Osoyoos

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WATER

2016

Submitted by:

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Town of Osoyoos
Annual Water Report

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1.0 Introduction to the Town Water Systems

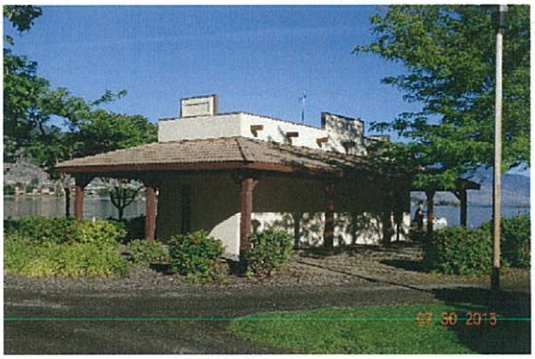
The Town of Osoyoos operates water systems within its municipal boundary (Municipal Water System) and within Electoral area (Water District Irrigation Systems) on the west side of Osoyoos Lake both north and south of the boundary. The service areas of both systems are illustrated on the following map (Page 3) . The municipal system provides service to the majority of residential, commercial and industrial lands within the municipal boundaries and is supplied by wells. The Water District system is primarily an irrigation water supply system using two intakes in Osoyoos Lake.

2.0 Municipal Water System

2.1 Water Supply Wells

A total of six wells supply groundwater to the Town's municipal water system. The water supply wells range in capacity from 18 L/sec (295 USgpm) to 75 L/sec (1200 USgpm) and are listed following.

Well No. 1	Jack Shaw Gardens
Well No. 3	Maple Drive
Well No. 4	Cottonwood Park
Well No. 5	Cottonwood Park
Well No. 6	Wye in Lacey Point Area
Well No. 8	Kingfisher Drive at 83rd Street



Wells 4 and 5

In addition, the Town has a drilled and capped a well (designated No. 7) north of Well No. 6 in the Lacey Point area. The locations of the water supply wells are shown on the following map (Page 4) of the municipal water system.

