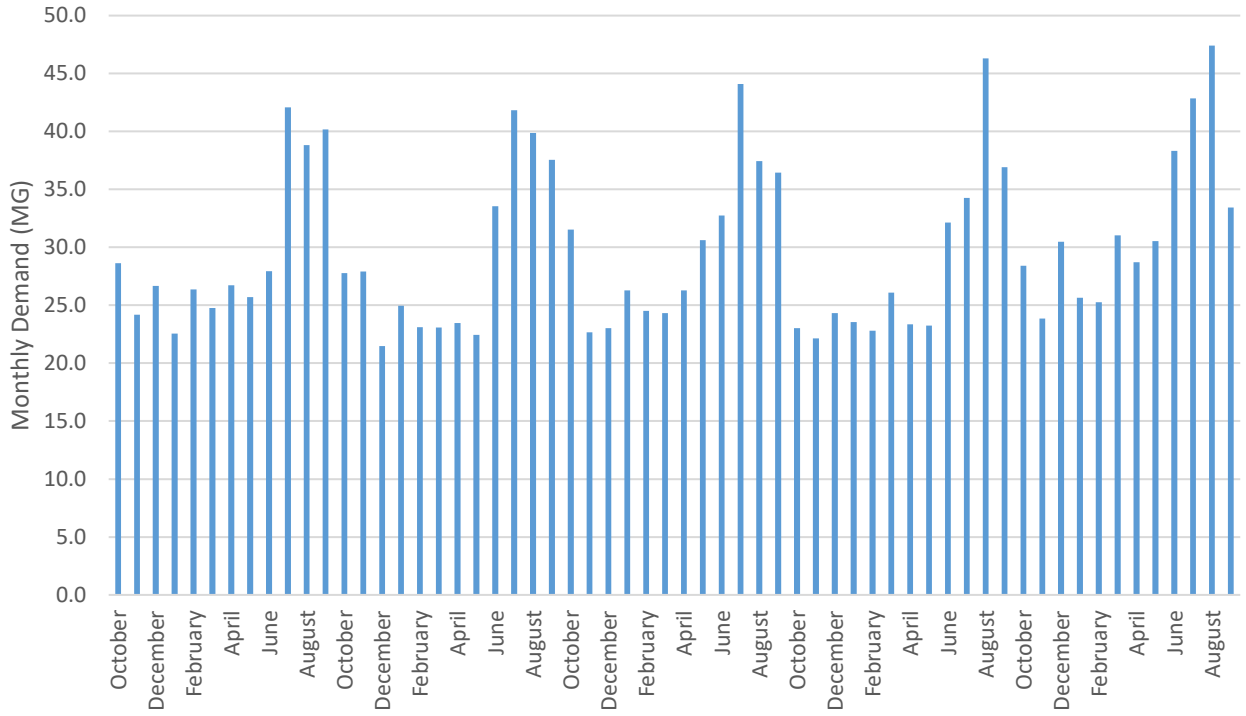
Exhibit 2-3 presents a chart of demand volumes, and ADD and MDD volumes that are found in Exhibit 2-2.

Exhibit 2-3. Overall Demand, ADD, and MDD, FY 2016/2017-2020/2021



Monthly demands are shown in Exhibit 2-4. The City's monthly demands over the five-year period show distinct increases during the months of June through September compared to other months. These increases reflect the seasonal nature of the City's water use as a result of outdoor uses of water generally and, more specifically, uses of water for irrigation. Consumption by customer class is discussed later in this section.

Exhibit 2-4. Monthly Water Demands, FY 2016/17 - 2020/21



2.7 Customer Description and Use Characteristics

OAR 690-086-0140(6)

2.7.1 Customer Accounts

Independence organizes its water service accounts by customer category. These customer categories include: City, Residential, Commercial, Residential Multi-Units, and Industrial. The Residential Customer Category comprises the greatest number of customer accounts (92.1 percent), followed by the Commercial customer category (4.3 percent), which includes businesses such as retail stores. The smallest customer categories were Residential-Multi-Units (2.7 percent), Industrial (0.5 percent), and City Accounts (0.4 percent). Exhibit 2-5 gives the number of customer accounts in each customer class as of September 2021.

Exhibit 2-5. Customer Accounts by Category, September 2021

Customer Category	Count	Percent of All Accounts
Residential	2,275	92.1%
Commercial	107	4.3%
Residential Multi-Units	68	2.8%
Industrial	12	0.5%
City Accounts	9	0.4%
Total	**2,471**	**100.0%**

2.7.2 Consumption by Account Type

Exhibit 2-6 provides total annual consumption for FY 2013/14 and total annual consumption by customer class for FY 2015/2016 through 2020/2021. Although the City's previous WMCP provided total consumption data for FY 2013/14, the previous WMCP did not include consumption data by customer class for a full year, and the monthly consumption by customer class data that was provided used different customer classes than those currently used by the City.[1] Therefore, a comparison of current annual consumption by customer class with consumption by customer class data from the previous WMCP is not useful. Note that the consumption data for FY 2016/17 through FY 2019/20 shown in Exhibit 2-6 does not exactly match the information in the City's 2021 WMCP progress report. The updated consumption included in this WMCP is understood to be more accurate.

Exhibit 2-6 Consumption by Customer Category by Fiscal Year (MG)

Fiscal Year	City Accounts	Residential[1]	Commercial	Residential Multi-Units	Industrial	Total
2013/14	-	-	-	-	-	**245.9**
2014/15[2]	-	-	-	-	-	-
2015/16	4.6	150.3	28.6	66.4	6.2	**256.2**
2016/17	8.8	143.3	33.9	76.6	4.3	**267.0**
2017/18	14.6	150.9	35.9	69.0	4.5	**275.0**
2018/19	13.0	150.9	33.9	71.1	5.8	**274.7**
2019/20	5.3	151.5	25.5	74.7	6.1	**263.1**
2020/21	13.0	168.7	25.5	96.4	6.6	**310.2**

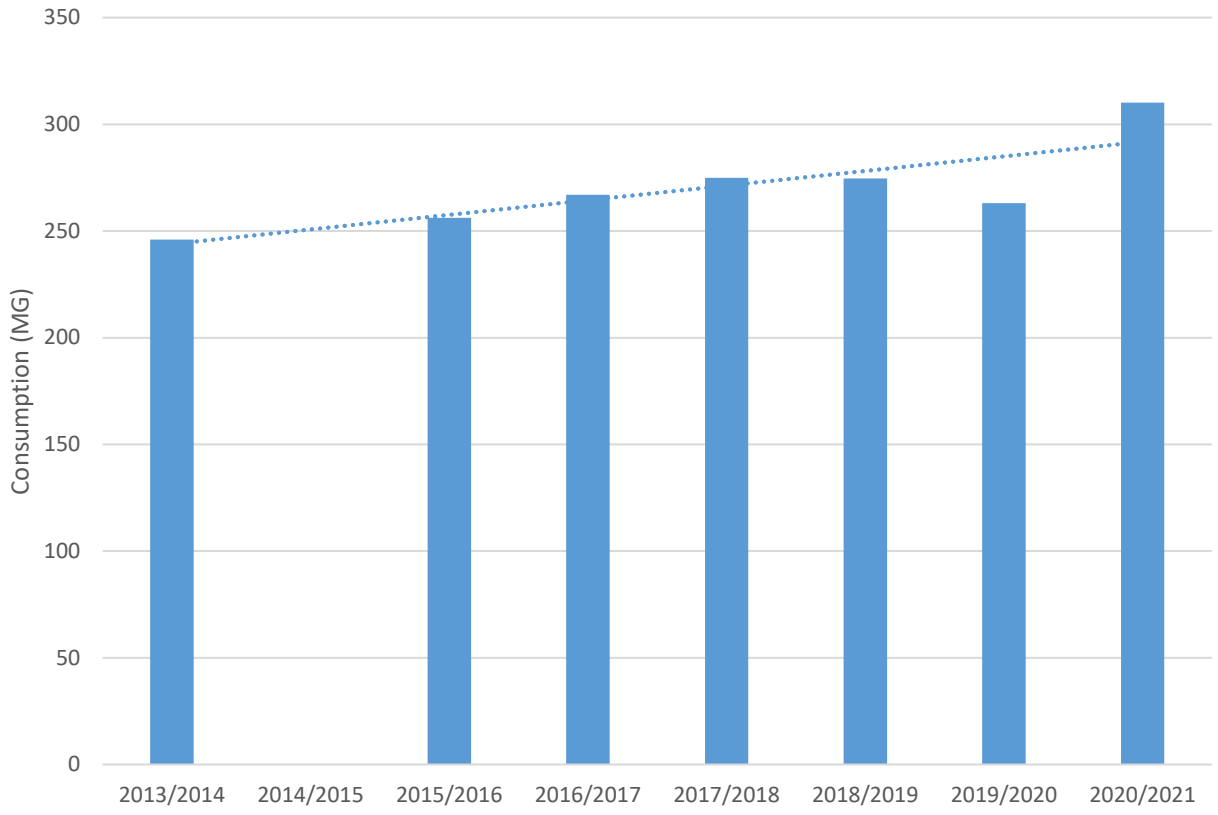
1 Included within the Residential category are volume readings from the City's flow meters that capture contractors use of water at fire hydrants.

[2] Data not available.

Exhibit 2-7 graphically depicts total consumption volumes from Exhibit 2-6.

[1] In the City of Independence's previous WMCP consumption by customer class was presented for February through December of calendar year 2014. The resulting total volumes of use were presented for the following customer classes during this eleven month period: Industrial – 5.6MG; Commercial – 48.5MG; Residential/Multi Family – 168.5 MG.

Exhibit 2-7. Total Annual Metered Consumption[1]



[2] Data not available for FY 2014/2015.

Over this eight-year period, metered consumption for all customer categories increased almost every year except for the Commercial category, contributing to an overall upward trend with total consumption peaking in FY 2020/21. Consumption by customer category from FY 2015/16 to FY 2020/21 is illustrated in Exhibit 2-8.

Annual fluctuations in total consumption are generally driven by outdoor water use which is impacted by the individual or combined effects of the following weather-related factors:

- Maximum temperatures
- Several consecutive days at high temperatures
- Low precipitation levels
- Extended consecutive days without precipitation

For example, hot weather will increase outdoor use of water, such as irrigation of residential landscaping. These factors may have played a role in the City's annual residential consumption patterns by influencing outdoor water use in combination with other factors. For example, residential water use increased in FY 2020/21 (a drier year).

