

Powder Mountain Water and Sewer Improvement District

Water Conservation Plan

December 2017

Prepared by



CRS ENGINEERS
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Table of Contents

Executive Summary	Page ii
Introduction.....	Page 1
Historic Use and Future Projections.....	Page 2
Conservation Efforts and Goals	Page 4
Implementing and Updating the Water Conservation Plan	Page 7
Tables	
1. Table 1 – Population Projections	Page 2
2. Table 2 – Demands and Projections	Page 4
3. Table 3 – Water Saving Alternatives for Common Household Activities.....	Page 4
4. Table 4 – Current Culinary Water Rates and Revenue	Page 9
Appendices	
1. Appendix A – Water Conservation Plan Ordinance	Page 8

Executive Summary

As of July 2017, the District serves approximately 120 water connections. Approved zoning changes and master planned developments will add as many as 2,800 new connections in the coming years. With severely limited resources, the District will be required to develop several new water sources to meet the growing demands. With the extreme increases in proposed connections, the District will have to be vigilant in its conservation efforts to limit the number of new sources and capital needed.

Existing policies, such as disallowing outdoor irrigation from the water system, has allowed the district to maintain a relatively low per capita usage rate. Additional efforts of education, building ordinances, and landscaping requirements will allow this usage rate to remain low with respect to the state average, but will not eliminate the need for several additional water sources. The District will also consider implementation of tiered rate structures as necessary if other efforts do not produce the desired results.

Introduction

CRS Engineers prepared this Water Conservation plan for Powder Mountain Water and Sewer Improvement District (PMWSID) in accordance with the Utah Water Conservation Plan Act (73-10-32, ULA). This plan meets the requirements by providing a reduction goal and plans to meet it, is adopted by the board, is delivered to Weber County and proper public notification has been completed.

The following chapters outline historic and future use, areas for improvement, and conservation goals. Currently, PMWSID serves approximately 120 culinary connections. Current development plans and approved master plans will allow the area to grow to include as many as 2,800 new water connections over the next 30 years. Because of the sharp increase in connections, and the limited financial resources of the District, it is critical that the District maximize its water sources and make effective use of impact fees. This plan outlines and evaluates what current and future practices the District will employ to maintain its low per capita usage during this time for growth.

This conservation plan will serve the District as it works with County leaders to shape development standards for the area within the District's service boundaries. This plan will provide the necessary direction for the District's board and management to continue with conservation efforts.

Historical Use and Future Projections

The service area of PMWSID has always contained relatively few residents. After decades of service, there are still less than 300 residents in the area, only about 20% of which are full time residents. The properties in the area are mainly recreational residences which likely contributes to the low historical usage in the area. While daily use during ski season far exceed the 300 residents, this transitory population can have a significant impact on water use during winter months. Water use data and projection numbers were derived from the District's Water Master Plan completed in 2017.

Inventory of Water Resources

Powder Mountain's water system is comprised of 4 water tanks for storage totaling 572,000 gallons and approximately 35,000 linear feet of installed waterline. The majority of the water lines are 4-inch diameter, with several segments of 8 and 6-inch lines. New lines are being installed at larger diameters in specific areas to meet future growth plans. The system operates with two pressure zones, one fed by the Timberline tanks and one fed by the Hidden Lake tanks. These two zones are tied together through a PRV at the Timberline tanks.

The current inventory of water resources includes a single well named the Hidden Lakes Well. There are however, two new planned wells that will be coming online soon. It is anticipated that the two new wells, the Cobabe Well and the Bloomington Well, will meet demands for the near future with additional sources being needed as development occurs.

Historical Use

Using historical reporting to the Division of Water Rights, the average daily usage per connection is provided in Table 1. As can be seen in the table, average water use has been approximately 121 gallons per connection per day. Active connections prior to 2015 are estimated as the final number was verified in 2017 for only 2015 and 2016 numbers. These numbers were used to establish a baseline for water use in the system. Average water use is 120 gallons per connection per day (gcpd) with the highest use being in 2013 at 177 gcpd and 176 gcpd in 2016. During both of these high years, significant leaks were found and repaired in the system, so the true use is likely nearer to the 120 gpcd average.

