

Liberty Pipeline Company Water Conservation Plan

November 2023

Prepared by:



With the Assistance of:



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1 INTRODUCTION

Liberty Pipeline Company (LPC) is a non-profit corporation whose purpose is to deliver culinary water safely and efficiently to residents of Liberty, Utah. The culinary water system serves an area of approximately 7 square miles which includes nearly 600 Equivalent Residential Connections. The purpose of this report is to document the existing water system, the projected system growth, and the system conservation efforts. LPC is committed to meeting the 2030 goal of 200 gallons per capita per day as recommended by the Utah Regional Conservation Goals Report for the Weber River area. This report outlines specific steps LPC has been taking or plans to take to meet the goal.

LPC recognizes the increasing importance of water in the state and strives to manage the resource wisely. Water conservation efforts from LPC's standpoint are necessary to sustain future supplies to its customers. Implementation of conservation efforts will reduce the need for capital improvement projects and increase the sustainability of the system.

2 EXISTING WATER SYSTEM

The culinary water system consists of one spring, three wells, four tanks, and miles of distribution pipe. The majority of the infrastructure was originally constructed in the 1970s and 1980s. A map of the existing system is found in Appendix A.

Liberty Pipeline Company currently has water rights through diversions of Durfee Creek and the North Fork of the Ogden River. Durfee Creek diversions provide a combined annual allotment of 126.585 Acre-ft, and the North Fork of the Ogden River provides an annual allotment of 144.79 Acre-ft. A summary of the company water sources is shown in Table 1.

Table 1. Company Water Sources

Source	Water Right	Annual Allotment (Acre-ft)
Durfee Creek	35-12923, 35-11737	126.585
North Fork Ogden River	35-5824	144.79
Well and Springs	A40560	487.735

The existing distribution system is primarily PVC pipe that was installed in the 1970s. The overall condition of the distribution system pipes is fair to good. Many areas of the distribution system have been identified for replacement due to insufficient fire flow.

The Company maintains approximately 600 connections, with majority being residential connections. Every connection to the distribution system is metered, with the Company regularly recording the meter readings. The connections and use for the 2022 water year are presented in Table 2.

Table 2. Culinary Water Connections as of 2022.

Type	Connections	Use (Ac-Ft)
Residential	569	150.85
Commercial	0	0.00
Institutional	8	7.01
Un-metered	0	0

3 FUTURE WATER DEMAND

Weber County recently adopted a Moderate Income Housing Plan (MIHP) for the Ogden Valley. According to the MIHP the Ogden Valley's population grew 15 percent between the years 2000 and 2017. The MIHP identified the growth rate for the Ogden Valley and Liberty to be 0.88% and 2.14%, respectively. The Company Master Plan shows consistent growth with a planning window until the year 2040, with no build-out conditions in the foreseeable future.

Table 3. Ogden Valley Population and Households.

	2012	2013	2014	2015	2016	2017	2024 ¹
Population	6,904	7,003	7,197	7,027	7,138	6,817	7,481
Households	2,459	2,400	2,490	2,487	2,581	2,433	2,901
Household size	2.8	2.91	2.88	2.81	2.75	2.78	2.61

Table 4. System Peak Day Flow Requirements.

	Year	Observed (gpd)	State Guidance (gpd)	Observed (gpm)	State Guidance (gpm)
Peak Day	2019	635,498	751,468	441	522
	2040	956,985	1,444,044	665	1,003

Table 5. System Annual Volume Requirements.

	Year	Observed (gal)	State Guidance (gal)	Observed (AF)	State Guidance (AF)
Annual Volume	2019	71,387,400	116,312,701	219	357
	2040	107,501,000	200,802,486	330	616

Table 6. North Zone System Peak Day Flow Requirements.

	Year	Observed (gpd)	State Guidance (gpd)	Observed (gpm)	State Guidance (gpm)
Peak Day	2019	126,165	149,189	88	104
	2040	189,715	286,270	132	199

Table 7. North Zone System Annual Volume Requirements.

	Year	Observed (gal)	State Guidance (gal)	Observed (AF)	State Guidance (AF)
Annual Volume	2019	14,172,499	23,091,492	43	71
	2040	21,311,000	39,807,524	65	122

The system specific sizing standards for the Company requires an annual volume of 192,994 gallons/year/ERC with an available combined annual supply of 239,331,960 gallons/year.