Exhibit 2-8. Consumption by Customer Category, FY 2015/16-2020/21

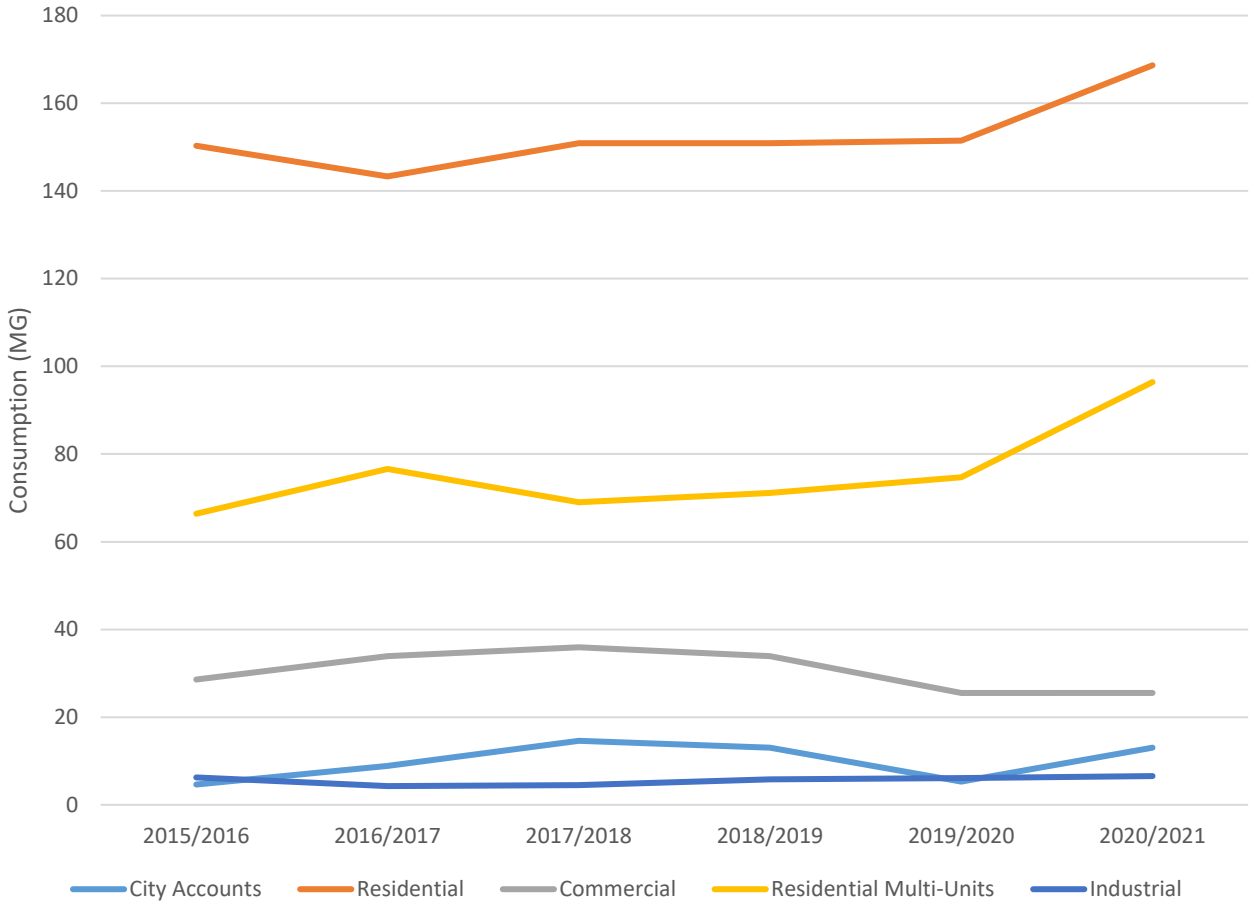
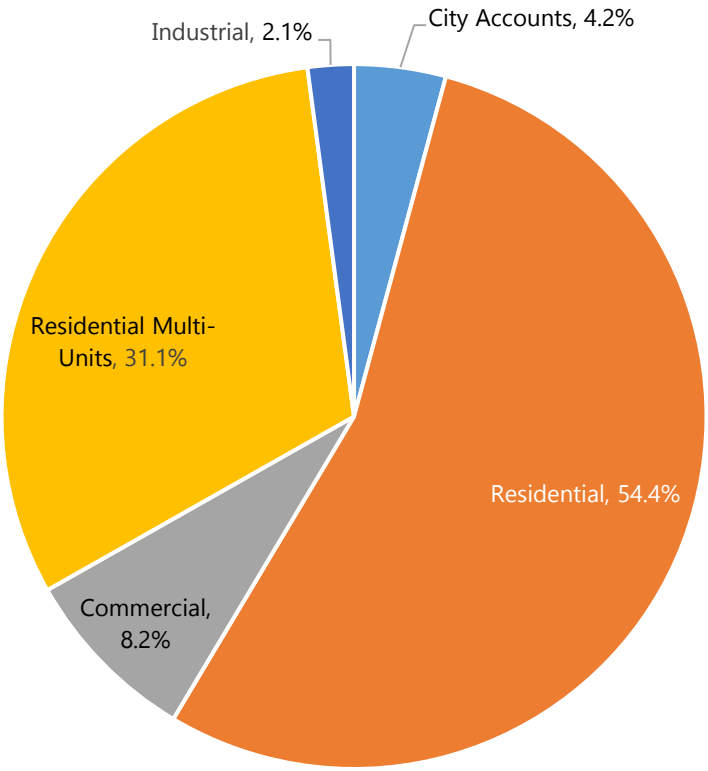


Exhibit 2-9 presents a pie chart showing the percentage of water used by each customer category in FY 2020/21. In this year, Residential consumption accounted for 54.4 percent, Residential Multi-Units consumption accounted for 31.1 percent, Commercial accounted for 8.2 percent, City Accounts accounted for 4.2 percent, and Industrial accounted for 2.1 percent.

Exhibit 2-9. Percentage of Water Used by Customer Category, FY 2020/2021



2.7.3 Largest Customers

Exhibit 2-10 lists the City's top 10 water consumers for FY 2020/21. These customers were responsible for an annual consumption of 93 million gallons (30 percent of total consumption) during FY 2020/21.

Exhibit 2-10. Top Ten Water Users, FY 2020/21

Customer Category	Annual Consumption, 2020/2021 (MG)	Percent of Total Consumption
Residential Multi-Units	21.6	7.0%
Residential Multi-Units	19.7	6.4%
City Accounts	12.7	4.1%
Industrial	7.5	2.4%
Residential Multi-Units	6.6	2.1%
Residential Multi-Units	6.4	2.1%
Residential Multi-Units	5.4	1.7%
Residential Multi-Units	4.6	1.5%
Commercial	4.4	1.4%
Residential Multi-Units	4.1	1.3%
Total	**93.0**	**30.0%**

2.8 Water Loss

OAR 690-086-0140(9)

Exhibit 2-11 shows the results of annual water audits for FY 2016/17 through 2022/23. Water loss is the difference between the volume of water pumped at the City's wells and consumption. The City includes in its consumption value the volumes from metered retail consumption, metered City uses, and metered backwash volumes associated with process water at the City's water treatment plants (WTP). The water loss percentages are calculated by dividing water loss volumes by demands.

The City's water losses ranged from 23.3 percent in FY 2018/19 to 17.6 percent in FY 2020/21. The average water loss from FY 2016/17 to FY 2022/23was 20.3 percent, which is near the historical annual values noted in the City's 2016 WMCP of 27 percent for 1997 and 20.7 percent for 2014. Water loss for FY 2020/21 was the lowest observed during the seven-year period and is likely related to the City's replacement of register heads at approximately 75 percent of its retail meter locations from 2019 to 2021 in order to improve meter accuracy. The water loss data presented does not exactly match the water loss data provided in the City's progress report. This is due to newly available historical demand and consumption data.

Exhibit 2-11. Water Audit, FY 2016/17 - 2022/23

Fiscal Year	Demand	Consumption		Water Loss (MG)	Water Loss (%)
		Retail	Other[1]		
2016/2017	347.4	267.0	4.4	75.9	21.9
2017/2018	348.9	275.0	1.9	72.0	20.6
2018/2019	361.2	274.7	2.3	84.2	23.3
2019/2020	338.7	263.1	1.9	73.6	21.7
2020/2021	379.8	310.2	2.8	66.8	17.6
2021/2022	350.0	280.0	3.1	66.9	19.1
2022/2023	368.7	302.0	1.0	65.7	17.8
Average	**356.4**	**281.7**	**2.5**	**72.2**	**20.3**

[1] "Other" category includes metered backwash volumes associated with process water at the City's WTPs and metered water use by the City for the meters manually read.

2.9 Water Rights

OAR 690-086-0140(5)

2.9.1 Summary of Water Rights

The City holds twelve water rights (nine groundwater rights and three surface water rights). The City's groundwater rights authorize the use of water for municipal purposes. The City's surface water rights authorize the use of water for municipal purposes, and pond maintenance. The City does not, however, currently use surface water to provide municipal water supply. A summary of these water rights is provided in Exhibit 2-12.

2.9.1.1 Groundwater Rights

The City's municipal groundwater rights include two water right certificates, three permits, three groundwater registrations, and one limited license. The water rights authorize use from three wellfields: the Polk Street, South, and Willamette River Wellfields.

Combined, the certificates and permit in the Polk Street wellfield authorize the use of up to 3.5 cfs. Use of groundwater from the wells in the Polk Street wellfield is authorized by Certificates 95501 and 95502, Permit G-12134 and Limited License LL-1779, which is a temporary authorization.

Certificate 95501 authorizes the use of up to 0.94 cfs from Polk Street Wells 1, 2, and 3, and the River Drive Well. Certificate 95502 authorizes the use of up to 0.56 cfs from the same wells.

Permit G-12134 authorizes the use of up to 2.0 cfs only from Polk Street Well 1. To date, the City has developed a 1.56 cfs portion of the permit. The permit has a development deadline of October 1, 1998, and in April 2017 the City applied for an extension of time until October 1, 2030 to allow sufficient time for development of the remaining 0.44 cfs. The permit extension application is still pending at OWRD. Following approval of the permit extension, the City intends to initiate a permit amendment in order to add Polk Street Well 3 and Polk Street Well 4 to the permit, as further described below.

Limited License LL-1779 temporarily authorizes the use of up to 2.5 cfs, further limited to 1 cfs from Polk Street Well 3 and 1.5 cfs from Polk Street Well 4. The limited license was obtained as a bridge to authorize the use of groundwater from Polk Street Well 3 and Polk Street Well 4 while the permit extension and subsequent permit amendment applications for Permit G-12134 are processed by OWRD. The limited license will expire the earlier of either July 15, 2024, or after the permit amendment adding Polk Street Wells 3 and 4 to Permit G-12134 is approved.

Three groundwater registrations authorize the use of up to 2.339 cfs (1.51 mgd) from the South Wellfield for municipal use. GR-3183 authorizes the use of up to 0.557 cfs (0.36 mgd) from South Wells 1, 2, 3, 4, and 5. GR-3184 and GR-3185 each authorize the use of up to 0.891 cfs (0.57 mgd) from the same wells.

Permit G-17868 authorizes the use of up to 1.0 cfs (0.65 mgd) from the City's Willamette River Wells 1, 2, and 3, which is further limited to up to 0.33 cfs from each well. Permit G-17868 is the result of a permit amendment approved in October 2017, which changed the authorized points of appropriation under Permit G-13015 from South Wellfield Wells 4 and 5 to the Willamette River Wells. Prior to the permit amendment, the City developed a 0.46 cfs portion of the permit, which is the rate to which the City currently has access. (OWRD's final order placed a development limitation of 0.46 cfs on this right). In May 2022, the City filed a permit extension application to request until 2042 to develop the remaining 0.54 cfs portion of the permit. The extension application was approved on January 5, 2024.

Finally, the City holds Permit G-17750, which authorizes the use of up to 0.58 cfs of groundwater from the Park Well. This water right, however, is only used for irrigation of a park and the groundwater does not provide water supply to the City's municipal water system. As a result, this right is not further considered as part of this WMCP.

