GSI Water Solutions, Inc.

June 7, 2021

Kerri Cope
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

Dear Kerri,

GSI Water Solutions, Inc. is submitting this Water Management and Conservation Plan (WMCP) progress report on behalf of the City of Sandy (City). The Final Order issued by the Oregon Water Resources Department (OWRD) approving the City's 2016 WMCP included a condition requiring the City to submit a progress report by June 2, 2021.

This report includes information that satisfies the requirements for progress reports under Oregon Administrative Rules 690-086-0120(4), namely a description of progress toward meeting the City's conservation benchmarks, rates of diversions by water right, water consumption by customer categories, and the calculation of water loss.

Conservation Benchmarks: The City's 2016 WMCP identified water conservation measures for implementation over the next five years and described associated benchmarks. Exhibit 1 of this progress report lists these measures and benchmarks and discusses the City's success at meeting these. By 2021, the City had implemented most of these benchmarks. For example, the City continues to promote the use of Xeriscaping, a low water use landscaping technique to its customers through distribution of written Xeriscaping materials at local community events.

Diversions by Water Right: Exhibit 2 presents average monthly and daily diversions under the City's water rights from 2016 through 2020. The 2016 WMCP described two water rights associated with Alder Creek: Permit S-36601, authorizing the use of up to 1.0 cubic feet per second (cfs), and Certificate 91176, authorizing the use of up to 3.0 cfs. Certificate 91176 was issued on January 28, 2016 confirming a partial perfection of Permit S-36601. Since the publication of the WMCP, the City perfected the final increment (1.0 cfs) of Permit S-36601. On August 9, 2018, the OWRD issued Certificate 93884, which supersedes Certificate 91176 and authorizes the use of the full 4.0 cfs rate developed under Permit S-36601. Therefore,

Exhibit 2 provides diversion data for Certificate 93884 rather than Certificate 91176 and Permit S-36601 as shown in the WMCP.

Consumption: Exhibits 3 and 4 present the historical volumes of water consumed by the City's customers from 2006 through 2020 in tabular and graphical formats. Consumption data from 2006 through 2014 were obtained from the City's 2016 WMCP and data for 2015 through 2020 were obtained from the City's utility billing software system.

Several trends can be observed in Exhibits 3 and 4. First, Single Family Residential water use has generally increased over time as the City's population has grown and new customer accounts have been added. Variation from year to year are largely due to changes in outdoor consumption, such as landscaping irrigation, resulting from variations in the weather during the summer months.

Water use in the Commercial/Industrial category showed a decreasing trend from 2006 through 2011 and then began to rebound, peaking in 2018.

A third major trend shown in the exhibits is the increase in the Wholesale water category after 2014, explained by the addition of Skyview Acres Water Association as a new wholesale customer in 2014, in addition to the City's existing wholesale customers Alder Creek Barlow Water District and Section Corner Water Association.

Note that data for 2016 are not presented in Exhibits 3 and 4 because the City transitioned to a new billing software in August 2016, therefore consumption records by customer category for the months of August through November 2016 were not available for this four month period.

Water Loss: Water loss is calculated by subtracting metered customer consumption from the volume of finished water delivered to the City's distribution system from Brownell Springs, the Alder Creek Water Treatment Plant, and wholesale water purchased from the Portland Water Bureau (collectively called "demand"). The water loss percentage is calculated by dividing water loss volume by demand. Water loss may indicate system leakage or unmetered water usage.

Exhibit 5 shows the water loss calculations for 2017 through 2020. The City's water loss averaged 16.7 percent during this period. Water loss of 23 percent in 2020 is likely the result of master meter inaccuracies at the City's sources and at the City's interconnection with the City of Portland. The City intends to evaluate those meters for accuracy in the near future.

If you have questions regarding the enclosed information, feel free to call me at 971-236-2550 or send an e-mail to thenkle@gsiws.com.

Sincerely,
GSI Water Solutions, Inc.