According to the system specific sizing standards for the Company, the peak day demand is currently insufficient. Peak day flow rate will need to be increased by 6 gpm (95,040 gpd) to accommodate future growth. To counter this deficiency, the Company has identified three potential source improvements: 1) Redevelop Smith Well, 2) Redevelop the Willow Creek Well or 3) Drill a new well. The extents, impacts, and details of each of these source improvements are analyzed in the Company's Master Plan of February 2021. Any conservation of water by the Company will delay or eliminate the need for some of the capital facility improvements identified in the Master Plan.

Additionally, water conservation will assist in maintaining the aquifer that supplies the Company wells. See Section 4 of this report for an outline of the Company's specific practices for conserving water.

4 WATER CONSERVATION

The Weber River Region conservation goal for 2030 is 200 gallons per capita per day (gpcd) which is equivalent to a 20% reduction from 2015 levels. LPC is committed to attaining the Weber River Region goal. Over the past five years, the per capita water use has fluctuated but has a clear downward trend. Table 4 summarizes the total water measured out of the system and the resulting per capita use. Table 5 shows the water use by connection type. Liberty Pipeline Company supplies roughly 75% of the service area with secondary water. The Company has the goal of a rolling five-year average of 100 gpcd.

Table 3. Historic Water Use

Year	Population	Billed Use (acre-ft)	GPCD
2018	1300	218.41	152.73
2019	1390	225.56	147.52
2020	1440	236.85	149.53
2021	1575	176.07	101.63
2022	1650	157.87	86.98

Table 4. Historic Water Use by Connection Type

Year	Residential (GPCD)	Commercial (GPCD)	Institutional (GPCD)
2018	152.73	0.00	0.00
2019	147.52	0.00	0.00
2020	161.79	0.00	4.77
2021	95.80	0.00	5.83
2022	83.11	0.00	3.86

The Company performs routine maintenance on the system and fixes known leaks as soon as possible. Residents with abnormally high amounts of water use are notified and connections are checked for leaks. Table 6 shows the amount of water leaving the system at metered connections compared to the water entering the system from sources.

Table 5. Historic Water Loss.

Year	Total Metered Use (AC-FT)	Total From Sources (AC-FT)	Estimated Water Loss %
2018	218.41	217.71	0%
2019	225.56	227.07	0.7%
2020	236.85	329.88	28.2%
2021	176.07	253.58	30.6%
2022	157.87	217.43	27.4%

5 CURRENT CONSERVATION PRACTICES

The following section summarizes the conservation practices that are currently being implemented by LPC. LPC's dedication to environmental stewardship and consciousness is exemplified through their dedication to water conservation efforts. Conservation practices are regularly evaluated on their effectiveness and updated as needed.

5.1 Permanent Tiered Rate Structure

LPC rate structure was updated Spring of 2023 to further their water conservation efforts. The residential rate structures are shown in Table 8. The new water rate structure allows the Company to charge users with higher-than-average water use a greater fee.

Table 6. 2023 Rate Structure.

Thousand Gallons Consumed	Residential (per 1000 gallons)	Thousand Gallons Consumed	Residential (per 1000 gallons)
20	\$1.75 (Base Rate)	80	\$4.60
30	\$1.75	90	\$5.60
40	\$1.95	100	\$6.60
50	\$2.20	110	\$8.60
60	\$2.75	120	\$12.00
70	\$3.60	130+	\$16.50

5.2 Water Metering

The Company has worked to ensure every connection to the distribution system has a functioning water meter. Meters are regularly checked for inaccuracies and meters with inaccuracies greater than 3% are replaced. Future pipeline improvement projects will include the replacement of any old service connections.

5.3 Leak Detection

The Company monitors water meter usage at the end of each month to identify meters with unusually high usage. The program used by the Company automatically identifies meters with higher usage than previous months. The property owners with high usage are contacted to diagnose the problem and if necessary, the water meters are replaced.

5.4 Pressure Regulation

The distribution system consists of eight pressure zones, created using strategic placement of pressure reducing stations. Pressure in the zones is kept at or below 120 psi. Maintenance on the pressure reducing stations is performed each year to ensure they remain in good working condition. The proper regulation of pressures significantly reduces the risk of pipe leaks or ruptures.