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Exhibit 2-12. Informational Water Rights Table

Appl./ GR Registration (GR Certificate)/ Limited License	Permit	Certificate	Transfer	Priority Date	Source(s)	Type of Beneficial Use	Authorized Rate (cfs)	Authorized Volume	Maximum Rate Diverted to Date (cfs)	Completion Date
Groundwater										
G-12736	G-12134	--	--	12/19/1991	Polk Street Well 1	Municipal	2.0	N/A	1.56	10/1/1998
G-11243	G-10375	~~83231~~ 95501	T-10827	3/8/1984	Polk Street Wells 1, 2, 3 & River Drive Well	Municipal	0.94	N/A	0.94	N/A
G-2469	G-2279	~~31510~~ 95502	T-12261	10/15/1962	Polk Street Wells 1, 2, 3 & River Drive Well	Municipal	0.56	N/A	0.56	N/A
LL-1779	N/A	N/A	N/A	N/A	Polk Street Wells 3 and 4	Municipal	Total - 2.5 cfs Well 3 -1 cfs Well 4 – 1.5 cfs	N/A	1.0	N/A
GR-3183 (GR-3141[1])	N/A	N/A	T-13060	8/2/1951	South Wells 1, 2, 3, 4 & 5	Municipal	0.557	N/A	0.557	N/A
GR-3184 (GR-3142[1])	N/A	N/A	T-13061	9/15/1951	South Wells 1, 2, 3, 4 & 5	Municipal	0.891	N/A	0.891	N/A
GR-3185 (GR-3143[1])	N/A	N/A	T-13062	3/25/1953	South Wells 1, 2, 3, 4 & 5	Municipal	0.891	N/A	0.891	N/A
G-13871[2]	~~G-13015~~ G-17868	--	T-12511 (permit amendment)	11/7/1994	Willamette River Wells 1, 2 & 3	Municipal	1.0 (0.33 from each well) Current access limited to 0.46 cfs	N/A	0.46	10/1/2042
G-18256	G-17750	--	--	2/4/2016	Park Well	Municipal	0.56	N/A	0.28	4/6/2037
Surface Water										
S-29640	S-23102	~~54268~~	T-12773	12/23/1954	Willamette River (Diversion from POD 2 and Willamette River Wells 1, 2 & 3)	Municipal	2.0	N/A	0	10/1/2050
S-86398	S-54331	--	--	8/10/2005	Willamette River	Municipal	4.46	N/A	0	8/17/2026
S-18304	S-14237	89411	T-7926	7/28/1939	South Fork Ash Creek	Pond maintenance for recreational use	1.0	N/A	1.0	N/A

1 The City should not use the GR certificate numbers (shown in parentheses) in communications regarding its groundwater registrations, because OWRD uses only the GR registration numbers to reference these claims.

2 The City occasionally operates the wells at the Willamette River Wells 1, 2, or 3 in order to exercise the pumps , but water from the wells is not put into the City's municipal water supply system.

Exhibit 2-13. Water Rights and Diversion Volumes

Source	Appl./ GR Registration/ (GR Certificate)/ Limited License	Permit	Certificate	Transfer	Maximum Annual Volume Diverted to Date (Water Years 2017-2021) (MG)	Average Monthly Diversions Water Year 2021 (MG)	Average Daily Diversions Water Year 2021 (mgd)	Average Monthly Diversions Water Years 2017-2021 (MG)	Average Daily Diversions Water Years 2017-2021 (mgd)
Groundwater									
Polk Street Well 1	G-12736	G-12134	--	--	69.49	5.18	0.17	4.69	0.16
	G-11243	G-10375	~~83231~~ 95501	T-10827					

Source	Appl./ GR Registration/ (GR Certificate)/ Limited License	Permit	Certificate	Transfer	Maximum Annual Volume Diverted to Date (Water Years 2017-2021) (MG)	Average Monthly Diversions Water Year 2021 (MG)	Average Daily Diversions Water Year 2021 (mgd)	Average Monthly Diversions Water Years 2017-2021 (MG)	Average Daily Diversions Water Years 2017-2021 (mgd)
	G-2469	G-2279	~~31510~~ 95502	T-12261					
Polk Street Well 2	G-11243	G-10375	~~83231~~ 95501	T-10827	86.02	3.95	0.13	3.58	0.12
	G-2469	G-2279	~~31510~~ 95502	T-12261					
Polk Street Well 3	G-11243	G-10375	~~83231~~ 95501	T-10827	99.81	7.76	0.26	6.16	0.21
	G-2469	G-2279	~~31510~~ 95502	T-12261					
	LL-1779	N/A	N/A	N/A					
Polk Well 4 (proposed)	LL-1779	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00
River Drive Well	G-11243	G-10375	~~83231~~ 95501	T-10827	12.11	1.01	0.03	0.46	0.02
	G-2469	G-2279	~~31510~~ 95502	T-12261					
South Well 1	GR-3183 (GR-3141[1])	N/A	N/A	T-13060	59.29	4.20	0.14	3.31	0.11
	GR-3184 (GR-3142[1])	N/A	N/A	T-13061					
	GR-3185 (GR-3143[1])	N/A	N/A	T-13062					
South Well 2	GR-3183 (GR-3141[1])	N/A	N/A	T-13060	74.46	5.83	0.19	4.08	0.14
	GR-3184 (GR-3142[1]	N/A	N/A	T-13061					
	GR-3185 (GR-3143[1])	N/A	N/A	T-13062					
South Well 3	GR-3183 (GR-3141[1])	N/A	N/A	T-13060	52.56	4.38	0.15	3.10	0.10

Source	Appl./ GR Registration/ (GR Certificate)/ Limited License	Permit	Certificate	Transfer	Maximum Annual Volume Diverted to Date (Water Years 2017-2021) (MG)	Average Monthly Diversions Water Year 2021 (MG)	Average Daily Diversions Water Year 2021 (mgd)	Average Monthly Diversions Water Years 2017-2021 (MG)	Average Daily Diversions Water Years 2017-2021 (mgd)
	GR-3184 (GR-3142[1])	N/A	N/A	T-13061					
	GR-3185 (GR-3143[1])	N/A	N/A	T-13062					
South Well 4	GR-3183 (GR-3141[1])	N/A	N/A	T-13060	0.01	0.00	0.00	0.00	0.00
	GR-3184 (GR-3142[1])	N/A	N/A	T-13061					
	GR-3185 (GR-3143[1])	N/A	N/A	T-13062					
South Well 5	GR-3183 (GR-3141[1])	N/A	N/A	T-13060	0.02	0.00	0.00	0.00	0.00
	GR-3184 (GR-3142[1])	N/A	N/A	T-13061					
	GR-3185 (GR-3143[1])	N/A	N/A	T-13062					
Willamette River Well 1	G-13871	G-13015 G-17868	--	T-12511 (permit amendment)	21.93	1.16	0.04	0.75	0.02
	S-29640	S-23102	54268	T-12773					
Willamette River Well 2	G-13871	G-13015 G-17868	--	T-12511 (permit amendment)	10.12	0.00	0.00	0.22	0.01
	S-29640	S-23102	54268	T-12773					
Willamette River Well 3	G-13871	G-13015 G-17868	--	T-12511 (permit amendment)	0.00	0.00	0.00	0.00	0.00
	S-29640	S-23102	54268	T-12773					
Park Well	G-18256	G-17750	--	--	6.12	0.00	0.00	0.33	0.01
Surface Water									
Willamette River	S-29640	S-23102	54268	T-12773	0.00	0.00	0.00	0.00	0.00
	S-86398	S-54331	--	--					

Source	Appl./ GR Registration/ (GR Certificate)/ Limited License	Permit	Certificate	Transfer	Maximum Annual Volume Diverted to Date (Water Years 2017-2021) (MG)	Average Monthly Diversions Water Year 2021 (MG)	Average Daily Diversions Water Year 2021 (mgd)	Average Monthly Diversions Water Years 2017-2021 (MG)	Average Daily Diversions Water Years 2017-2021 (mgd)
South Fork Ash Creek	S-18304	S-14237	89411	T-7926	8.90	0.31	0.01	0.27	0.01

[1] The City should not use the GR certificate numbers (shown in parentheses) in communications regarding its groundwater registrations, because OWRD uses only the GR registration numbers to reference these claims.

2.9.1.2 Surface Water Rights

The City holds two municipal surface water rights: Transfer T-12773, and Permit S-54331, which authorize the use of up to a total of 6.46 cfs (4.17 mgd). The City also holds Certificate 89411, which authorizes the use of up to 1.0 cfs from South Fork Ash Creek for pond maintenance for recreational use. Since this certificate does not provide water supply for the City's municipal system, it will not be considered further in this WMCP.

Permit S-54331 authorizes the use of up to 4.46 cfs (2.88 mgd) from the Willamette River, and has an August 10, 2005 priority date. The development deadline for the permit is August 17, 2026. To date, the City has not used water under this permit.

Transfer T-12773 authorizes the use of up to 2.0 cfs (1.29 mgd) from the Willamette River for municipal use, and has a priority date of December 23, 1954. The water right originally authorized the use of water for industrial use at an upstream location, and the order approving the transfer to authorize use by the City for municipal purposes was issued in December 2019. Water can be diverted under the transfer at the authorized point of diversion on the river, or from the City's Willamette River Wells 1, 2 and 3. The development deadline for the transfer is October 1, 2050, and the City has not used water under the transfer to-date.

2.9.2 Aquatic Resource Concerns

Independence's water rights authorize diversion from the Willamette River near river mile 96 and appropriation of groundwater from multiple wells (see Exhibit 2-1). OAR 690-086-140(5) requires the City to identify the following for each of these water sources: 1) any listing of the source as water quality limited (and the water quality parameters for which the source was listed); 2) any streamflow-dependent species listed by a state or federal agency as sensitive, threatened or endangered that are present in the source; and 3) any designation of the source as being in a critical groundwater area.

The Willamette River has been an important source of drinking water for the region. Numerous cities, such as the Cities of Corvallis and Wilsonville rely on the river as a source of supply. Land development has impacted the Willamette River basin over time, changing the water quality of the river. However, over the last 50 years, federal and state laws, such as the federal Clean Water Act, were promulgated and revised to protect water quality in drinking water sources like the Willamette River. As part of a federal and state effort to protect Oregon streams from pollutants, every two years the Clean Water Act requires Oregon Department of Environmental Quality's (DEQ) to assess or re-assess water quality and report to the Environmental Protection Agency on the condition of Oregon's waters. The Clean Water Act Section 303(d) requires the DEQ to identify waters that do not meet water quality standards and where a Total Maximum Daily Load (TMDL) pollutant load limit needs to be developed for additional regulation.

The segment of the Willamette River, from the Luckiamute River to Rickreall Creek, Assessment Unit OR_SR_1709000701_05_104005, is on DEQ's 303(d) list as an impaired water body for some water quality parameters. In DEQ's 2022 Integrated Report, DEQ categorized this segment as a Category 5 water quality limited stream due to biocriteria, dissolved oxygen, and temperature.

The streamflow dependent fish species that may occur in the Upper Willamette River and the state and federal listing statuses of these species are provided in Exhibit 2-13.

Exhibit 2-13. Federal and State Listed Fish Species within the Willamette River Basin

Species	Evolutionarily Significant Unit (ESU)	Federal Listing	State Listing
Coho salmon (Oncorhynchus kisutch)	Lower Columbia River	Threatened	Endangered
Chinook salmon-Spring and Fall (*O. tshawytscha*)	Lower Columbia and Upper Willamette Rivers	Threatened	Sensitive-Critical (Spring and Fall)
Steelhead trout-Winter (*O. mykiss*)	Lower Columbia and Willamette and Upper Willamette Rivers	Threatened	Sensitive-Critical (Lower Columbia R.) Sensitive (Willamette and Upper Willamette R.)
Steelhead-Summer/ Coastal Rainbow trout	Lower Columbia R. SMU/ESU)	N/A	Sensitive-Critical
Coastal Cutthroat Trout (O. clarkia clarkia)	Lower Columbia River	N/A	Sensitive
Chum salmon (*O. keta*)	Columbia River	Threatened	Sensitive-Critical
Bull trout (Salvelinus confluentus)	Willamette SMU (State Listing)	Threatened	Sensitive
Oregon Chub (Oregonichthys crameri)	No ESU listed	N/A	Sensitive
Western brook lamprey (*Lampetra richardsoni*)	No ESU listed	N/A	Sensitive
Western River Lamprey	No ESU listed	N/A	Sensitive
Pacific Brook lamprey (Lampetra pacifica)	No ESU listed	N/A	Sensitive
Pacific lamprey (*Entosphenus tridentatus*)	No ESU listed	N/A	Sensitive
Pacific Eulachon (Thaleichthys pacificus)	Southern DPS	Threatened	N/A
Green Sturgeon (*Acipenser medirostris*)	Southern DPS	Threatened	N/A
White Sturgeon (Acipenser transmontanus)	Lower Columbia	N/A	Sensitive

Sources:

- State listings: https://www.dfw.state.or.us/wildlife/diversity/species/docs/Sensitive_Species_List.pdf
- Federal salmon listings: https://www.fisheries.noaa.gov/resource/document/status-esa-listings-and-critical-habitat-designations-west-coast-salmon-and
- Federal listings: https://www.fisheries.noaa.gov/species-directory/threatened-endangered
- Additional federal listings: https://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp

2.9.3 Assessment of Water Supply

OAR 690-086-0140(3)

The City holds permanent municipal water rights used for potable water supply that authorize the use of up to 6.839 cfs (4.42 mgd) of groundwater and up to 6.46 cfs (4.17 mgd) of surface water. The amount of water available under these water rights to satisfy the City's demands is primarily a function of existing system capacities.