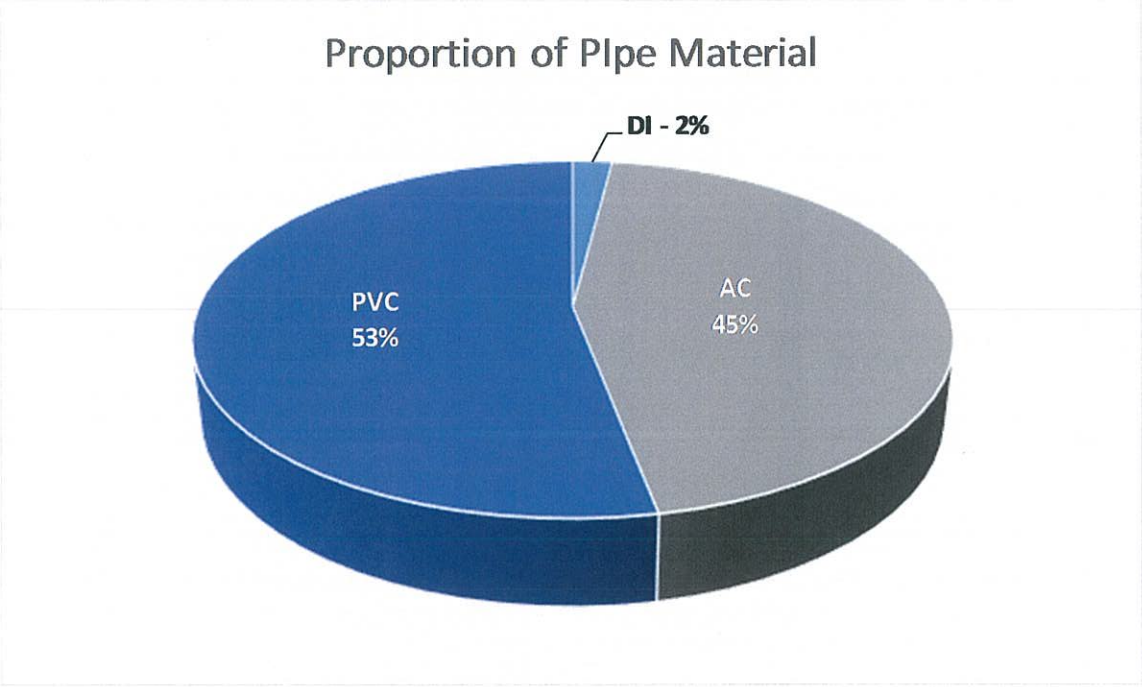


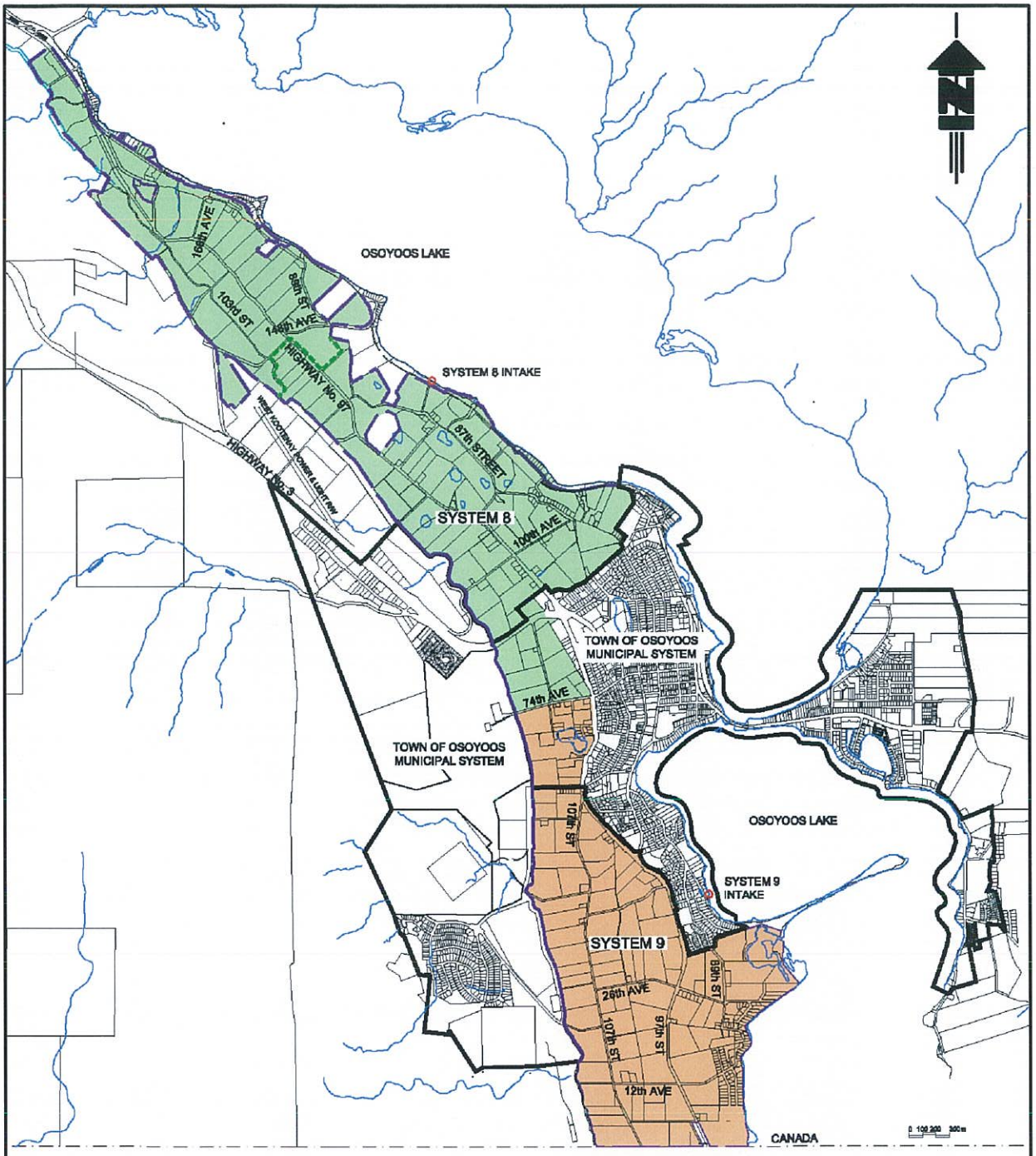
Well No. 1

2.2 Water Distribution System

The municipal water distribution system comprises about 49.1 km of water main ranging in size from 50 mm (2") to 400mm (16"). Pipe materials comprise:

- 22.2 km of asbestos cement pipe installed in the period up to 1980
- 0.9 km of ductile iron pipe installed in the 1980's
- 26.0 km of PVC pipe installed since 1980





Town of Osoyoos Water System Service Areas



Town of Osoyoos Municipal Water System

2.3 Reservoirs and Pressure Zones

The municipal water system comprises a total of 3 pressure zones each at successively higher elevations servicing areas on the west side of Osoyoos Lake. The pressures zones and reservoirs in each pressure zone are listed following.

- 340 Zone – 2 Reservoirs having a combined capacity of 3,910,000 L (1,000,000 USgal). The service areas include all areas of the Town east of Highway 97 including East Osoyoos.
- Industrial Park Reservoir having a capacity of 1,000,000 L (260,000 USgal). The service area includes the Industrial Park, secondary school and Desert Park.
- Dividend Ridge Reservoir having a capacity of 1,140,000 L (300,000 USgal). The service area includes the Dividend Ridge neighbourhood and the golf course clubhouse.



340 North Reservoir
under Construction 2011

3.0 Osoyoos Water District (Irrigation Systems 8 and 9)



Irrigation System 8 Intake/Pumphouse

Up to 1990, irrigation systems 8 and 9 were owned and operated by the South Okanagan Lands Irrigation District (SOLID). In 1990, the Province dissolved SOLID and transferred ownership of irrigation systems 8 and 9 to the Town. The Osoyoos Water District provides irrigation water to about 600 hectares (1,500 acres) of agricultural land and about 500 domestic connections.

3.1 Osoyoos Lake Intakes

During the irrigation season, mid-April to mid-October annually, irrigation systems 8 and 9 are supplied from separate intakes in Osoyoos Lake. The System 8 intake is located south of the BC Tree Fruits Packinghouse and the System 9 intake on Acadia Court. At both intakes, water disinfection is provided by chlorination.



Irrigation System 9 Intake/Pumphouse

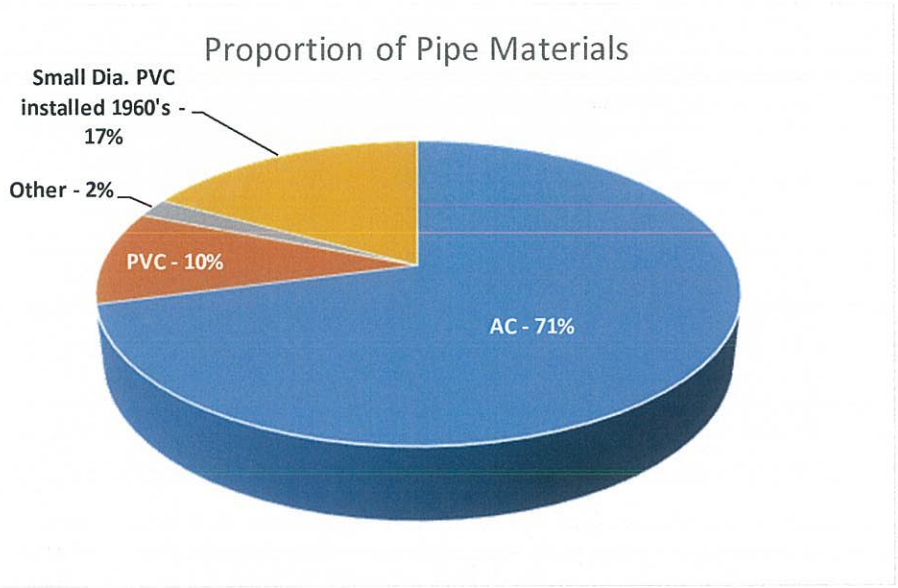
Outside of the irrigation system (mid-October to mid-April annually) the lake intakes are not operated except for emergency conditions. In this period, water to domestic connections in the service area of Systems 8 and 9 are supplied groundwater from the Town's municipal system.