Tim Henkle
Water Resources Consultant

Cc: Mike Walker, City of Sandy

Exhibit 1. Conservation Benchmarks

Required Conservation Measures	2016 Conservation Measures Benchmarks	2021 Status
Annual Water Audit	The City will continue to conduct an annual water audit.	The City conducts monthly audits of production versus consumption, and will aggregate the monthly data into annual water audits.
	In the next two years, the City will investigate its billing software for potential sources of accounting errors.	A new billing software system was installed in August 2016 which eliminated the accounting errors that were observed in the City's previous system.
System-wide Metering	The City will continue to install AMI (Advanced Meter Infrastructure) meters on all new connections.	AMI meters are installed on all new connections.
	In the next five years, the City will complete a cost-benefit analysis of replacing all non-AMR meters with AMR meters and will decide how to proceed with meter replacement.	The cost-benefit analysis was completed in 2019, and all non-AMI meters have been replaced with AMI meters.
Meter Testing and Maintenance	The City will continue its meter testing and maintenance program. In the next five years, the City will begin to track the number of meters that it replaces at existing connections.	Tracking the number of replaced meters was performed during installation of AMI meters. The average age of meters system-wide is now less than two years.
	In the next five years, the City will complete a cost-benefit analysis of replacing all non-AMR meters with AMR meters and will decide how to proceed with meter replacement.	The cost-benefit analysis was completed in 2019, and all non-AMI meters have been replaced with AMI meters.

Water Rate Structure and Billing Practices that Encourage Conservation	The City will continue to bill customers based on the quantity of water metered at the service connection.	Billing continues to be based, in part, on the quantity of water metered at each service connection.
	The City will continue to bill its customers monthly and to periodically include water conservation messages in utility bills.	Billing continues to occur monthly, and water conservation messaging is included in utility bills seasonally.
Leak Detection	The City will continue to conduct its leak detection and repair program.	Leak detection and repair now includes the use of billing software system that is capable of alerting the City of leaks and unusual water consumption daily. The City investigates leaks soon after alert and customers are notified of unusual consumption as soon as possible.
Public Education	The City will continue to be a member of the Regional Water Providers Consortium.	The City remains a member of the Regional Water Providers Consortium.
	The City will continue to promote water conservation at the City's Earth Day event and neighborhood events.	The City promoted water conservation at Earth Day events annually from 2016 through 2019. No events were conducted in 2020 or 2021 due to the pandemic. The City anticipates that neighborhood events may resume in summer 2021, and water conservation kits and messaging will be provided to attendees.
Technical and Financial Assistance	In the next five years, the City will explore ways to increase interest in the xeriscaping outreach program materials.	The City promotes its Xeriscaping program materials at City-sponsored neighborhood events to increase interest in Xeriscaping.
Supplier Financed Retrofit or Replacement of Inefficient Fixtures	The City will continue to make water conservation kits available at no charge to any customer requesting one.	The City continues to make water conservation kits available at no cost to customers at City-sponsored events, such as the Earth Day event and neighborhood events.
Water Reuse, Recycling, and Non-	The City will continue to make downspout rain barrels available to water customers to reduce	Downspout rain barrels were made available at Earth Day events from 2016 through 2019. No Earth Day events were held in 2020 or 2021, but the City anticipates offering rain barrels again at

potable Opportunities	demand for finished water for residential irrigation.	future events. Approximately 12 rain barrels were distributed annually.
	The City will continue the water reuse project with Iseli Nursery.	The City continues to send all treated wastewater to Iseli Nursery between May 1 and October 31 of each year.
	In the next five years, the City will explore additional water reuse, recycling, and non-potable water opportunities.	The City conducted a market analysis of demand for non-potable reuse water in 2020 as part of a new wastewater treatment project.