The City holds groundwater rights for the use of wells at three wellfields, the Polk Street, South, and Willamette River Wellfields. The reliability of the City's groundwater rights is primarily dependent on the capacities of these wellfields.

Use of groundwater from the wells in the Polk Street wellfield is authorized by Permit G-12134, and Certificates 95501 and 95502. In addition, Limited License LL-1779 temporarily authorizes use of groundwater from two of the wells.

Permit G-12134 authorizes the use of up to 2.0 cfs from Polk Street Well 1. The development deadline for this permit is October 1, 1998. The City filed an application for an extension of time, which is currently pending with OWRD. The application indicated that the City had developed a 1.56 cfs portion of the water right. As part of the permit extension process, the City anticipates that the undeveloped portion of the permit (0.44 cfs) will be conditioned by OWRD to maintain the persistence of listed fish (as recommended by the Oregon Department of Fish and Wildlife [ODFW]) due the hydraulic connection between the Polk Street wellfield and the Willamette River. For planning purposes, the City is assuming that the entire undeveloped portion of the permit will be considered to be in hydraulic connection with the Willamette River, meaning that "fish persistence" conditions will apply to the entire undeveloped portion of the permit. The City is also anticipating that these "fish persistence" conditions will reduce the reliability of the water right by up to 20 percent of the undeveloped portion of the permit, or 0.09 cfs (0.44 cfs undeveloped portion x 20% = 0.09 cfs). This assumption is based on past fish persistence conditions for Willamette River permits that cap curtailment at 20 percent. Thus, the City considers a 1.91 cfs portion of Permit G-12134 to be reliable.

The current capacity of Polk Street Well 1 is approximately 0.78 cfs, which is 1.22 cfs less than the maximum rate authorized by Permit G-12134 (2.0 cfs). In order to maximize Permit G-12134, after the City receives an extension of time for the permit, it intends to apply for a permit amendment that will request to add Polk Street Wells 2, 3, and 4 as authorized points of appropriation.

Certificates 95501 and 95502 authorize the use of 0.94 cfs and 0.56 cfs, respectively. The source wells for these rights (Polk Street Wells 1, 2, 3 and River Drive Well) have a combined capacity of approximately 2.84 cfs. Accordingly, the City considers Certificates 95501 and 95502 to provide reliable source of groundwater supply.

The City's permanent Polk Street wellfield water rights do not authorize use of groundwater from Polk Well 4, and are currently insufficient to authorize use of the full wellfield capacity. To help address this issue, the City obtained limited license LL-1779, which authorizes the use of up to 2.5 cfs from Polk Street Wells 3 and 4 for municipal use. The limited license allows groundwater use until July 15, 2024 or

when a permit amendment adding Polk Wells 3 and 4 to Permit G-12134 is approved. The City does not consider the limited license a reliable source of long-term supply, primarily due to its limited duration.

Three groundwater registrations authorize the use of up to 2.339 cfs from the South Wellfield for municipal use. The current total combined summer capacity of the five wells associated with these rights is approximately 1.28 cfs. Thus, the capacity of the South wellfield is approximately 1.06 cfs less than the combined maximum authorized rate of the water rights associated with the wellfield. Additionally, the groundwater registrations will have to be adjudicated by the State of Oregon before the City will receive water right certificates and have certainty as to these water rights. An adjudication is not anticipated to occur in the foreseeable future.

Two water rights currently authorize the appropriation of groundwater from the three wells in the Willamette River wellfield. Permit G-17868 authorizes use of up to 1.0 cfs and Transfer T-12773 authorizes use of up to 2.0 cfs, for a total authorized use of up to 3.0 cfs. The reliability of water these rights is affected by both the capacity of the wellfield and water right limitations associated with Permit G-17868.

The Willamette River wellfield has multiple capacity limitations. Only Willamette Well 1 is currently considered usable. Willamette Well 2 will require repairs before it can be used, and Willamette Well 3 has poor water quality conditions and a relatively low yield. Thus, the capacity of the Willamette River wellfield is currently equivalent to the capacity of Willamette Well 1 (1.1 to 1.2 cfs). Since the City shares the Willamette River Wells with the City of Monmouth, its portion of the capacity is 0.55 to 0.6 cfs. Further, the City anticipates that groundwater from the wellfield will need to be treated prior to use for municipal purposes. Accordingly, the wells do not currently provide water supply to the City's municipal water system.

In addition, Permit G-17868 has multiple limitations. First, the permit has a development deadline of October 1, 2042 to develop the remaining 0.54 cfs portion of the permit,. Second, the City currently has access to only the 0.46 cfs developed portion of Permit G-17868. (This portion of the permit was developed when the permit's authorized points of appropriation were two wells in the South wellfield. The permit was subsequently amended to authorize appropriation from the Willamette River Wells.) Finally, OWRD previously determined that a 0.35 cfs portion of the 0.54 cfs undeveloped portion of the permit would have the potential for substantial interference with surface water. Accordingly, this 0.35 cfs portion of the permit is subject to conditions to maintain the persistence of listed fish in the Willamette River. When identified target flows are not met, curtailment under the "fish persistence" conditions is capped at 20 percent, or 0.07 cfs (0.35 cfs portion of permit x 20% = 0.07 cfs).

The City is currently assessing the alternatives related to the Willamette River wellfield. If the City ultimately decides not to obtain municipal water supply from the Willamette River wellfield, it could apply for a permit amendment to change the authorized point(s) of appropriation for Permit G-17868. . If the system capacity limitations for Permit G-17868 were resolved, the reliable portions of the permit would be 0.93 cfs after the City obtained access to the undeveloped portion of the permit. (1 cfs – 0.07 cfs subject to fish persistence = 0.93 cfs)

The City holds two municipal surface water rights that authorize the use of up to 6.46 cfs from the Willamette River (Transfer T-12773 and Permit S-54331). Both water rights have an authorized point of diversion on the Willamette River. Transfer T-12773 authorizes use of up to 2.0 cfs and Permit S-54331

authorizes use of up to 4.46 cfs. (As described above, Transfer T-12773 also authorizes the appropriation of the 2.0 cfs from Willamette River Wells 1, 2, and 3 based on the hydraulic connection between the wells and the Willamette River.) The City has not yet developed a surface water intake on the Willamette River for diversion of water under these water rights.

The Willamette River has ample water supply to meet the City's need for water use under Transfer T-12773 and Permit S-54331. According to OWRD's Water Availability Reporting Systems for the Willamette River at U.S. Geological Survey (USGS) Gage 14191000 in Salem, water currently is available to meet existing demands year-round. The water availability analyses considers the estimated 80 percent exceedance natural streamflow, and all existing consumptive use and non-consumptive use water rights, including instream water rights, when determining water availability. Since streamflow availability in the Willamette River is expected to be highly reliable in the near-term, both water rights would be expected to provide a secure source of water supply in the near-term. Over the long-term, Transfer T-12773, which has a relatively senior priority date (December 23, 1954), would be expected to be a more secure source of water supply. Permit S-54331, however, has an August 10, 2005 priority date, and is junior in priority relative to most other rights on the Willamette, which could potentially reduce the City's ability to rely on this right at some point in the future.

The future adequacy and reliability of the City's Willamette River municipal water rights will depend on the amount of water in the Willamette River available for the City's use. The ability for the City to access water under Permit S-54331 could be affected by the factors described below.

- The section of the Willamette River adjacent to the City has an unconverted minimum perennial streamflow (MF 183) for 1,300 cfs year-round at USGS Gage 14191000 near Salem for supporting aquatic life. If MF 183 is converted to an instream water right, it would receive a priority date of the date it was established (June 22, 1964), which is senior to Permit S-54331. As a result, the City would have reduced access to water under Permit S-54331 when Willamette River streamflow is less than the instream water right.

- In addition, the Willamette Basin Program also includes unconverted minimum perennial streamflows for water stored in the U.S. Army Corps of Engineers (USACE) reservoirs upstream from the City. The minimum perennial streamflow for stored water in this reach of the Willamette River would protect up to 4,700 cfs of released stored water at USGS Gage 14191000 near Salem. Significant uncertainty is associated with the ultimate "conversion" of the stored water component of the minimum perennial streamflows to instream water rights.

- Currently, most of the water released from the USACE storage reservoirs is considered natural flow (i.e., unallocated streamflow available to water right holders). Consequently, the City can appropriate this water under its Willamette River municipal water rights. If the stored water component of the minimum perennial streamflow (4,700 cfs) is converted to an instream water right, the City (and other natural streamflow water right holders) could not appropriate the released stored water, regardless of priority date. OWRD would consider the stored water released to meet the instream water right to be a different water source than that identified on the City's water rights (natural flow rather than stored water).

- If unconverted minimum perennial streamflows for natural flow (1,300 cfs) and for stored water (4,700 cfs) are both converted to an instream water right, then a total streamflow of 6,000 cfs

would need to be met before the City could have full access to water under Permit S-54331. Historically, there have been times when there is less than 6,000 cfs at USGS Gage 14191000 near Salem; in 2021 the flow was less than 6,000 cfs for most of July and August.

- The National Oceanic and Atmospheric Administration (NOAA) Fisheries released the final Biological Opinion (BiOp) for the Willamette River Project in 2008, which recommends identifying additional stored water in reservoirs that could be allocated to instream flow for fish listed under the Endangered Species Act. As described above, unallocated stored water is considered Willamette River natural flow. If additional unallocated stored water is converted to instream water rights, the City's access to water under Permit S-54331could be impaired.

In summary, both of the City's Willamette River water rights are currently expected to provide a reliable water supply. However, there are a number of complex activities under consideration on the Willamette River and the outcome of those activities is difficult to predict. Some of these activities could result in future constraints on the City's use of Permit S-54331 in the long term.

2.10 System Description

OAR 690-086-0140(8)

Independence owns and operates a public drinking water system under Public Water System Identification Number OR41 00399 assigned by Oregon Health Authority and the Environmental Protection Agency. The City currently sources water from four wells in the Polk wellfield, five wells from the South wellfield, and the Park well. Water appropriated from the two wellfields is treated at two WTPs. Following treatment, water is stored in four reservoirs, with a combined capacity of 3.478 MG as noted in the , then pumped to the distribution grid. Within the distribution system, the City's service or pressure zone is served by three booster pump stations. The Willamette River wellfield is not connected to the distribution system. A system schematic is provided in Exhibit 2-1.

3. Water Conservation Element

This section satisfies the requirements of OAR 690-086-0150 by describing the City's historical water conservation program over the previous ten years and through the establishment of new or maintenance of existing measures over the next ten years.

3.1 Progress Report

OAR 690-086-0150(1)

Independence has an established conservation program designed to help its customers and the City's operations efficiently use water. The City's 2016 WMCP described the conservation measures that were being implemented at that time and provided some examples of potential future measures, though did not explicitly call out benchmarks for most measures. For this WMCP, the City reports on benchmarks listed in the City's 2016 WMCP and establishes benchmarks for conservation measures that previously did not have benchmarks clearly identified. Exhibit 3-1 describes Independence's progress in meeting these benchmarks and provides examples of the City's efforts. The information is duplicated from the City's WMCP progress report dated November 11, 2021.

