



March 30, 2018

Chris Kowitz  
Water Resources Department  
725 Summer Street NE, Suite A  
Salem, OR 97301

RE: City of Cannon Beach's Water Management and Conservation Plan Progress Report

Dear Mr. Kowitz,

On April 1, 2013, the Department issued a Final Order approving the City of Cannon Beach's revised Water Management and Conservation Plan (WMCP). This Final Order included the requirement that the City submit a progress report containing information required under OAR-086-0120(4). On behalf of the City of Cannon Beach (City), GSI Water Solutions, Inc. is submitting this progress report which fully meets that requirement.

The City's WMCP presented data through 2004 or, in some cases, through 2005. For purposes of continuity and overlap with the WMCP, this Progress Report includes historic water use data starting in 2005 when available.

The City has been diligently working to improve its water management, as demonstrated in this progress report. The progress report consists of the four exhibits described below.

**Exhibit 1** describes the progress made addressing the five year water management and conservation benchmarks outlined in the City's WMCP. The City highlights its efforts in meeting many of these benchmarks and expresses its intent to meet all the benchmarks by the next required plan update in 2020.

**Exhibit 2** presents annual, average monthly, and average daily water diversions from the City's four water sources from 2013 to 2017. The data was obtained from the City's Water Use Reports submitted to OWRD, except for the last three months of 2017, which were obtained from the City's daily meter reads. Since the City does not meter each of the three ground water sources separately, the ground water diversion volumes presented in Exhibit 2 are a combination of all three sources. The surface water source diversions are metered separately from the ground water sources and is presented in Exhibit 2 separate from ground water diversion volumes. All meters are located at or near the sources. The surface water diversion data presented does not include water volumes sent back to the creek prior to water treatment, but only water that is intended to meet customer demand.

**Exhibit 3** presents water consumption by the City's customers from 2005 through 2017. The City's WMCP aggregated the City's customer classes into three categories; this Progress Report observes this same categorization. The City's customer classes are residential (which includes single-family in city limits, single-family outside city limits, multi-family, and short-term

rentals), commercial, and public (known by the class name of "non-bill"). Generally, consumption shows a slightly decreasing trend over this time period, with the highest annual volumes in years 2005-2007.

**Exhibit 4** shows the unaccounted for water for the City's water system from 2005 through 2017 and shows a range from 11.7 percent (2011) to 31.2 percent (2017) over the 13 year period.

The City defines system demand as all the water used within the system, including metered consumption, authorized metered non-revenue uses (e.g. vactors, street sweepers, and hydrant and water line flushing), authorized unmetered uses (e.g. fire fighting), and water lost to leakage. Measurements of system demand are taken at the meter installed downstream of the City's main reservoir. Consumption is equal to the metered water use within the City's distribution system. The unaccounted for water percentage is equal to system demand minus customer consumption and other authorized and unauthorized unmetered water uses divided by system demand. Note that the City's historic method of calculation for unaccounted for water was refined for this Progress Report to increase accuracy. Namely, annual unaccounted for water was calculated herein using annual totals of customer use and system demand.

In **Exhibit 4**, a recent trend shows annual increases in unaccounted for water from 2011 to 2017 except for 2015. In response, the City has made significant efforts recently to address system leaks, a component of unaccounted for water. Four years ago, the City conducted performed system-wide leak detection and, within the last six months, the City hired a leak detection company to test a portion of its system. Using the results of the most-recent testing, the City repaired or replaced some sections of leaking water lines which had the effect of reducing system leakage by an estimated 50 gallons per minute. (For perspective, average day customer demand was approximately 322,000 gallons per day in 2017 which converts to approximately 234 gallons per minute. The savings observed from these repairs will show up in the City's 2018 unaccounted for water calculation.) The savings were thought to be significant enough for the City to decide to resume leak testing throughout the remainder of the system starting in April 2018. The City is eager to find and repair additional leaks that may be driving annual increases in unaccounted for water and will discuss the results of these efforts in the City's next WMCP update.

I look forward to working with you during the review of this progress report. If you have questions regarding the enclosed information, you may call me at 503-358-2274.