3.2 Water Distribution Systems

The System 8 and 9 water distribution systems were constructed in the 1960's when flood irrigation supplied from the irrigation canal was replaced with pressurized systems. Water distribution systems for Systems 8 and 9 comprise:

	System 8	System 9	Total
Small dia. PVC installed 1960's	3,875 m	1,953 m	5,828 m
Asbestos Cement	12,130 m	12,197 m	24,327 m
Ductile Iron and Concrete Cylinder	280 m	321 m	601 m
PVC installed since 1991	1,722 m	1,769 m	3,491 m
Totals	18,007 m	16,240 m	34,247 m

The total distribution main length is 34.2 km of which 24.3 km, 71%, is asbestos cement pipe.



3.3 Reservoir

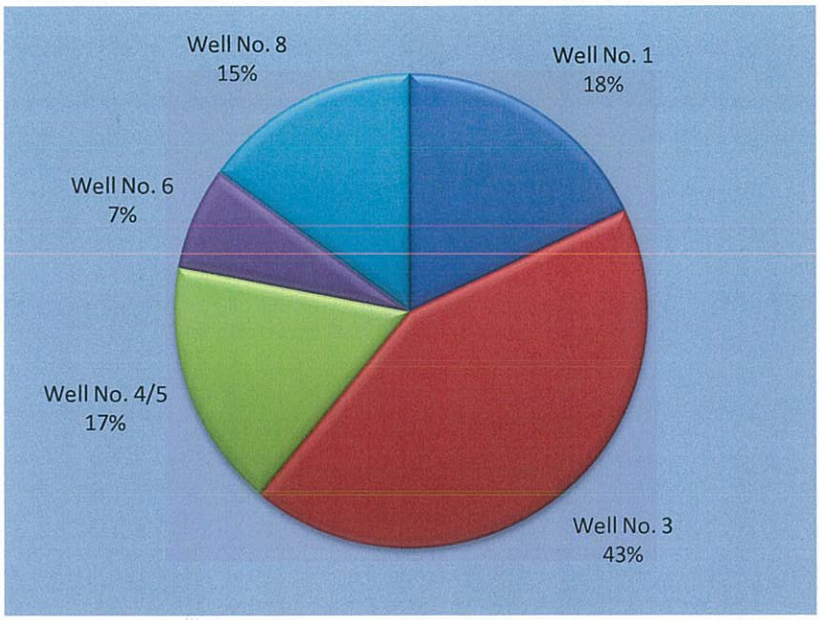
During the irrigation season, Systems 8 and 9 are operated / controlled by system pressure. Pressure monitors in each pumphouse start and stop supply pumps as required to maintain a set supply pressure. In the winter months, mid-October to mid-April annually, a reservoir located on the Osoyoos West Bench south and adjacent to the municipal 340 reservoir is put into service. This reservoir has an operating capacity of 482,000 L (130,000 USgal). In the winter months, water is supplied by Well No. 6 which is controlled by reservoir level.

4.0 Water Consumption

4.1 Municipal System

Consumption in the service area of the municipal water system in 2016 totaled 2,374 ML. Water supplied by each well is tabulated following.

Well No. 1	433 ML	(18%)
Well No. 3	1,017 ML	(43%)
Well No. 4/5	399 ML	(17%)
Well No. 6	160 ML	(7%)
Well No. 8	365 ML	(15%)
Total	2,374 ML	



Dissolved manganese concentration at or above the aesthetic objective as specified in the Canadian Drinking Water Quality Standards is present in water supplied by Wells 4, 5, 6 and 8. To the greatest extent practical the Town maximizes the use of Wells 1 and 3 to minimize the amount of dissolved manganese in the water system.

The maximum day water consumption was recorded in the five day period from August 17th to 21st when the water consumption averaged 12.3 ML/day. 2016 annual and maximum day water consumption are compared to historical data on *Figure 1*. From *Figure 1*,

- total annual water consumption in 2016 was about 134 ML (5.6%) higher than 2015. This increase could be attributed to the Town of Osoyoos implementing new "Normal" Water Restrictions effective May 2, 2016. It is believed that citizens with automatically controlled underground sprinkling systems set theses systems to operate for the entire 6 hour time period on the days they were allow to operate. This probably contributed to the small increase in domestic water consumption in 2016.
- the maximum day demand in 2016 was 12.9 ML (0.8%) higher than the maximum day demand in 2015.
- over the last 15 years, the total annual water consumption has remained relatively constant in the range of 2,100 to 2,500 ML/year. In this period the permanent population of the Town as measured by the census increased by 16% from 4,295 in 2001 to 5,085 in 2016. This population growth may also have added to increase domestic water consumption.