3.2 Other Conservation Measures

OAR 690-086-0150(3) & (5)(e)

An important component to the City's conservation program is its leak detection and line repair and replacement program. In approximately 2010, the City hired a contractor to inspect for leaks throughout the City's distribution system. Immediately following the inspection, the City repaired or replaced all lines identified with leaks. The results of the City's program suggests that its water loss estimates are less a result of loss due to leaks (as a result of the City's follow up repairs of all leaks) and a more of a function of meter inaccuracies. The City's efforts since then have focused on meter replacement, as detailed in Section 3.4.3, and will continue to be a focus over the next five years.

Since the system-wide leak detection effort in the early 2010s, the City continues to replace laterals constructed of copper material which are prone to leakage, and responds to and quickly repair reported line breaks. The City's current master planning effort will develop a list of capital improvements, some of which will include recommended projects to replace aging lines. The City will use this list of projects as the basis for its line replacement program. In addition, the City continues to replace older, leak-prone water lines proactively in areas where other utility work occurs.

Five-Year Benchmarks

- Continue replacing leak-prone waterlines in conjunction with other utility work as funds allow.
- Develop a Capital Improvement Plan based on Water Master Plan recommendations for waterline and service line replacements.
- Continue to replace copper laterals in the distribution system.

3.3 Measurement and Reporting Program

OAR 690-086-0150(2)

The City's water measurement and reporting program complies with the measurement and reporting standards in OAR Chapter 690, Division 85. Independence measures the water appropriated from its groundwater sources with meters at each well via its telemetry system. The City tests and calibrates, repairs, or replaces production meters as needed for ongoing accuracy.

Annually, Independence submits monthly water use measurements to OWRD. OWRD publishes this data at https://apps.wrd.state.or.us/apps/wr/wateruse_query/.

Exhibit 3-1. 2016 Conservation Measure Benchmark Progress

Conservation Measures Required	2016 WMCP Conservation Measure Benchmarks	2016 Benchmark Progress Status
Annual Water Audit	Continue performing monthly water audits[1]	The City continues to perform monthly water audits
System-wide Metering	Continue metering all service connections[1]	The City continues to meter all service connections
Meter Testing and Maintenance	Random checks and evaluations of meters suspected of failure to occur at a rate of 100 meters per year starting in 2017. Failed meters will be replaced automatically. [1]	Performed meter checks on over 100 meters per year since 2017 based on potential meter failure alerts provided by Utility Billing system and from customer requests. All failed meters are replaced upon discovery.
	Replace any meters over 20 years of age discovered during routine meter reading or maintenance.	In the late 2000s, the City replaced nearly all of its retail meters with meters capable of integrating Automatic Meter Read (AMR) technology. From 2019 to 2021, the City replaced the AMR meter heads of 1,950 meters (approximately 75 percent of all meters) due to widespread meter head failures, improving the accuracy of these meters. The original meter replacement program did not replace the City's twelve compound meters. The City has been replacing these meters over time with magnetic flow meters as budgets allow, with three compound meters left in need of replacement.
	Perform standard flow tests on meters when customers alert City to potential meter inaccuracies.	Small meters are tested upon requests by customers through the use of a simple test to determine meter failure. Failed meters are promptly replaced.
Water Rate Structure	Rate structure allows for one unit (750 gallons) of water per month and each additional unit is $3 each. [1]	Water rates have changed; however, the City continues to use a water rate structure that is based, in part, on the quantity of water consumed.
Water Loss	Implement the 20-year water line replacement program	Water lines continue to be replaced based on a prioritized project list. Lines with a history of leaks and lines constructed of material prone to leaks have highest priority. For example, the City is replacing four blocks of water lines in September 2021 in conjunction with a storm water system project.

Conservation Measures Required	2016 WMCP Conservation Measure Benchmarks	2021 Benchmark Progress Status
Public Education	Prepare and distribute water conservation materials (bill inserts, information in monthly newsletters, etc.) [1]	The City's monthly newsletter is included with all utility bills. These newsletters include articles describing ways for customers to efficiently use water. For example, the newsletter published in June of 2019 included tips to increase outdoor irrigation efficiency. The City also uses social media to broadcast conservation messaging, for example posting on the City's Facebook page leak detection methods in October 2020.
	Prepare and distribute technical conservation information to specific customer types such as residential, commercial, industrial, etc. [1]	The City provides technical information to customers. For example, when customers call about high-water bills, the City may instruct customers how to identify leaks (turn off all water and inspect meter register). The City has also included leak detection and repair information in its monthly newsletter distributed to all customers and has included this information on its Facebook page.
	Flyer describing water conservation measures and a promotional program that provides free low-flow showerheads to City customers through a partnership with the Energy Trust of Oregon. Information will be added to water bill mailing prior to the high use month of July (example in WMCP appendix)	The City includes a monthly newsletter along with customers' utility bills. Over the past five years, the City has included conservation tips and promoted its 2017 showerhead giveaway program (in partnership with Energy Trust of Oregon) in these newsletters. The giveaway program resulted in the distribution of over 300 showerheads to customers.
	OWRD (water conservation) brochures are available at City Hall [1]	The City makes conservation flyers produced by the City available at City Hall.
	Signage during hot summer months reminding residents to conserve water[1]	The City's trailer sign is used periodically during peak season in high traffic areas, including near the city park and downtown, to remind customers to use water wisely.

[1]The City's 2016 WMCP described this measure as being implemented at that time, but did not describe these as benchmarks. For this WMCP, the City converted these measures to benchmarks.

3.4 Required Conservation Measures

OAR 690-086-0150(4)(a-f)

The Administrative Rules for Water Management and Conservation Plans require that all water suppliers establish five-year benchmarks for implementing the following required conservation measures:

- Annual water audit
- System-wide metering
- Meter testing and maintenance
- Unit-based billing program
- Water loss
- Public education

During the next five years, Independence plans to initiate, continue, or expand these conservation measures to meet these requirements, as described below.

3.4.1 Water Audit

OWRD defines a water audit as an analysis of the water system that includes a thorough accounting of all water entering and leaving the system. Independence describes its method of performing its annual water audit to determine water loss in Section 2.8. To summarize, Independence calculates annual water loss by subtracting the sum of annual authorized metered and unmetered consumption from annual demand. Total annual loss volume is divided by annual demand to obtain the percentage of loss. As shown in Section 2.8, Independence's water loss in FY 2020/21 was estimated to be 17.6 percent. In 2024, the City intends to incorporate additional authorized metered and unmetered water uses, including uses by the fire district and use related to the flushing of water lines conducted by the City.

The City continues to analyze its own water use to identify alternatives to increase water efficiency. Each year, the City performs spring irrigation system checks on its irrigation systems at City parks to ensure the systems continue to operate at maximum efficiency. These checks entail inspecting for broken rotors and other spray head types and replacing these to reduce water losses, among other steps.

Five Year Benchmark

- Continue performing and documenting the results of annual water audits.
- In 2024, incorporate uses by the fire district and City for line flushing.
- Continue seeking ways to increase the efficiency of the City's use of water.

3.4.2 System-wide Metering

Water use at all of the City's service connections are metered and the City continues to install meters at all new water connections.

Five-Year Benchmark

- Continue to meter all current and new service connections.

3.4.3 Meter Testing and Maintenance

The City has multiple facets to its meter maintenance program. First, meters at service connections are replaced or repaired upon failure. The City discovers meter failures when alerted to possible failures through the City's utility billing system or through communications from customers who suspect their meters are inaccurate. The City may repair larger meters upon failure but replaces smaller meters outright for cost-efficiency purposes.

The City is nearing completion of a project to replace meters heads fitted with Automated Meter Reading (AMR) technology. The batteries associated with these meter heads had begun to fail prematurely. Wide-spread failure could have resulted in lost or missed meter reads which would affect the City's water loss calculations. In response, the City began replacing these meter heads in 2019. The City estimates that approximately 1,950 meter heads have been replaced as of spring 2022, representing most of the faulty or potentially faulty meters. The City intends to complete this replacement project by 2027.

The City also focuses its meter maintenance efforts on service connections with meters larger than one inch. Of the City's 12 compound meters, the City had replaced the nine oldest meters by 2022 and will replace the three remaining compound meters as resources allow. In 2022, the City replaced an eight-inch meter located at the fire department that had failed. Replacement of this meter will enable the City to better capture fire department usage, which is thought to be a significant contributor to overall consumption relative to other users.

The City regularly reviews production logs of the City's master meters located at wellheads to determine potential meter inaccuracies. Through this process, the City discovered two inaccurate meters located at Polk Wells 2 and 3. These meters were replaced in 2020. Of the five South wellfield meters, one was replaced in approximately 2019 and another repaired in approximately 2017.

The vast majority of the City's customers' meters were replaced in the late 2000s. By the late 2020s, most of these meters will have reached 20 years of age, the approximate year when the accuracy of these types of meters begin to wane. In preparation, the City intends to establish a policy for inspection, repair, and replacement of these customer meters and master meters. In addition, the City will create an asset management list to include an inventory of meters that identifies meters' age and establish a replacement schedule based on meter age, with the oldest meters being replaced first. This list will help the City prioritize meter maintenance activities, prepare and budget for maintenance expenditures, and help ensure meters are replaced by the end of their expected lifespan.

Five Year Benchmark

- Prepare departmental policy for inspection, testing, repair, and replacement of customer and master water meters by the end of 2023 and implement the policy in 2024.
- Develop asset management list of meters with year installed and recommended replacement schedule at end of meter life by the end of 2025.

- Complete system wide small meter head replacements and compound meter replacements by the end of 2027.
- Continue replacing or repairing failed meters upon alert.

3.4.4 Water Rate Structure

The City's rate structure is based, in part, on the quantity of water metered at each service connection. The City charges a basic water charge that is dependent upon the size of the meter at the service connection and an additional charge per 100 cubic feet of water (ccf). The current rate for all customer classes is $3.33 per ccf. The City reads customers' meters and bills customers monthly. Current water utility rates are provided in Appendix B.

In addition to updating the City's WMCP, the City also is updating its water system master plan. These projects will help inform City Council discussions about revisions to the City's current rate structure, including discussions about adopting a progressive tiered rate structure.

Five Year Benchmark

- Continue to bill customers based, in part, on the volume of water consumed.
- Update the water rate schedule as needed based on results of the Water Master Plan and Water Management and Conservation Plan by 2024.
- Evaluate a tiered water rate structure and implement structure if approved by City Council.

3.4.5 Water Loss

As previously noted, the City's water loss in 2021 was 17.6 percent. Because the City's water loss is greater than 10 percent, OAR 690-086-0150(4)(e)(A) requires the City to provide a description and analysis identifying potential factors for loss and selected actions for remedy to OWRD within two years of approval of this WMCP. If the selected actions do not reduce water loss to less than 10 percent within five years of approval of the WMCP, OAR 690-086-0150(4)(e)(B) requires the City to develop and implement a regularly scheduled and systematic program to detect and repair leaks in the transmission and distribution system using methods and technology appropriate to the size and capabilities of the Municipal Water Supplier, a line replacement program detailing the size and length of pipe to be replaced each year, or develop and implement a water loss control program consistent with American Water Works Association's standards.

To help reduce loss, the City will continue to implement its meter replacement program and continue to identify and repair lines with a history of leaks. If losses continue to exceed 10 percent within two years of approval of this WMCP, the City will analyze potential factors for loss and select and implement remedies. If, after five years of approval of this WMCP, losses still exceed 10 percent, the City will implement one or more of the three measures prescribed in 690-086-150(4)(e)(B).

Five-Year Benchmarks

- Within two years of approval of this WMCP, the City will provide OWRD with a description and analysis identifying potential factors for the water loss and selected actions for remedy if water loss continues to exceed 10 percent.

- If the selected actions do not reduce water loss to less than 10 percent within five years of approval of the WMCP, the City will implement one or more of the prescribed measures in the rules.