Exhibit 2. Five Year Monthly and Daily Diversions by Water Right

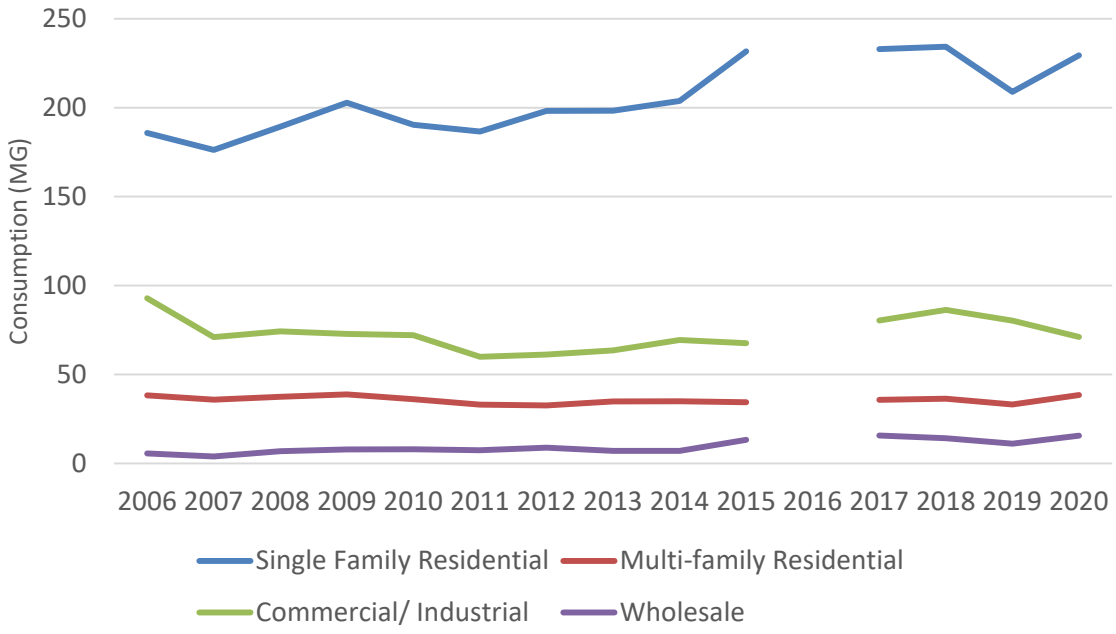
Application	Permit	Certificate	Source	Priority Date	Completion Dates	Type of Beneficial Use	Maximum Instantaneous Rate Allowed	Average Monthly Diversions (2016-2020)	Average Daily Diversions (2016-2020)
S-9669	S-6597	5427	Brownell Springs	7/11/1924	---	Municipal	0.2 cfs	8.6 MG	0.3 mgd
S-27810	S-21879	26132		11/10/1952	---	Municipal	0.7 cfs		
S-47254	S-35394	91156		7/23/1970	---	Municipal	0.3 cfs		
S-48840	S-36601	93884	Alder Creek	11/11/1971	---	Municipal	4.0 cfs	14.1 MG	0.5 mgd
S-65051	S-48451	---	Salmon River	4/28/1983	10/1/2069	Municipal	25.0 cfs	0 MG	0 mgd

Exhibit 3. Historical Annual Consumption by Customer Category (MG)

	Single Family Residential	Multi-family Residential	Commercial/ Industrial	Wholesale	Total
2006	185.8	38.3	92.9	5.6	**322.6**
2007	176.3	35.9	71.0	3.9	**287.2**
2008	189.3	37.5	74.3	6.9	**308.0**
2009	202.8	38.8	72.8	7.9	**322.2**
2010	190.4	36.1	72.1	8.0	**306.6**
2011	186.6	33.1	60.0	7.4	**287.1**
2012	198.2	32.6	61.2	8.9	**300.9**
2013	198.3	34.9	63.6	7.1	**303.9**
2014	203.8	35.0	69.4	7.1	**315.3**
2015	231.7	34.4	67.6	13.3	**347.0**
2016[1]					
2017	232.9	35.8	80.4	15.7	**364.8**
2018	234.3	36.4	86.3	14.2	**371.2**
2019	208.9	33.2	80.3	11.1	**333.5**
2020	229.4	38.5	71.1	15.6	**354.6**

[1]Consumption data by customer category was not available for the months of August through November 2016 due to a change in billing software.

Exhibit 4. Historical Annual Consumption by Customer Category[1]



[1]Consumption data by customer category was not available for the months of August through November 2016 due to a change in billing software.

Exhibit 5. Historical Water Loss

	Demand (MG)	Metered Consumption (MG)	Water Loss (MG)	Water Loss (%)
2017	424.7	364.8	59.9	14.1
2018	446.5	371.2	75.3	16.9
2019	382.3	333.5	48.8	12.8
2020	460.8	354.6	106.2	23.0
			Average	**16.7%**