5.5 Fire Hydrant Regulation

The City has made a concerted effort to regulate the unmetered use of fire hydrants. A few migrating meters were recently purchased that are used when flushing or during prolonged use of fire hydrants for construction purposes. As funding becomes available, the City plans to purchase more meters to ensure unmetered hydrant use is minimized.

5.6 Water Conservation Meetings

The Company has included and will continue to include the topic of water conservation in their Annual Shareholders Meeting. The open forum setting provides LPC with valuable feedback and ideas from invested individuals.

5.7 Water Conservation Webpage

The Company has added a webpage to their city website that includes information on how residents can conserve water. The webpage includes links to Weber Basin Water Conservancy District website, Utah's DNR Division of Water Resources Water Conservation website, a USU scholarly article on "Cost Free Landscape Water Conservation Ideas", and incentive programs such as "Slow-the-Flow". These websites and programs play a vital role in the region's conservation efforts and improving publicity for them directly increases resident participation.

6 PLANNED CONSERVATION PRACTICES

6.1 Replacement of 23,000 feet of Leaking, Undersized Waterline

LPC recently contracted with JUB Engineers, Inc. to develop a Water Master Plan. The Master Plan identified several projects to improve the functionality and efficiency of the water system. Following these recommended improvements, LPC again contracted with JUB to design the construction of a booster station, the replacement of an old distribution line, and the construction of a new transmission line. The booster station will provide means for the South Pressure Zones to provide water to the Northern Pressure Zones, providing essential redundancy for serious drought years.

The existing 23,000 feet of distribution line is old, leaking, and undersized – this causes substantial water loss and poor level of service. Replacement of this pipe and the construction of the new transmission line will sizably reduce water losses and increase the peak day, peak hour, and fire flow residual pressures to meet code requirements.

Additionally, all service laterals will be replaced before their reconnection to the new distribution line. Each meter will be inspected and replaced if necessary. Replacing galvanized steel with poly or copper will reduce the potential for leaks, and replacing old meters will improve metering accuracy and water allocation.

(Implementation Timeline: 2023 -2024)

6.2 Informative Billing

While LPC's utility bill already includes a graph on the customer's water use history, it would be even more beneficial to include information on how to actually reduce this usage. To accomplish this, LPC plans to add phrasing to the bill that directs customers to LPC's webpage on water conservation. The new bill format is expected to be implemented by August 2024. Again, it is difficult to evaluate water conservation resulting directly from this change, but the outreach of this program can be evaluated by tracking the number of visitors to the webpage.

(Implementation Timeline: 2023-2024)

7 IMPLEMENTATION PLAN

Liberty Pipeline Company is committed to following the steps described in this water conservation plan. The issues caused by consistent drought in Utah have led to an increased focus on water conservation and the Company plans to take advantage of that enthusiasm. The Water Conservation Team (shown in Table 8) will take the lead in the implementation of this plan.

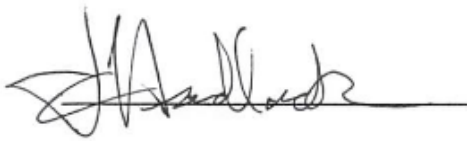
Table 7. Water Conservation Team.

Name	Position	Phone	Email
Thom Summer	System Operator	801-614-0870	thom.summersfarms@gmail.com
Jodi Davis	Secretary	801-745-2088	jodi@libertypipelinecompany.com
Jami Hadlock	President	801-941-6302	jami@libertypipelinecompany.com

The water conservation team will regularly review the goals established in this report and update them when necessary.

This Water Conservation Plan was presented at the LPC Board Meeting on November 1, 2023 and adopted by the Board. The current Board members are:

- Jami Hadlock, President
- Mitch Holmes, Board Member
- John Wood, Board Member
- Matt Bailey, Board Member
- Ed VanDyke, Board Member



Jami Hadlock, President



Jodi Davis, Secretary

Appendix A – Liberty Pipeline Company System Map

Figure 1

Existing Water System

Liberty Pipeline Company

- Springs

⬡ Wells

■ Tanks

⊕ Pressure Reducing Valve

Pipe Diameter

4"

6"

8"

10"

14"

Pressure Zones

Durfee

Lower Durfee

Lauren LN

Cutler Flat

Lomondi

South Gate

Liberty

Lower Sheep Creek