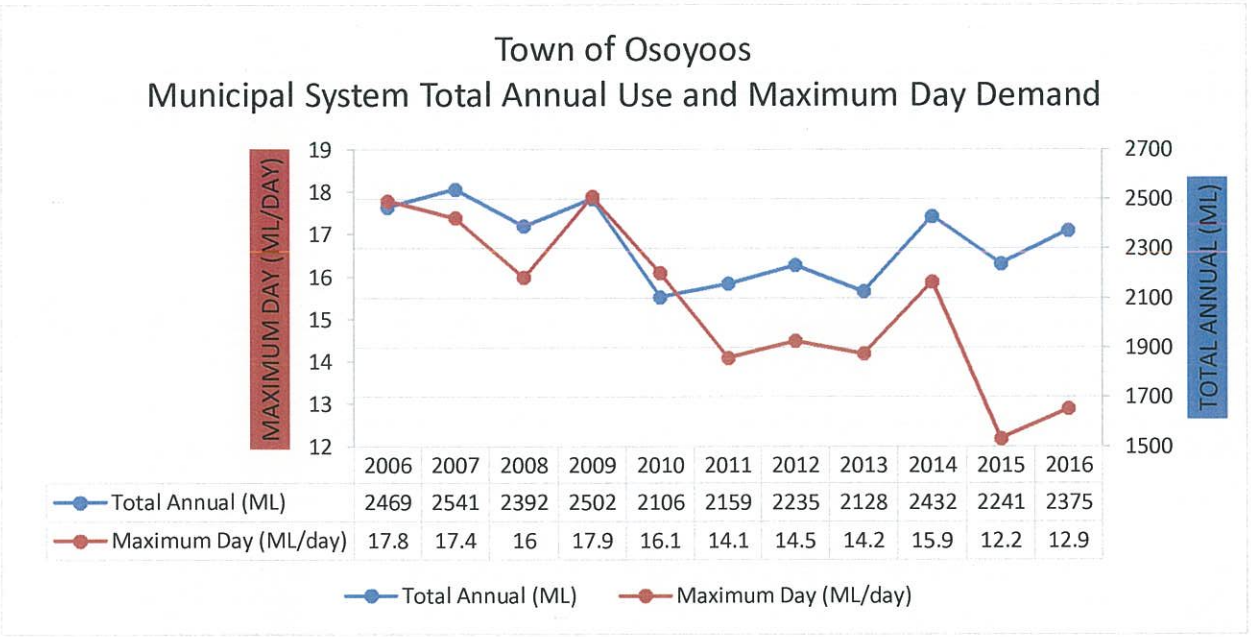


Figure 1

4.2 Irrigation Systems 8 and 9

Water consumption in 2016 in the service area of Irrigation Systems 8 and 9 is summarized as follows.

Irrigation Season		
System 8		4,341 ML
System 9		2,874 ML
	Total	7,215 ML
Winter		
Well No. 6		160 ML

The consumption of 7375 ML in the irrigation season equates to an average application rate of 1.20 m based on 611 ha (1500 ac) of irrigation in the service area.

Figure 2 illustrates Irrigation Systems 8 and 9 consumption in the period 2008 to 2016. As compared to 2015, irrigation system consumption decreased by 290 ML (3.9%) in 2016. This decrease in consumption can probably to attributed to cooler and wetter weather conditions during the summer of 2016.

Irrigation Season
Water Consumption
Irrigation Systems 8 and 9

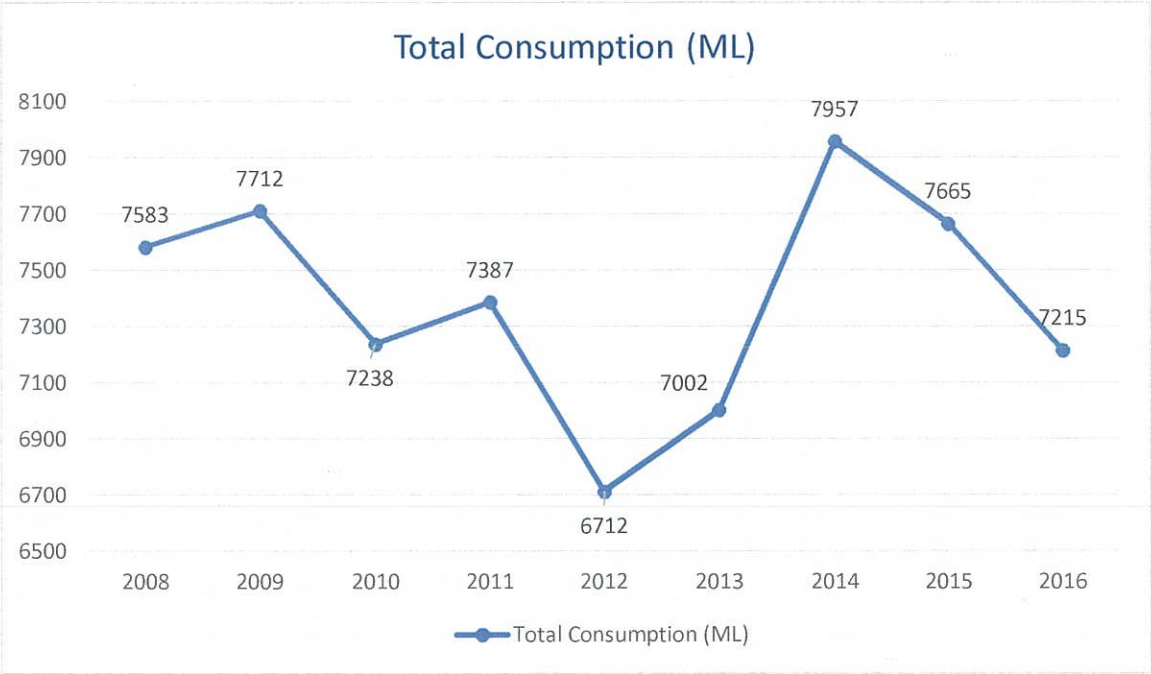


Figure 2

5.0 Water Sampling and Testing

5.1 Bacteriological Testing

The Town undertakes sampling for bacteriological analysis of both the irrigation and municipal systems. Sampling is undertaken weekly with the sampling locations listed following.