Sincerely,



Tim Henkle  
Water Resources Consultant  
Enclosures

cc: Jim Arndt, Public Works Director, City of Cannon Beach

**Exhibit 1. Water Management and Conservation Five-Year Benchmark Progress Update.**

Section Requirement	Sub-section Requirement	2005 Benchmarks	2017 Benchmark Status
OAR 690-086-150 (4) A description of the specific activities, along with a schedule that establishes five-year benchmarks, for implementation of each of the following conservation measures that are required of all municipal water suppliers:	(a) An annual water audit that includes a systematic and documented methodology for estimating any un-metered authorized and unauthorized uses	The City will begin a program to track, by estimation, non-revenue, non-metered, water usage starting in June 2006 and factor this number into all subsequent auditing reports for year 2006 and beyond.	Met. In the City's annual audit report, the City includes an estimate for all non-revenue and non-metered water usage.
		The City will annually review water usage at city facilities to identify conservation opportunities.	This effort is on-going. The City monitors for leaks at these facilities on an on-going basis using meter technology that automatically flags these accounts when leaks are identified and alerts City staff.
		Fire hydrant meters will be used to account for all uses except fire protection. The Fire Department will provide estimated water use information.	This effort is on-going. The City has a placeholder for unmetered water usage in its annual water audit which includes uses at fire hydrants. Planned fire hydrant uses by the City are metered and the City will begin incorporating the measured volumes into its calculation of unaccounted for water.
	(b) If the system is not fully metered, a program to install meters on all un-metered water service connections.	The City will continue to meter all water service connections.	Met. All City customers continue to be metered.
	(c) A meter testing and maintenance program.	The City will perform accuracy testing of production meters beginning in year 2006, and every two years thereafter.	This effort is on-going. To address accuracy concerns, one of the City's three production meters (the "effluent" meter) was replaced in approximately 2008 and the other two were replaced in 2017. The City tested the older meter five years ago and has not begun to test the 2017-installed meters. Though the City has not met yet its goal of bi-annual accuracy testing, the City will begin testing production meters every two years, beginning with the oldest meter in 2018.
		Meters 2-inches and smaller will be replaced with "state-of-the-art" Automated Meter Reading (AMR) systems utilizing leak detection functions.	Met. The City recently completed an aggressive meter replacement program that replaced all meters 2-inches and smaller with AMR meters utilizing leak detection functionality.
		Meters, 3-inch and larger, will be tested on a five year schedule.	This effort is on-going. The City recently completed an aggressive meter replacement program in which all customer meters' 3-inches and larger have been replaced with compound meters in the last seven years. Meters five years and older have not been tested yet. The City will begin testing these meters in 2018 every five years.
		Upon testing, all meters will be brought into manufacturer's accuracy specifications or will be replaced. Meters nearing or surpassing the 20-year length of service are scheduled for replacement.	This is an on-going effort, as described above. However, the City recently completed an aggressive meter replacement program in which all customer meters have been replaced within the last 10 years. Upon installation, these meters met manufacturer's accuracy specifications.
	(d) A rate structure under which customers' bills are based, at least in part, on the quantity of water metered at the service connections	The City's rate structure includes a flat fee for water use equal to or less than 400 cubic feet per month; any use above 400 cubic feet is charged a volume rate in 100 cubic feet increments.	Met. The City's rate structure continues to be based, on part, in the quantity of water used as described in the associated 2005 benchmark.
	(e) If the annual water audit indicates that system leakage exceeds 10 percent, a regularly scheduled and systematic program to detect leaks in the transmission and distribution system using methods and technology appropriate to the size and capabilities of the municipal water supplier;	The City is budgeting for comprehensive leak detection services for fiscal year 2007 and every five years thereafter. Results will be used to prioritize and repair high priority leaks.	Nearly met. The City budgeted and performed system-wide leak detection via an outside company specializing in leak detection four years ago and also performed a similar, but partial system inspection, in early 2018. The remainder of the system will be inspected for leaks in April 2018. All leaks that were found during the early 2018 inspection were repaired, reducing leakage by an estimated 50 gallons per minute.
		The City will routinely check fire hydrants (for leaks) after each use.	Nearly met. Fire hydrants are inspected for leaks annually during hydrant exercise activities, which is the frequency that most of the City's hydrants are used. The City will begin to identify and check hydrants used by other entities (e.g. the fire department) in 2018.
		The City will perform a minimum of 2 hour per month systematic routine spot checks for leakage.	Met. Most of the City's meters have leak detection functions and can alert the City and customers to potential leaks. The City performs routine spot checks throughout the system regularly, equating to two hours per month.
	(f) A public education program to encourage efficient water use and the use of low water use landscaping that includes regular communication of the supplier's water conservation activities and schedule to customers	The City will continue free leak detection tests for residential customers who suspect a leak if the leak is outdoors and offer free brochures with conservation information and a free conservation kit when applicable. Brochures include tips on water saving irrigation techniques and methods to reduce consumption indoors.	Met. The City provides basic technical assistance to customers who suspect leaks, including suggestions on ways to detect either indoor or outdoor leaks. Free conservation brochures and a kit are offered to these residents. Leak detection tablets for toilets are included in each conservation kit.
		Distribute water conservation brochures and conservation kits at community events such as the Public Works Week open house, and provide brochures at City Hall. Brochures include tips on water saving irrigation techniques and methods to	Met. The City continues to distribute conservation brochures and kits at the open house and brochures at City Hall.