TABLE 1. Historic Water Use

Year	Acre-Feet	Million Gallons	Active Connections	GPCD*
2009	8.44	2.75	87	86.6
2010	10.21	3.33	85	107.2
2011	10.02	3.27	82	109.1
2012	5.85	1.91	86	60.7
2013	17.85	5.82	90	177.1
2014	13.58	4.43	95	127.6
2015	12.54	4.09	92	121.7
2016	19.36	6.31	98	176.4
Average	12.23	3.99	89.38	120.80
*Gallons per capita daily (Average)				

Future Projections

In the Water Master Plan, completed in 2017, projections were made through 2060 for population and water use. The master plan used the required yearly production capacity from the State Drinking Water regulations to determine PMWSID's annual demand. This report, however, used the historical average to make projections and evaluate opportunities for further conservation efforts. At current average use rates, the District will not exceed 400 acre-feet per year even at build out. These projections will be used to determine the success of conservation goals.

TABLE 2. FUTURE GROWTH PROJECTIONS

Year	Population	ERC's	Annual Demand (AF)
2016	276	120	16.13
2017	391	170	22.85
2018	506	220	29.57
2019	587	255	34.28
2020	667	290	38.98
2025	1093	475	63.85
2030	1518	660	88.72
2035	1894	824	110.76
2040	2270	987	132.67
2045	2647	1151	154.71
2050	3023	1314	176.62
2055	3399	1478	198.67
2060	3775	1641	220.58
Build Out	6785	2950	396.53



Conservation Efforts and Goals

Powder Mountain Water and Sewer Improvement District has several restriction and regulations in place to limit water use and eliminate wasteful uses. One of the primary challenges to these efforts is that the District does not have any legislative power and relies on Weber County to pass and enforce proper zoning ordinances, development standards and building codes to enable some of the District's needed conservation goals. The District will continue to participate in the County's plan review process as well as be involved with the planning commission to promote this effort as much as possible. Based on the current and future efforts outlined below, the District plans to reach it's goals over the next 10 years.

Current Efforts

Currently, PMWSID has one primary restriction on connections to the water system to promote conservation. This restriction is that no outdoor irrigation is allowed on the system. Due to the limited water resources on the top of the mountain, this restriction is critical to the successful application of this conservation plan. Due to this restriction, the District works with the County to limit landscaping to only native plants that will not require irrigation.

Future Efforts

As the District moves to the future, additional efforts will be required to not only maintain but decrease the District's average water usage. The District will work with the County to require low flow fixtures in new construction. Additional efforts that have been considered include:

1. **Active Water Education Program:** The District will use available materials from Weber Basin Water Conservancy District and others to involve residents in the conservation effort. As more residents move into the area, additional efforts to promote community outreach will be employed.
2. **Meter Replacement and Leak Detection:** The District's current system is outdated and in many areas inadequate for future use. As the District undertakes to update its infrastructure we will also actively work to detect and repair any leaks in existing piping. This effort could significantly decrease the overall use numbers. The District will actively employ this method of conservation.
3. **Fixture Replacement Program:** The District has considered fixture replacement programs for existing customers. Because of the projected growth and recent construction, most of the connections meet more stringent low flow standards and this program would be limited in its effect. It is unlikely that the District will employ this effort to the low cost: benefit ratio.
4. **Modified Rates:** The District has recently approved more aggressive water rates, but still operates on a flat monthly rate for its customers. As growth continues to put more strain on the system, the District will re-evaluate the benefits of a tiered rate structure. It is likely that this method will not be employed within the next 10 years.

Water Conservation Goals

At the current time, average water use in the District is 120 gpcd. The District's conservation goal is to reduce that number by 10% over the next 10 years. This means reaching an average water use of 108 gpcd or less by 2027. The progress will be monitored on an annual basis during preparation of the annual water use report to the Division of Water Rights.

Evaluating Success

Throughout the implementation of this plan, the District will evaluate if additional measures need to be used or if this plan needs to be modified. During the annual evaluation of water use, average use per connection will be reported to the Board for their consideration.

Implementation and Monitoring

The District understands that application of this plan will require financial requirements. The District has one full time employee that will be responsible to apply this plan as directed by the Board throughout the year. We do not anticipate that additional financial or personnel resources will be required on a year to year basis for the execution of this plan.

As previously discussed, the District will monitor its success by annually evaluating per connection use rates during annual reporting of water use to the Division of Water Rights. After this report is filed with the Division of Water Rights, the District will present the results of the previous year to the Board for consideration. Where necessary, the Board will provide additional direction to increase conservation efforts.

Adoption

NOW, THEREFORE, IT IS ORDAINED BY THE DISTRICT OF POWDER MOUNTAIN, UTAH:

The water conservation plan of Powder Mountain, is hereby adopted on the ___th day of _____(month). The plan will be amended no less than every five years and will continue to play a vital role in the future development within Powder Mountain Water and Sewer District Boundaries, Utah.

Signed

Board Chair

Board Member

Board Member

District Manager