Municipal System Sampling Locations:

5202 Lombardy Lane	10124 Meadowlark Drive
8707 78th Avenue	8703 74th Avenue
8606 87th Avenue	6006 89th Street
4220 Lobelia Drive	5705 Lombardy Lane
6066 89th Street	8405 87th Street
4010 Lobelia Drive	11715 Locosta Lane

Irrigation System Sampling Locations:

System 9

- 5001 – 107th Street
- 10021 – 42nd Avenue

System 8

- 9103 – 100th Avenue
- 9707 – 87th Street

Bacteriological sampling results for 2016 are tabulated in Appendix A and summarized as follows.

Municipal System

- Total No. of Samples – 104
- No. of Positive Results for E.Coli – 0
- No. of Positive Results for Total Coliform – 6

Irrigation Systems

- Total No. of Samples – 104
- No. of Positive Results for E.Coli – 2
- No. of Positive Results for Total Coliform – 0

When positive results for EColi or Total Coliforms are discovered the Town's procedure is to thoroughly flush the area where the results where obtained and then re-sample the area the next week. This has always resulted in the elimination of positive E.Coli and Total Coliform test results.

The bacteriological results for the two systems reflect that the water supplied from the municipal system is not chlorinated and water supplied from the irrigation system is chlorinated.

5.2 Water District Trihalomethane Testing

Trihalomethanes are a group of organic chemicals that are formed by the reaction of chlorine and organic materials which may be present in the water. Organic materials typically include algae, colour, and other natural organic matter. Trihalomethanes are described as disinfection by-products with the concentration being dependent on a number of factors including concentration of organic materials (usually measured as total organic carbon), chlorine dose and retention time in the distribution system.

Irrigation Systems 8 and 9 are sampled annually for trihalomethane. The sample results for 2016 are presented as follows.

Sample Date/Location	August 09 System 9 – 5001 107th	August 09 System 8 – 10408 89th	CDWQ Standard
Total Trihalomethanes	0.033 mg/L	0.037 mg/L	0.1 mg/L MAC
Bromodichloromethane	0.002	0.002	
Bromoform	<0.001	<0.001	
Chloroform	0.031	0.035	
Dibromochloromethane	<0.001	<0.001	

The sample results are well within the maximum acceptable standard as set in the Canadian Drinking Water Quality Standards.

5.3 Osoyoos Water District Boil Water Advisory

Treatment provided for water supplied from the Systems 8 and 9 water intakes in Osoyoos Lake does not comply with IHA drinking water quality standards. The principal deficiencies are:

- inadequate chlorine contact time to services in proximity to the two pumphouses
- there is no treatment, typically filtration, for the removal or inactivation of parasites, most common being giardia and cryptosporidium

In accordance with instructions from IHA, the Town annually issues a boil water advisory for residents within the service area of Irrigation Systems 8 and 9. The boil water advisory was issued in April 2016 at the start of the irrigation season and rescinded in October 2016 at the end of the irrigation system.

Residents in the service area of irrigation systems 8 and 9 are advised of the Boil Water Advisory by notices published in the Osoyoos Times and posted on the Town's website. Notices are published in the Osoyoos Times:

- end of March or first week of April – Advanced Notice
- weekly in April
- monthly – May, June, July, August and September
- end of October or first week of November – Notice of Boil Water Advisory rescindment

5.4 Municipal System Full Spectrum Analysis

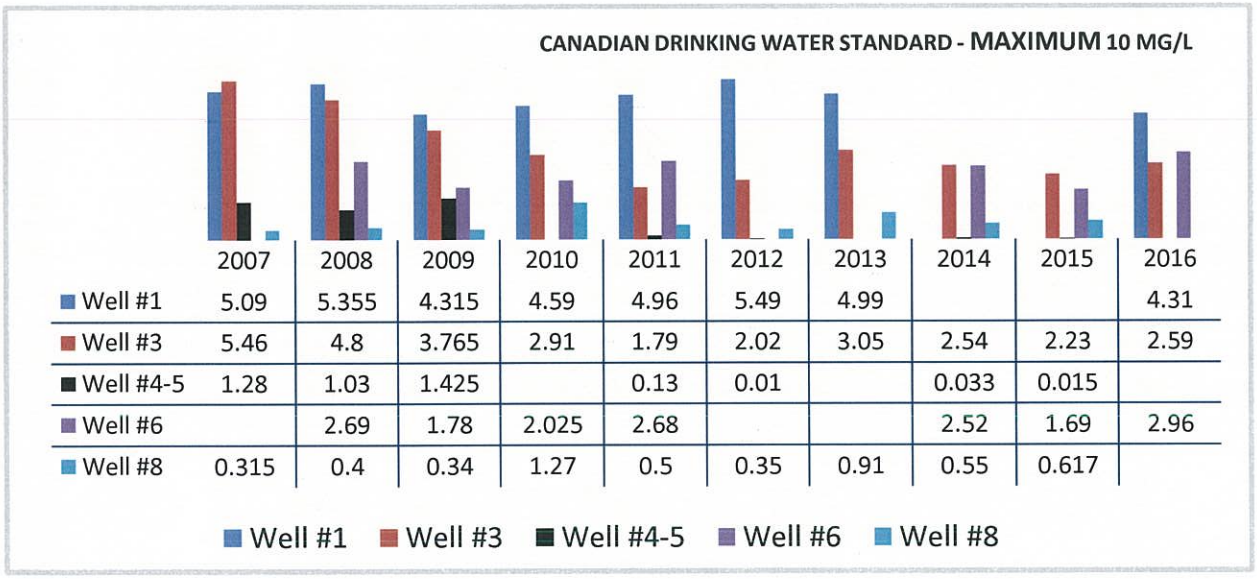
In addition to bacteriological testing as described in 5.1, the Town samples annually one of the six water supply wells for a full spectrum analysis. In 2016, Well No. 3 was sampled for a full spectrum analysis. Full spectrum water quality testing for the water supply Well #3 is contained in Appendix B.