3.4.6 Public Education

The City administers a public education program aimed at increasing the efficiency of indoor and outdoor water use by its customers. The City publishes print materials and digital content to broadcast these conservation messages. Monthly newsletters contain periodic articles about irrigation system efficiency, for example, and are included with customers' monthly water bills. The City makes available flyers written in English and Spanish at City Hall and at City events that provide simple indoor and outdoor water conservation tips. This flyer is included in Appendix C. The City also uses a reader board with a message to conserve water placed at high visibility locations within the City during peak season. The City also uses social media, namely its Facebook page, to help inform customers about efficient ways to use water. Web content on the City's website includes tips to help customers conserve water.

The City intends to expand its education program to include conservation messaging in its Consumer Confidence Report (CCR). Since the CCR is distributed in late spring or early summer, near the start of the irrigation season, the City will focus content on efficient irrigation practices.

Five-Year Benchmark

- Continue to publish education materials in utility bills, city newsletter, website, and social media.
- Continue to provide conservation pamphlets at City Hall and City events.

3.5 Additional Conservation Measures

OAR 690-086-0150(5)

OAR 690-086-0150(5) requires municipal water suppliers that serve a population greater than 1,000 and propose to expand or initiate the diversion of water under an extended permit for which resource issues have been identified, or if the population served is greater than 7,500, to provide a description of the specific activities, along with a 5-year schedule to implement several additional conservation measures. This rule applies to the City given that it intends to expand its diversion of water under extended water use permits.

3.5.1 Technical and Financial Assistance Programs

The City offers technical assistance to customers in order to help reduce leaks on customers' properties when customers contact the City with concerns about high water bills. This information is distributed by billing staff and Public Works staff during service calls. Customers seeking a way to identify leaks can reference the City's website, which describes one method of leak detection. In the future, the City will begin to provide leak detection dye tabs to customers for use in identifying toilet leaks that will be distributed to customers during an in-person service call where indoor leaks are suspected.

Five-Year Benchmark

- Offer technical assistance, such as leak detection measures, to customers who may have leaks on

the customers' sides of meters (indoor).

- Provide leak detection tips on the City's website.
- Provide toilet leak detection dye tabs to customers during service calls as needed starting in 2023.

3.5.2 Supplier Financed Retrofit or Replacement of Inefficient Fixtures

The City has offered low flow shower heads to customers as recently as 2017. While the City intends to focus resources on meter replacement and repair as a means to reduce its water loss and improve the efficiency of its water system, it will also provide outdoor conservation kits to its residential customers. These kits will help reduce peak season consumption by helping customers irrigate more efficiently. These kits will include an automatic shut-off spray nozzle and other items such as soil moisture meter probe and rain gauge. These spray nozzles replace nozzles that are designed to remain in the "on" position that allow for flow when water is not needed. Up to 20 kits will be made available annually to the City's residential customers. The City will promote these kits on the City's website and will make these kits available at City Hall.

Five-Year Benchmark

- Provide up to 20 outdoor conservation kits to residential customers annually over the next five years.

3.5.3 Rate Structure and Billing Practices that Encourage Conservation

As previously described, the City's customer water bill is comprised of a meter charge based on meter size and a volume charge based on the amount of water consumed. Thus, the City continues to bill customers based, in part, on the volume of water used. Customers are billed on a monthly basis, providing timely feedback on water consumption. In addition, water bills include historical water consumption, providing customers a tool for evaluating how their consumption practices may be affecting their water bills from month-to-month.

As noted in Section 3.4.4, the City will consider adopting a progressive tiered water rate structure.

Five-Year Benchmark

- Continue to bill customers based, in part, on the volume of water consumed on a monthly basis.
- The City will continue to provide historical water consumption information on water bills and continue billing customers monthly.
- Continue to bill customers based, in part, on the volume of water consumed.
- Update the water rate schedule as needed based on results of the Water Master Plan and Water Management and Conservation Plan by 2024.
- Evaluate a tiered water structure and implement the rate structure if approved by City Council.

3.5.4 Water Reuse, Recycling, and Non-potable Opportunities

In 2020, the City began treating some of its wastewater under authority of the City's National Pollutant Discharge Elimination System Waste Discharge Permit number 101217 for application at agricultural lands for irrigation purposes. The treated wastewater is being used for irrigation purposes under Reclaimed Municipal Water Use Registration RM-231. A total of 262.8 acres of agricultural lands, located northwest of City limits, are authorized to be irrigated with this recycled water during dry weather months. While it is unlikely that the City would provide potable water service to these agricultural lands if these lands did not receive recycled water, the City's provision of recycled water reduces the volume of water drawn from the watershed.

Five-Year Benchmark

- Continue to provide recycled water for irrigation on agricultural lands.

4. Water Curtailment Element

This section satisfies the requirements of OAR 690-086-0160. This rule requires a description of past supply deficiencies and current capacity limitation. It also requires inclusion of stages of alert and the associated triggers and curtailment actions for each stage.

4.1 Introduction

Curtailment planning is the development of proactive measures to reduce demand during supply shortages as the result of prolonged drought, or partial or full system failure from unanticipated events including catastrophic events, mechanical or electrical equipment failure, or events not under control of the City.

In 2001, the City promulgated a curtailment plan in 2001 under Ordinance 1391 to be invoked in the event of a water supply shortage or potential shortage. For this WMCP, the City made modifications to some elements of this ordinance to meet current needs. The resulting modified curtailment plan is presented below.

4.2 History of System Curtailment Episodes

OAR 690-086-0160(1)

The City has not experienced any system curtailment episodes within the last 10 years.

4.3 Capability Assessment

OAR 690-086-0160(1)

Independence evaluated its ability to continue to provide water during a variety of events that may cause a water shortage and determined that the City will be able to continue to meet demand for some of these supply shortages. For example, the City is well positioned to provide power to its wellfields in the event of a power outage. Specifically, the South Wellfield receives its electrical service at a single entry point in the booster pump station and distributes individual power to the five wells from this point. The electrical service at this site has been equipped with an auto-start emergency generator and an automatic transfer switch to run up to all five wells along with the entire booster pump station during a power outage. Currently, the Polk Street wellfield does not have any automatic electrical or mechanical backup facilities of any kind, although a manual transfer switch was recently installed for this purpose and a city-owned portable generator is available, if needed. Future plans call for an automatic-start standby generator to be placed at this site in the early years of this study period.

The City of Independence has an Emergency Water Agreement with the City of Monmouth. The agreement was signed January 19, 2010 allowing either city to supply water to the other during emergency situations. The connection point is located on South 4th Street, at the City of Monmouth 4th Street Pump Station and Reservoir. Both the City of Independence and the City of Monmouth have signed the Emergency Water Agreement stating that, upon request, each City will supply the other

surplus water under emergency conditions, when it will not hinder or harm the water delivery of the City supplying the water.

In the event of contamination of the source aquifer and assuming water from the City of Monmouth, the City of Independence may enact the Emergency Water Agreement with the City of Monmouth until the cause of the contamination is identified and addressed. Due to the significant distance between the Polk and South Wellfields, the City could shut off one wellfield in the event of contamination and continue to provide water from the remaining wellfield with supplementation through the emergency water agreement.

For some short-duration supply shortages, the City may be able to rely on inline distribution system storage to meet demand. The total capacity of the City's storage is 3.478 MG. This volume could meet demand for approximately 3 days assuming an ADD of 1 mgd and the reservoirs were full.

In the event of a real or potential threat to its water supply that the City is not able to address through these or other means, the City will enact the curtailment plan described below.

4.4 Curtailment Stages and Initiating Conditions

OAR 690-086-0160(2) and (3)

Independence's curtailment plan has three curtailment stages and each of these stages have initiating conditions, or triggers, that define when these stages are implemented. The curtailment stages are organized based on the level of severity of the water shortage event, such that the least severe impact of an event is addressed by the first stage of alert. Independence's response to a water shortage may escalate successively through each stage, or, a latter stage could be implemented directly, bypassing earlier stages (e.g., moving from stages 1 to 3), depending upon the event. The three stages and initiating conditions are listed in Exhibit 4-1.

The initiating conditions rely on the percentage of water system demand relative to the volume of system capacity as a trigger for each stage of curtailment. Water system capacity is defined as the total daily capacity of the City's combined water sources (wells) and the two treatment facilities. System demand is defined as a three day rolling average of total daily production of water treated at the City's WTPs.

Independence recognizes that there may be other factors that could trigger this curtailment plan and reserves the flexibility to consider these factors (such as lack of chemical needed for treatment processes) and to modify this plan in response.

Exhibit 4-1. Curtailment Stages of Alert and Initiating Conditions

Curtailment Stages	Initiating Conditions[1]
Stage 1: Alert for a Potential Water Supply Shortage	Demand is 70-80% of supply capacity.
Stage 2: Water Supply Shortage	Demand is 80-90% of supply capacity.
Stage 3: Critical Water Supply Shortage	Demand is 90% or more of supply capacity.

[1] The City will also consider how anticipated future conditions will impact the demand and supply capacity when determining which stage to initiate and when to initiate a stage.

4.5 Curtailment Measures by Stage

The plan includes both voluntary and mandatory curtailment measures associated with each stage. These measures are intended to reduce demand during water shortages, thereby extending Independence's water supply to meet basic domestic needs and the needs to maintain the health and safety of the community. The City may modify, add, or remove measures based upon the cause, severity, anticipated duration of the shortage, and other factors associated with the event. Moreover, the scope of the water shortage will determine if the measures are applied to the entire system, to specific water use sectors, or in those geographic areas that are directly impacted. The measures associated with each stage of alert are described below.

While most of the following measures prohibit specific nonessential uses of water, any prohibition may be disregarded if the use meets public health or safety requirements, including but not limited to abatement of fire or sanitation hazards, or to meet air quality standards mandated by the Oregon Department of Environmental Quality (e.g. dust suppression), and the use maintains the public health, safety, and welfare of Independence's customers.

4.6 Curtailment Measures by Stage

OAR 690-086-0160(4)

4.6.1 Stage 1: Alert for a Potential Water Supply Shortage

A Stage One Alert is defined as being when the water demand is 70 to 80 percent of supply capacity. The goal of this stage is to reduce water use under voluntary curtailment measures to prevent the City from entering Stage 2. The City will communicate information to customers about effective water conservation measures.

Under Stage One, the City Manager has the authority to activate some or all of the voluntary curtailment measures listed below:

A. Institute a voluntary watering schedule that restricts irrigation practices to occur from 8 pm to 6 am for all customer types to avoid loss due to evaporation.

B. Provide specific notification to major water users asking for voluntary reductions in use and/or deferring non-essential use to off-peak hours. For commercial and industrial users that have developed water shortage contingency plans, provide specific notification at each stage of curtailment and ask that they implement a corresponding action.
C. The City Parks Department shall operate their irrigation system to achieve maximum efficiency based upon data received from their on-site weather station.

In addition, City uses of water hydrants and water line flushing shall be limited to essential needs.

4.6.2 Stage 2: Water Supply Shortage

Stage Two is activated when a determination is made by the City Manager that a water shortage exists. Stage Two Alert is defined as being when the water demand is between 80 and 90 percent of system capacity. The goal of this stage is to significantly reduce non-essential water uses through mandatory curtailment measures in order to prevent the City from entering Stage 3. The City will continue to communicate information to customers about effective water conservation measures.

Under Stage Two, the City Manager has the authority to activate the mandatory measures listed below until the City Manager determines that the capacity to deliver adequate supplies of water is restored:

A. Stage One measure A will be implemented as mandatory.
B. The City will continue to implement Stage One measure B.
C. Lawn watering and other non-essential uses of water will be restricted as specified below:
    a. No watering or irrigating of lawns, grass or turf unless it is:
        i. New lawn, grass, or turf that has been seeded or sodded after March 1 of the calendar year, but before curtailment was initiated;
        ii. Exempted public or private athletic fields used for organized play. Exemptions for athletic fields must be received in writing from the City Manager;
        iii. Golf course tees and greens; and,
        iv. Park and recreation areas of a particular significance and value to the community, as approved by the City Manager.
    b. No use of City-supplied water to wash sidewalks, walkways, streets, driveways, parking lots, or other hard surfaced areas (e.g. buildings and other structures).
    c. No uses of City-supplied water for washing vehicles, except for commercial carwashes using a system to recirculate and reuse water.
D. For parks supplied by City water, the Parks Department shall curtail irrigation of all non-athletic fields.
E. All fire districts using City water shall be notified of the Stage Two alert and requested to refrain from any training activities using City water.
F. Prohibit filling and replenishing permanent or temporary swimming pools or other water using features, such as hot tubs and Jacuzzis, designed for recreational use.
G. Eliminate replenishing water in fountains or ponds for aesthetic or scenic purposes, except for recalculating systems and where necessary to support fish life.
H. Eliminate the use of water for dust control.