		reduce consumption indoors.	
	(continued) (f) A public education program to encourage efficient water use and the use of low water use landscaping that includes regular communication of the supplier's water conservation activities and schedule to customers	Provide information on City conservation programs with links to other water conservation sites on the City's website.	Met. The City has a website which includes an explanation of the purpose of conservation, information about the City's conservation program, and links to other water conservation sites. <a href="https://www.ci.cannon-beach.or.us/publicworks/page/water-conservation-tips">https://www.ci.cannon-beach.or.us/publicworks/page/water-conservation-tips</a> .

Though not required, the City performs or intends to implement additional conservation measures, as follows.

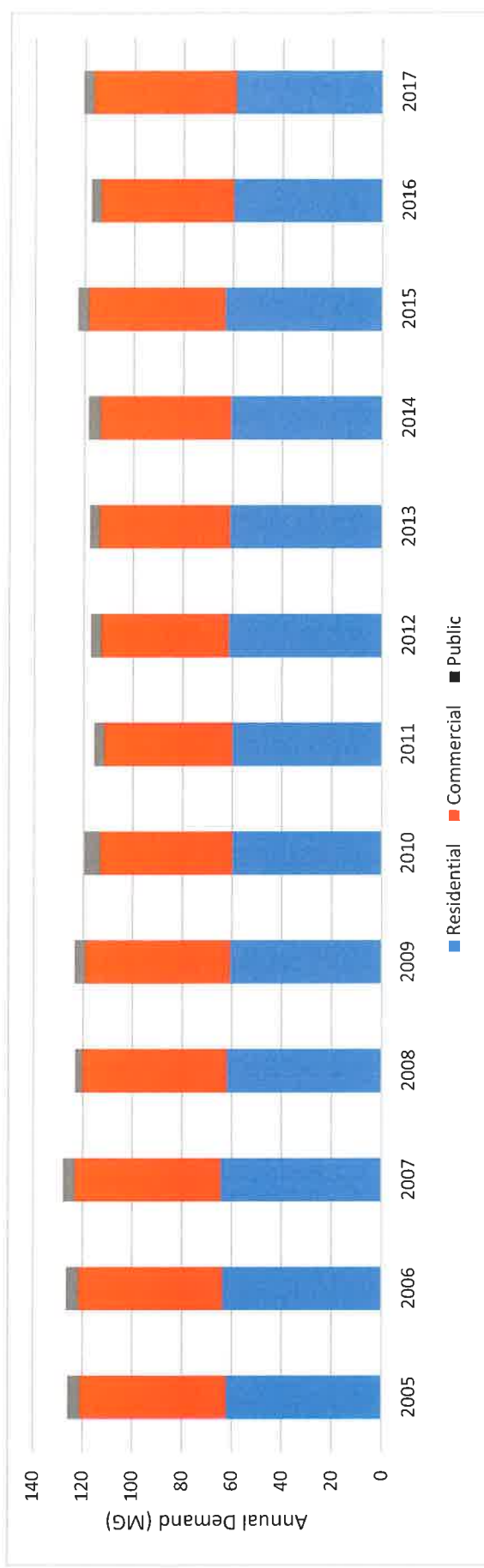
- The City will continue to distribute free water conservation kits to residential customers upon request and at the Public Works Week open house annually.
- The City will install a rain sensor at one of the city's parks which are on automatic irrigation systems by 2020.
- The City will continue to budget for and implement a water main replacement program.
- If customers' meters indicate a leak, these customers' water bills will include leak notices. The City's billing system will flag these accounts from which the City builds a "leak list". The City will provide leak assistance to those accounts where are on the list for prolonged periods of time or upon request. For large leaks, the City immediately addresses the water leaks with these customers to help eliminate the leak.