5.5 Groundwater Source Nitrate Monitoring

High nitrate concentrations in groundwater is experienced throughout the South Okanagan area. High nitrate concentrations are attributable to fertilizer use by the agricultural industry. The Town monitors nitrate concentration in all six of the water supply wells used as water sources. Nitrate data for each well for the period 2001 to 2016 is contained in Appendix C. The data is summarized following.

	Nitrate-Nitrite
Canadian Drinking Water Quality Maximum Acceptable Concentration	10 mg/L
Ten Year Averages (2007 to 2016)	
Well No. 1	4.89 mg/L
Well No. 3	3.12 mg/L
Wells No. 4 & 5	0.56 mg/L
Well No. 6	2.43 mg/L
Well No. 8	0.69 mg/L

Wells No. 1 and 3 have higher nitrate-nitrite concentrations than the Town's other four wells. The graph following illustrates the nitrate-nitrite concentrations in Wells No. 1 and 3.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Well #1	5.09	5.355	4.315	4.59	4.96	5.49	4.99			4.31
Well #3	5.46	4.8	3.765	2.91	1.79	2.02	3.05	2.54	2.23	2.59
Well #4-5	1.28	1.03	1.425		0.13	0.01		0.033	0.015	
Well #6		2.69	1.78	2.025	2.68			2.52	1.69	2.96
Well #8	0.315	0.4	0.34	1.27	0.5	0.35	0.91	0.55	0.617	

Note: Data from Wells 4, 5 is not available from 2013 + 2016. Data from Well 6 is not available for 2013 and from Well 8 for 2016. Future reports will attempt to capture nitrate-nitrite data from all 6 Town wells.

5.6 Water Quality Complaints and Operational Incidents

The majority of water quality related complaints relate to "black and dark brown sediments" in the water. These complaints are primarily from residents in the service area of the municipal water and are attributable to manganese in water supplied from Wells 4, 5, 6 and 8. The Town has an ongoing flushing program focusing on dead end mains with the objective of removing manganese related sediments/precipitates from the distribution system. The Town attempts to preferentially use Wells 1 and 3 which do not have manganese to thereby minimize the amount of manganese in water supplied in the municipal system.

Note: The Town of Osoyoos has plans to development and construct a Water Treatment facility to assist with the removal of manganese from Town well water. The proposed schedule for this project is as follows: Detailed Design – 2018

Facility Construction - 2019

The most significant operational incident in 2016, was the later than anticipated operational start of the Irrigation system. There were some unexpected delays in the commissioning of the new motors, pumps and electronic controls for Station No. 8 which prevented it from being fully operational until April 13, 2016.

6.0 Operation and Maintenance

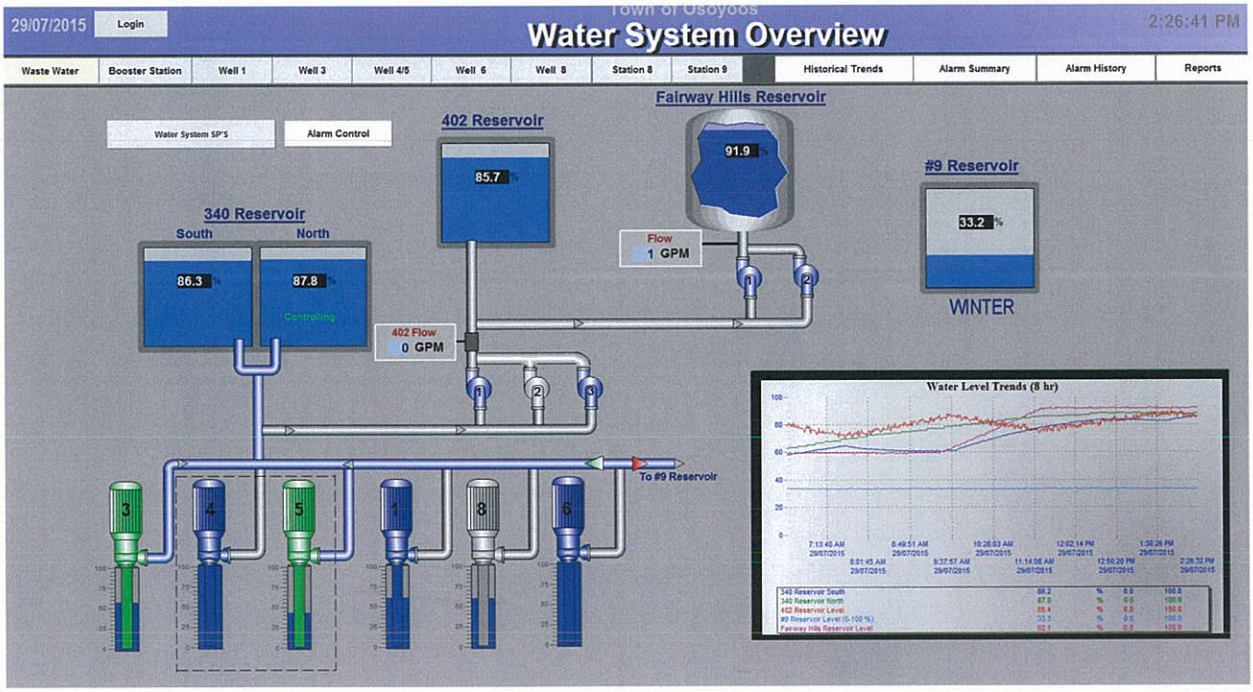
6.1 Routine Maintenance Program

- Water Supply Wells
  - daily check of all wells to confirm satisfactory operation. Operating parameters including discharge pressure, flow, running time, and service voltage are logged.
  - pumped lubrication and packing are checked and adjusted as required.
  - annual water sampling.
- Irrigation Systems 8 and 9 Intake/Pumphouse
  - daily check during the irrigation season. Operating parameters are logged.
  - pump lubrication and packing are checked and adjusted as required.
  - chlorine residual and turbidity analyser calibration is checked monthly.
  - chlorine cylinders are removed when empty and replaced with full cylinder.
  - pumphouse maintenance on an as required basis.
- Booster Stations 402 and Fairway Hills
  - daily inspections to check securing and record operating parameters.
  - pump lubrication and packing are checked and adjusted as required.
- Reservoirs
  - all reservoirs are inspected daily, excluding weekends, to confirm site and reservoir structure security.