Independence will also alert the City of Monmouth about the potential need for emergency water supply and prepare interconnections for water distribution.

4.6.3 Stage 3: Critical Water Supply Shortage

Stage Three Alert is defined as being when the water demand reaches or exceeds 90 percent of system capacity. The City Manager shall immediately notify the Mayor and the City Council of the situation and submit a report at the next available meeting of the Council. The City will continue to communicate information to customers about effective water conservation measures.

Under Stage Three, the City Manager has the authority to activate the mandatory restrictions and other measures listed below:

A. Maintain Stage 2 curtailment measures unless modified by the following Stage 3 measures.
B. No watering of lawns, grass or turf shall occur.
C. No use of water shall be allowed to wash vehicles, including all commercial carwashes.
D. No City-supplied water shall be used for fire district training activities.

4.7 Notifications of Curtailment

The City has several communication channels that it can use to relay important information about a supply shortage, including voluntary or mandatory measures. The City may rely on local media, mailers, bill stuffers, door hangers, social media, strategically-located reader boards, and its web site to communicate with its customers about a supply shortage. Notices and other forms of communication may include a description of the current water situation, the reason for the requested conservation measures, and a warning that mandatory restrictions will be implemented if voluntary measures are not sufficient to achieve water use reduction goals.

4.8 Authority and Enforcement

Under authority of Ordinance 1391, the stages shall be activated when a determination is made by the City Manager that a potential for a water shortage exists. The City Manager has the authority to identify the curtailment stage based on the shortage or potential shortage and decrease or increase the curtailment stages as needed. The City Manager may also add new, modify, or terminate curtailment measures.

4.9 Drought Declaration

If a declaration of a severe drought in Polk County is declared by the Governor per ORS 536.720, the Oregon Water Resources Commission may order political subdivisions within any drainage basin or subbasin to implement a water conservation or curtailment plan or both, approved under ORS 536.780. The conservation and curtailment elements of this WMCP meet these requirements. If the City falls within a severe drought area declared by the Governor, such as Polk County, the City will consider whether curtailment measures are needed to meet system demands. Regardless of whether curtailment is needed, the City will continue to encourage customers to conserve water.

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5. Municipal Water Supply Element

This section satisfies the requirements of OAR 690-086-0170.

This rule requires descriptions of Independence's current and future service area and population projections, demand projections for 10 and 20 years, and the schedule for when the City expects to fully exercise their water rights. The rule also requires comparison of the City's projected water needs and the available sources of supply, an analysis of alternative sources of water, and a description of required mitigation actions.

5.1 Delineation of Service Area

OAR 690-086-0170(1)

The City's current service area is contiguous with City limits and City limits and UGB is shown in Exhibit 2-1. Future growth is expected to occur with the unincorporated areas outside of City limits, but within the UGB. The type of growth will include infill and redevelopment within the City and development within the unincorporated areas within the City's UGB. The City's growth is partially constrained to the west by the City of Monmouth, which borders Independence's western most extent.

5.2 Population Projections

OAR 690-086-0170(1)

The City relied on population projections prepared by PSU's PRC which were published in 2021. In keeping with observed historical trends, the City's population is expected to increase over time. The average annual growth rate (AAGR) is projected to exceed the rate observed from 2010 to 2020 of 1.4 percent, reaching 4.0 percent from 2020 to 2025, and eclipsing the high rate of growth documented from 1990 to 2010 of 3.4 percent. Following 2025, the PSU projects the AAGR to drop to 2.3 percent and gradually decline through 2045 to 2.1 percent. Regionally, Independence is projected to grow the fastest of any Polk County municipality through 2042.

By 2032, the City's population is forecast to reach 14,206 and by 2042, the City projects a population of 17,520.

Exhibit 5-1. Projected Population, 2032 and 2042

Year	Population
2021	9,961
2032	14,206
2042	17,520

5.3 Demand Forecast

OAR 690-086-0170(3)

The City's WSMP utilized a per capita demand formula to project demand. These calculations and results are described below. For this calculation, Independence used an ADD of 106 gallons per person per day (gpcd) and multiplied forecasted populations (see Section 5.2) in 2032 and 2042 by this water use factor. (The ADD of 106 gpcd was obtained by rounding up the average historical per capita rate of 105.4 gpcd observed from 2017 through 2021.) The projected MDD was calculated by multiplying these projected ADD volumes by a peaking factor of 2.0. (The City's historical peaking factor has ranged between 1.8 and 2 over the previous five years.) The use of 106 gpcd for ADD and a peaking factor of 2 mgd provided a more conservative forecast of demand.

The City anticipates its MDD to reach approximately 4.66 cfs (3.01 mgd) by 2032, and 5.75 cfs (3.71 mgd) by 2042. The City is also currently projecting an MDD of 9.12 cfs (5.89 mgd) by 2065. For comparison, the City's MDD in FY 2020/2021 was 2.8 cfs (1.8 mgd).

Exhibit 5-2. 20 Year Demand Forecast

Year	Population	MDD (mgd)	MDD (cfs)
2021 (Actual)	9,961	1.85	2.86
2032	13,138	3.01	4.66
2042	15,456	3.71	5.75
2065[1]	27,793	5.89	9.12

[1] The City forecasted demand to 2065, which was the extent of PSU's population projection.

5.4 Schedule to Exercise Permits and Comparison of Projected Need to Available Sources

OAR 690-086-0170(2) and (4)

The projected growth of the City through 2042 translates to an increase in demand for water supply. The City projects an MDD of 5.75 cfs by 2042 and intends to meet this demand through the use of its existing sources of supply and associated water rights, as described below.

The City's sources of supply will include groundwater under Certificates 95501 (0.94 cfs) and 95502 (0.56 cfs). Combined, these rights will provide up to 1.5 cfs of the City's projected need of 5.75 cfs by 2042.

The City also will rely on Permit G-12134 to provide up to 2 cfs of groundwater, 1.56 cfs of which has been developed by the City. In order to utilize the full rate of 2.0 cfs, the City will request access to the undeveloped portion of the permit (0.44 cfs) in another WMCP after the pending permit extension is approved. For planning purposes, Independence has assumed that the permit extension process will be completed before 2042, and that the entire 0.44 cfs undeveloped portion of the permit will be conditioned to maintain the persistence of listed fish in the Willamette River. As previously described, the City also anticipates that these "fish persistence" conditions will include a 20 percent cap on

curtailment when target flows are not met. Thus, at maximum curtailment, the City anticipates having access to 1.91 cfs under Permit G-12134.

Independence will also rely on extended Permit G-17868 (1.0 cfs) to help meet its 20 year MDD. The City has developed a 0.46 cfs portion of this permit. In OWRD's final order approving the City's previous WMCP, the agency limited the City's access to 0.46 cfs under this permit. In order to utilize the full rate of 1.0 cfs, the City must gain access to the undeveloped portion of Permit G-17868 (0.54 cfs). As previously described, the final order approving an extension of time for Permit G-17868 included "fish persistence" conditions on 0.35 cfs of the undeveloped portion of the permit. The conditions capped curtailment at 20 percent when target flows are not met, or a reduction of 0.07 cfs (0.35 cfs x 20% = 0.07 cfs). Accordingly, the City anticipates having access to 0.93 cfs under the permit at maximum curtailment. This assumes that the City will either apply for a permit amendment to add additional points of appropriation to the permit, or address the limitations associated with the currently authorized points of appropriation (the Willamette Wellfield).

The City also holds groundwater registrations GR-3183, GR-3184, and GR-3185, which have a total rate of up to 2.339 cfs. These registrations will need to be adjudicated by the State of Oregon before the City will consider these rights permanently secure. An adjudication is not likely to occur in the near future. Given that there is some level of uncertainty related to these groundwater registrations, the City has chosen to rely on a total rate of up to 1.28 cfs under these rights, which is equivalent to the combined current capacities of the wells in the South Wellfield. The City is unlikely to expand the capacity of its existing wells in the wellfield in the near term or add additional wells.

Given the temporary nature of the City's limited license LL-1779, the City does not consider it to provide a permanent source of water supply and, accordingly, it is not included in the City's calculations of future sources of supply.

Exhibit 5-3 summarizes the City's use of its existing groundwater rights to meet future demands under two scenarios. Scenario 1 describes the maximum authorized rate of appropriation available to the City when target stream flows are met and no curtailment is required under the above-described "fish persistence" conditions. Scenario 2 describes the maximum authorized rate of appropriation under these permits when flows in the Willamette River are low enough to trigger maximum curtailment (i.e.; when curtailment of 20 percent would be required).

Exhibit 5-3. Rates of Appropriation for Use in Meeting Forecasted MDD under Two Curtailment Scenarios

Ground Water Right	*Scenario 1:* Authorized Rates of Appropriation, No Curtailment (cfs)	*Scenario 2:* Authorized Rates of Appropriation, Maximum Curtailment(cfs)
Certificates 95501	0.94	0.94
Certificates 95502	0.56	0.56
Permit G-12134	2.00*	1.91*
Permit G-17868	1.00	0.93
Ground Water Registrations 3183, 3184, and 3185	1.28	1.28
Total	**5.78**	**5.62**
Surplus/Deficit Relative to 2042 Forecasted Demand (5.75 cfs)	**+0.03**	**-0.13**

* Rates assume permit extension is approved and fish persistence conditions are included in the final order approving the extension of time.

Under Scenario 1, the rate of 5.78 cfs is equivalent, for planning purposes, to the City's projected MDD of 5.75 cfs in 2042. In order to meet 20 year demand, the City will require full access to Permit G-17868. Therefore, the City requests access to "green light water" for the undeveloped portion of Permit G-17868 at the rate of 0.54 cfs. (The City will request access to "green light water" for Permit G-12134 in its next WMCP after the permit extension process for that permit is complete. The City anticipates fully developing Permit G-12134 by October 1, 2030 and Permit G-17868 by October 1, 2042.

Scenario 2 in Exhibit 5-3 presents the rates of appropriation expected to be available to the City at the maximum expected curtailment rate of 20 percent under Permits G-12314 and G-17868 (see Section 2.9.3 for more information). Under this scenario, the City's groundwater supplies are expected to meet up to 5.62 cfs of the projected demand of 5.75 cfs by 2042. In this situation, the City expects to be able to meet the projected MDD using its groundwater supply until approximately 2041.

To meet the City's forecasted demand through 2042 of 5.75 cfs during periods of maximum curtailment, the City intends to develop its surface water supply either under its Transfer T-12773 or Permit S-54331. Either of these water rights authorize use of sufficient water to help the City meet its 20-year demand, and also can provide an important source of back-up supply in the event of a loss of one or more of the City's wells. Prior to the development date for Permit S-54331 of August 17, 2026, the City will file an application for an extension of time with OWRD to provide the City with sufficient time to complete development of the permit. A component of the review criteria for the extension is documentation of initiation of actual construction. Until additional source evaluations are completed, Independence cannot provide a specific date by which either of these surface water rights will be fully developed, but the City currently expects that development will occur prior to 2072. The City's next WMCP will provide the City's long term plans for its surface water rights, including expected dates for fully exercising these rights.

5.5 Alternative Sources

OAR 690-086-170(5)

The City requires an expansion of water allocated under existing permits as noted in Section 5.4. As part of its evaluation of available and potential sources and supply, the City considered conservation and interconnections with other municipal supply systems as alternative sources of supply.