Exhibit 2. Water Management and Conservation Five-Year Benchmark Progress Update.

Source Name (Common Name)	Source Type	Application	Permit	Certificate	Priority Date	Entity name on water right	Type of Beneficial Use	Authorized Rate (cfs)	Annual Production (MG)					Average Monthly Demand (MG)					Average Daily Demand (MG)				
									2013	2014	2015	2016	2017	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Small stream, trib. of S. Fork Elk Crk. (Haskell Spring)	Ground water	S-5202	S-3135	1988	10/16/1916	Elk Creek Water and Light Co., City of Cannon Beach	Domestic	1.0	127.6	202.2	195.7	204.3	224.8	10.6	16.8	16.3	17.0	18.7	0.3	0.6	0.5	0.6	0.6
Unnamed spring (Howell Spring)		S-14958	S-10936	11616	5/25/1933		Municipal	0.60															
Unnamed spring, trib. Of Elk Crk. (Main Spring)		S-16524	S-12321	19540	8/20/1936	Cannon Beach Water Co., City of Cannon Beach	Municipal	1.0															
West Fork Elk Creek	Surface water	S-55694	S-41717	-	4/15/1977	City of Cannon Beach	Municipal	1.5	31.2	37.3	47.7	44.4	66.8	2.6	3.1	4.0	3.7	5.6	0.1	0.1	0.1	0.1	0.2

**Exhibit 3. Water Management and Conservation Five-Year Benchmark Progress Update.**

Annual Water Use by Customer Class (MG)													
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Residential	62.2	63.6	64.3	61.9	60.6	59.8	59.8	61.4	61.0	60.7	63.1	59.7	58.9
Commercial	58.9	58.2	59.0	58.4	58.6	53.4	51.9	51.6	52.8	52.8	55.3	53.8	57.5
Public	4.8	4.8	4.6	2.9	4.2	6.5	4.1	4.2	3.9	4.9	4.3	4.0	4.2
<b>Total</b>	<b>125.9</b>	<b>126.6</b>	<b>127.9</b>	<b>123.1</b>	<b>123.4</b>	<b>119.7</b>	<b>115.8</b>	<b>117.3</b>	<b>117.7</b>	<b>118.3</b>	<b>122.7</b>	<b>117.5</b>	<b>120.6</b>



**Exhibit 4. Water Management and Conservation Five-Year Benchmark Progress Update.**

<b>Annual Water Audit, 2005-2017</b>					
<b>Year</b>	<b>Demand (MG)</b>	<b>Consumption (MG)</b>	<b>Authorized &amp; Unauthorized Unmetered Uses (MG)</b>	<b>Unaccounted for Water (MG)</b>	<b>Unaccounted Water (%)</b>
2005	153.1	125.9	N/A <sup>(1)</sup>	27.2	17.8%
2006	153.6	126.6	N/A <sup>(1)</sup>	27.0	17.6%
2007	151.1	127.9	N/A <sup>(1)</sup>	23.2	15.3%
2008	145.6	123.1	N/A <sup>(1)</sup>	22.5	15.4%
2009	150.8	123.4	N/A <sup>(1)</sup>	27.5	18.2%
2010	138.5	119.7	0.1	18.7	13.5%
2011	131.4	115.8	0.3	15.4	11.7%
2012	137.1	117.3	0.3	19.5	14.2%
2013	147.6	117.7	0.3	29.6	20.1%
2014	156.2	118.3	0.6	37.3	23.9%
2015	144.3	122.7	0.2	21.4	14.8%
2016	161.9	117.5	0.2	44.3	27.3%
2017	175.6	120.6	0.2	54.8	31.2%

(1) Data not available; the City did not estimate these uses in this year.