- Distribution System
  - water mains flushing is carried out on a weekly basis during the summer months and monthly during the remainder of the year.
  - fire hydrants are inspected and maintained twice per year.
  - pressure reducing stations are inspected monthly.
  - watermain valves are exercised annually.

6.2 SCADA (Supervisory Control and Data Acquisition) System

A SCADA computer control and monitoring system is used by the Town to control major components of the water systems. System capabilities include:



- Water Supply Wells and Intakes
  - pump operational status
  - flow, elapsed running times
  - well levels where applicable
  - chlorine residuals at irrigation intake
- Booster Stations
  - pump operational status
  - flow and elapsed running time

- Reservoirs
  - reservoir level
  - pump start/stop and alarm set points
  - intruder alarms

The Town has an ongoing program to upgrade the capabilities of the SCADA system.

6.3 Major Maintenance – 2016

Major maintenance projects undertaken in 2016 include:

- Decommissioning and demolition of the structure around Well No. 2. (See Appendix F for full decommissioning report)
- Changed chlorine generation from gas to sodium hypochloride at Well No. 6.

6.4 Cross Connection Control Program

A cross connection is most commonly a plumbing system in a building that represents the risk of backflow into the Town's water distribution system thereby representing the potential of adversely affecting water quality. The Town has a program for identifying cross connections and requiring the installation and maintenance of backflow prevention devices to prevent reverse flow from a service connection to the Town's water distribution system.

The implementation and administration of the Town's cross connection program is contracted to Mr. Wayne Muzyka of Personnel Development & Consulting of Vernon. The Town's cross connection control program includes a total devices of which:

- 94 are classified as high hazard
- 73 are classified as medium hazard
- 47 are classified as low hazard

To the end of December 2016, a total of 88% of the backflow devices have been surveyed which comprises an inspection of the premises and backflow prevention devices. Of the high hazard group, 99% have been surveyed. At the end of December 2016, compliance with the Town's cross connection control program is summarized as follows.

Hazard Category		Compliant		
		Surveyed	Number	%
High	94	93	66	71%
Medium	73	57	39	68%
Low	47	38	15	39%

Non-compliance generally means a deficient (or lack of) backflow prevention device or failure by the property owner to provide certification of annual testing.

6.5 Emergency Response Plan

The Town has an emergency response plan for the water and sanitary sewer utilities which is available for public viewing at Public Works. The plan describes strategies to respond to a wide range of water related events including source and distribution system contamination, high turbidity events in Osoyoos Lake, broken water main, chlorination failure, vandalism and extended interruption in electrical service. The emergency response plan was last updated in 2015.

7.0 Capital Program

7.1 Municipal System

7.1.1 Completed Capital Projects for 2016

- Replace flow meter and discharge piping upgrade at Well No. 4.
- Remediation of Town Water Well No. 6.

7.1.2 Budgeted Capital Projects for 2017

- Installation of Twin 300 mm water mains between Gyro Park and the Holiday Inn under Osoyoos Lake.
- Water well at Gyro Park for irrigation water.
- Twin the 250mm Town watermain into the South half of Irrigation District No. 8 from 74 Avenue to 148 Avenue.
- Pump test of Well No. 7 (to determine if this well is a viable domestic water production well).
- Construction of 370 m of 150 mm water main on Lakeshore Drive between 56 Avenue and Highway No. 3.

7.1.3 Other Water Related Budget Items

- Completion of Long Range System Upgrading Plan to provide disinfection (chlorination) with contact time and manganese removal for water supply wells 1, 4, 5, and 8

7.1.4 Master Plan

The Town's plan to upgrade treatment works for the municipal system is based on a comprehensive groundwater quality and contamination risks assessment study of the well sources by Western Water Associates dated 2012 and pilot testing in 2012 of biological processes for removal of manganese. The treatment plan for the municipal system comprises:

- a treatment plant for manganese removal and disinfection by chlorination located at Jack Shaw Gardens.
- raw water piping from existing Wells 1 and 8 to the treatment plant.

The removal of manganese from the Town's well water should result in an improvement in the appearance and taste of the domestic supply while improved disinfection from chlorination will minimize possible health concerns.

7.2 Water District (Irrigation Systems 8 and 9)

7.2.1 Completed Projects in 2016

- Pump Station No. 8 electrical upgrades.
- Remediation of Well No. 6

7.2.2 Budgeted Capital Projects for 2017

- Phase 1 (South half of System No. 8 service area from 74th Ave to 148th Ave) of water twining project.

7.2.3 Master Plan

In 2008, the Town of Osoyoos adopted a plan to construct twin domestic water distribution systems in the Systems 8 and 9 service areas to comply with IHA 43210 drinking water treatment standards. The twin domestic water systems will be supplied by municipal system groundwater sources thereby discontinuing the use of intakes in Osoyoos Lake as potable water sources.

To date, twin domestic water distribution mains are in service on 74th Avenue and on the west side of H97 from 74th Avenue to Mariposa.

The Twinning project will be undertaken in four phases as described below:

Phase 1	South half of System No. 8 service area from 74th Ave to 148th Ave.
Phase 2	East half of System No. 9 service area generally comprising the area East of Hwy 97 from 32nd Ave to the USA border, including the supply main from Nighthawk Drive.
Phase 3	West half of System No. 9 service area comprising the area West of Hwy 97 from 74th Ave to the USA border.
Phase 4	North half of System No. 8 service area from 148th Ave to Willow Beach.