Independence has maintained a conservation program roughly equivalent in scope to those of other similarly-sized municipalities in the region. Through this program, the City employs a variety of conservation measures as means to help the City and its customers use water efficiently, for example maintains an active line replacement program targeting lines with a history of leakage. This and other measures are described in Section 3. The City's future conservation program maintains most of the measures that the City previously implemented and anticipates that these measures will continue to attain the same level of efficiency gained over time. No additional efficiency gains are anticipated to occur beyond those previously realized except for the gains observed through implementation of the City's water loss reduction measures. These water loss reduction measures are focused on reducing the City's estimated water loss to 10 percent or less within five years (or by approximately 8 percent if this goal is applied to the City's 2021 water loss estimate of 17.6 percent). Eight percent of the City's projected MDD in 2042 would be 0.46 cfs. (0.08 x 5.75). In comparison, the undeveloped portions of Permits G-12134 and G-17868 would provide a combined rate of 0.98 cfs). Through successful implementation of the water loss reduction measures, it would appear that the City would have a limited need for Permits G-12134 and G-17868, but this conclusion assumes that the City will be able to meet it conservation goals within the planning period and does not take into account ongoing growth beyond the 20 year period. As noted in Exhibit 5-2, the City's MDD could increase to 9.12 cfs by 2065 based on the City's population forecast published by PSU, eclipsing any benefit gained by the City's planned conservation measures, and leaving a deficit of available supply relative to demand. In sum, conservation measures will delay, but cannot eliminate the need for access to the undeveloped portion of the permits over time.

The City has considered the costs of implementing additional conservation measures relative to the costs associated with fully exercising Permits G-12134 and G-17868 and determined that additional conservation measures exceed costs to develop these permits. The City's current reliable combined peak season capacity of the Polk Street and South Wellfields is less than the combined rates of appropriation under the reliable water rights authorizing use at these wellfields (as described in Section 2.9.3). To help address this deficit, the City will add other well(s) as authorized point(s) of appropriation for these permits. The additional capacity would allow the City to fully develop Permits G-12134 and G-17868. The City's maximum cost to develop the remaining portions of Permits G-12134 and G-17868 would amount to the administrative costs associated with amending the permits to allow for use at one or more new points of appropriation (POA). (If the City elects to address the issues associated with the Willamette River Wells, there would be no additional expenses associated developing Permit G-17868 because no permit amendment would be necessary.) These administrative costs are significantly less than the costs associated with implementing additional conservation measures.

Independence currently relies on an interconnection with neighboring water supplier the City of Monmouth to provide emergency supplies. The City considered the option to obtain wholesale water

from Monmouth in place of fully developing Permits G-12134 and G-17868 and determined that this option is not feasible given Monmouth's long-term supply needs. Monmouth's 2022 WMCP indicates a surplus of water in 2040 of 0.23 cfs (105 gpm), [2] which is insufficient to provide Independence with 0.95 cfs (the sum of the undeveloped portions of the permits) needed by Independence long-term. The next closest water suppliers are the City of Dallas and Salem. Given the approximately 15 to 18 mile distance between these cities' centers and Independence, construction of the infrastructure necessary to send water to Independence would be significantly more expensive than developing Permits G-12134 and G-17868, particularly given both the engineering challenges of crossing the Willamette River which is located between Independence and Salem, and the fact that development of the permits is not anticipated to exceed administrative costs associated with the potential need to request one or more permit amendments.

The City is participating in a regional effort led by Polk County (County) to discuss water-sharing opportunities among the municipal and quasi-municipal water providers within the County. These discussions were initiated in late 2021 and are on-going. Independence is open to considering options that this forum may reveal, however no formal arrangements have been discussed at this time.

5.6 Quantification of Maximum Rate and Monthly Volume

OAR 690-086-0170(6)

OAR 690-086-0170(6) requires a quantification of the maximum rate and maximum monthly volume of water to be diverted if expansion or initial diversion of water allocated under an existing permit is necessary to meet demands in the 20-year planning horizon. Independence is requesting full access to Permit G-17868, therefore this rule applies. Assuming Permit G-17868 is used at the maximum rate of appropriation of 1 cfs at 24 hours per day over a 30 day period, the monthly volume of water would equal approximately 2.6 million cubic feet.

5.7 Mitigation Actions under State and Federal Law

OAR 690-086-0170(7)

Under OAR 690-086-0170(7), for expanded or initial diversion of water under an existing permit, the water supplier is to describe mitigation actions it is taking to comply with legal requirements of the Endangered Species Act (ESA), Clean Water Act, and other applicable state or federal environmental regulations. Independence is aware of the conditions of extended Permit G-17868 imposed by OWRD that are intended to protect listed fish under the ESA. The City will abide by these conditions.

[2] *Water Management and Conservation Plan*, City of Monmouth (2022), 4B Engineering and Consulting, LLC, Table 5-1

5.8 New Water Rights

OAR 690-086-0170(8)

Under OAR 690-086-0170(8), an analysis of alternative sources of additional water is required if acquisition of new water rights will be necessary within the next 20 years to meet the projected water demands. The City does not intend to acquire new water rights to meet its demands within the next 20 years, so the provisions of this section are not applicable.

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Appendix A

Letters to Affected Governments

Public Works Department
PO Box 7
555 S. Main Street
Independence, OR 97351
Phone: (503) 838-1212
Fax: (503) 606-3282

TRANSMITTAL

(via email and regular mail)

March 16, 2023

Sidney Mulder, Planning Manager
Polk County Planning Division
850 Main Street
Dallas, OR 97338

RE: 2020-03 Water Management and Conservation Plan – Opportunity to Comment

Hi Sidney,

The City of Independence has completed its final draft of the Water Management and Conservation Plan (WMCP). In accordance with OAR 690-086-0120(8) we are providing you with the attached copy of the WMCP and invite you to comment. Please feel free to send me your comments by the end of the day on April 21, 2023. You can submit comments by email to gfisher@ci.independence.or.us or by mail to Gerald Fisher, Public Works Director, 555 S Main Street, Independence, OR 97351. Any comments provided will also be shared with Oregon Water Resources in our submission packet. Thank you and feel free to contact by email or at 503-838-1212 if you have any questions.

Sincerely,

Gerald Fisher, PE, Public Works Director

Cc: Kenna West, City Manager (via email only)
Fred Evander, Community Planner (via email only)
Todd Whitaker, Polk Co Public Works (via email only)
File #2020-03

Appendix B

Current Water Rates

CITY OF INDEPENDENCE
SCHEDULE OF FEES FOR CITY SERVICES and CITY UTILITIES

Effective: February 1, 2021

Stormwater fees: Effective: April, 2019 (automatic increase, Res. 05-1148)

DEPARTMENT	CHARGE/FEE
ADMINISTRATION	
A) Copies of Public Records:	
1. Research Fee: 10-30 minutes staff time	$ 25.00
2. Research Fee: in excess of 30 minutes	Employee personnel costs
3. Redaction Fee	Employee personnel costs and/or legal review costs
4. Hard copies:	
Standard documents, up to 11"x17", b&w/color	$ 0.25 per page
Nonstandard documents	Actual cost to reproduce
5. Digital copies	$ 0.25 per page
6. CD/DVD/Flash Drive (1 GB) (media only)	$ 5.00 CD/DVD/Flash Drive (1 GB)
7. Electronic search of city server	Actual costs (employee personnel costs or consultant fees)
B) Facsimile	
1. send	$ 2.00 per page
2. receive	$ 1.50 per page
C) Courtesy photocopies of non-city documents:	
8.5 X 11, B&W	$ 0.25 per page
8.5 X 11, Color	$ 0.50 per page
11 X 17, B&W	$ 0.50 per page
11 X 17, Color	$ 1.00 per page
D) Copy of Municipal Code	$ 75.00
E) Appeal Fee	$ 200.00 fee; refunded if appeal upheld
F) Lien Search Fee	$ 25.00 per search
G) Dog Hobby Kennel Application	
-Commercial	$ 125.00
-Private Hobby	$ 30.00
H) Backyard Chicken Permit	
-Application fee	$ 40.00 application + 3-year permit
-Renewal fee	$ 15.00 3-year renewal
I) Temporary RV Parking Permit	$25 per application
J) Business Licenses:	
Taxicab Businesses	
1. Application Fee: New Business	$ 100.00
Renewal	$ 35.00
2. Transport Rates:	
a. Minimum charge (meter drop)	$ 2.50
b. Base Mileage Rate	$ 2.50 per mile
c. Increments	$ 0.25 per 1/10
d. Wait time	$ 30.00 per hour
e. Fuel Surcharge*	$ 2.00

*If the average gasoline pump price rises above $2.50 per gallon in Oregon, the City Manager may authorize the fuel surcharge to be added to the base rate.

DEPARTMENT	CHARGE/FEE	
ENTERPRISE OPERATIONS		
Utility Billing and Collection		
Deposits:	$ 150.00	Due at time of application
Miscellaneous:		
Posting fee	$ 15.00	
Late Charge	10%	($10 minimum)
Reinstatement Fee	$ 50.00	
Tampering Fee	$ 50.00	plus damage costs, if any

Stormwater Utility		**(Res 05-1148 / + annual increase in April ea. year**
All Users:	$ 1.50	monthly, base rate
	$ 11.76	per ERU, monthly

Water Utility			
Rates - Residential, Commercial, Industrial:			
Meter Size	Monthly Minimum:		
5/8" - 3/4"	$ 34.79		
1"	$ 73.06		
1-1/4"	$ 107.89		
1-1/2"	$ 153.12		
2"	$ 264.47		
3"	$ 584.62		
4"	$1,026.55		
6"	$2,300.16		
Usage Rate, $ per 100 cubic feet of water	$ 3.33		
Private fire protection: hydrants/sprinklers			
Connection Size	Monthly Rate:		
2"	$ 7.83		
4"	$ 10.43		
6"	$ 18.26		
Public Fire Protection			
Annual Fee	$ 1,605.65		
Service Connection Fees & Meter:			
Service Size	Connection Fee:	Meter:	
3/4"	$ 250.00	$ 258.78	
1"	$ 282.00	$ 364.18	
1-1/2"	$ 970.00	$ 561.69	
2"	$ 1,100.00	$1,734.66	
3"	$ 1,850.00	$1,919.54	
4"	$ 1,900.00	$2,516.91	
6"	$ 2,700.00	$3,927.63	

Appendix C

Water Conservation Tips Flyer

Inside and outside Water Conservation Tips

- **Fix leaks as soon as possible**
  Regularly check for leaks inside and outside your home
- **Run the washing machine & dishwasher only when full**
- **Turn the tap off**
  When washing your hands, face, brushing your teeth or shaving, save water by turning the faucet off
- **When you're upgrading your appliances, choose energy efficient appliances**
- **Use a low flow showerhead**
  Time your showers to 10 minutes or less
- **Water your yard in the early morning or evening**
- **Mulch around plants**
  To hold water in the soil. Also when buying new plants, look for ones that need less watering
- **Use a shut-off nozzle on your hose when washing your car**

For more tips, visit our website at www.ci.independence.or.us

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Consejos para la conservación del agua

Repare las fugas lo antes posible
Revise regularmente si hay fugas dentro y fuera de su hogar

Encienda la lavadora y el lavavajillas solo cuando estén llenos

Apaga el grifo
Al lavarse las manos o cepillarse los dientes, ahorre agua cerrando el grifo

Cuando actualice electrodomésticos, elija electrodomésticos de bajo consumo

Use un cabezal de ducha de bajo flujo
Toma una ducha de menos de 10 minutos

Riegue sus plantas y jardín temprano en la mañana o en la noche

Mantillo alrededor de las plantas
Eso retendrá agua en el suelo y encontrará plantas que necesitan menos riego

Use una boquilla de cierre en su manguera cuando lave su automóvil

For more tips, visit our website at www.ci.independence.or.us

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