APPENDIX A

Bacteriological Test Results

January 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
8707 78th Ave	Jan 5/16	Jan 7/16	<1	<1
Well #5	Jan 5/16	Jan 7/16	<1	<1
5705 Lombardy Lane	Jan 12/16	Jan 14/16	<1	<1
6066 89th St.	Jan 12/16	Jan 14/16	<1	<1
8707 78th Ave	Jan 19/16	Jan 21/16	<1	<1
Well #5	Jan 19/16	Jan 21/16	<1	<1
4010 Lobelia Drive	Jan 26/16	Jan 28/16	<1	<1
8405 87th St.	Jan 26/16	Jan 28/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9103 100th Ave	Jan 5/16	Jan 7/16	<1	<1
9707 87th St.	Jan 12/16	Jan 14/16	<1	<1
9103 100th Ave	Jan 19/16	Jan 21/16	<1	<1
9707 87th St.	Jan 26/16	Jan 28/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave	Jan 5/16	Jan 7/16	<1	<1
5001 107th St.	Jan 12/16	Jan 14/16	<1	<1
10021 42nd Ave	Jan 19/16	Jan 21/16	<1	<1
5001 107th St.	Jan 26/16	Jan 28/16	<1	<1

February 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5705 Lombardy Lane	Feb 2/16	Feb 4/16	<1	<1
8707 78th Ave	Feb 2/16	Feb 4/16	<1	<1
8405 87th St	Feb 9/16	Feb 11/16	<1	<1
Well #3	Feb 9/16	Feb 11/16	<1	<1
5705 Lombardy Lane	Feb 16/16	Feb18/16	<1	<1
6006 89th St.	Feb 16/16	Feb18/16	<1	<1
Well #3	Feb 23/16	Feb 25/16	<1	<1
8707 78th Ave	Feb 23/16	Feb 25/16	4	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9103 100th Ave.	Feb 2/16	Feb 4/16	<1	<1
9707 87th St.	Feb 9/16	Feb 11/16	<1	<1
9103 100th Ave.	Feb 16/16	Feb18/16	<1	<1
9707 87th St.	Feb 23/16	Feb 25/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave	Feb 2/16	Feb 4/16	<1	<1
5001 107th St.	Feb 9/16	Feb 11/16	<1	<1
10021 42nd Ave	Feb 16/16	Feb18/16	<1	<1
5001 107th St.	Feb 23/16	Feb 25/16	<1	<1

March 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5705 Lombardy Lane	Mar 1/16	Mar 3/16	<1	<1
8707 78th Ave	Mar 1/16	Mar 3/16	<1	<1
8405 87th St.	Mar 8/16	Mar 10/16	<1	<1
4010 Lobelia Drive	Mar 8/16	Mar 10/16	<1	<1
5705 Lombardy Lane	Mar 15/16	Mar 17/16	<1	<1
6006 89th St.	Mar 15/16	Mar 17/16	<1	<1
8405 87th St.	Mar 23/16	Mar 25/16	<1	<1
4010 Lobelia Drive	Mar 23/16	Mar 25/16	<1	<1
Well #3	Mar 29/16	Mar 31/16	<1	<1
6006 89th St.	Mar 29/16	Mar 31/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9103 100th Ave.	Mar 1/16	Mar 3/16	<1	<1
9707 87th St.	Mar 8/16	Mar 10/16	<1	<1
9103 100th Ave.	Mar 15/16	Mar 17/16	<1	<1
9707 87th St.	Mar 23/16	Mar 25/16	<1	<1
9103 100th Ave.	Mar 29/16	Mar 31/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave	Mar 1/16	Mar 3/16	<1	<1
5001 107th St.	Mar 8/16	Mar 10/16	<1	<1
10021 42nd Ave	Mar 15/16	Mar 17/16	<1	<1
5001 107th St.	Mar 23/16	Mar 25/16	<1	<1
10021 42nd Ave	Mar 29/16	Mar 31/16	<1	<1

April 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
8707 78th Ave	Apr 5/16	Apr 7/16	<1	<1
5705 Lombardy Lane	Apr 5/16	Apr 7/16	<1	<1
8405 87th St.	Apr 12/16	Apr 14/16	<1	<1
4010 Lobelia Drive	Apr 12/16	Apr 14/16	<1	<1
5705 Lombardy Lane	Apr 19/16	Apr 21/16	<1	<1
4010 Lobelia Drive	Apr 19/16	Apr 21/16	<1	<1
5302 Lombardy Lane	Apr 26/16	Apr 28/16	<1	<1
Well #3	Apr 26/16	Apr 28/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9707 87th St.	Apr 5/16	Apr 7/16	<1	<1
9103 100th Ave	Apr 12/16	Apr 14/16	<1	<1
9707 87th St.	Apr 19/16	Apr 21/16	<1	<1
9103 100th Ave	Apr 26/16	Apr 28/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5001 107th St.	Apr 5/16	Apr 7/16	<1	<1
10021 42nd Ave	Apr 12/16	Apr 14/16	<1	<1
5001 107th St.	Apr 19/16	Apr 21/16	<1	<1
10021 42nd Ave	Apr 26/16	Apr 28/16	<1	<1

May 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
8708 78th Ave	May 3/16	May 5/16	<1	<1
4010 Lobelia Drive	May 3/16	May 5/16	<1	<1
5705 Lomabardy Lane	May 10/16	May 12/16	<1	<1
6006 89th St.	May 10/16	May 12/16	<1	<1
Well #1	May 17/16	May 19/16	<1	<1
4010 Lobelia Drive	May 17/16	May 19/16	<1	<1
8405 87th St.	May 24/16	May 26/16	<1	<1
6006 89th St.	May 24/16	May 26/16	<1	<1
Well #1	May 31/16	June 2/16	<1	<1
Well #3	May 31/16	June 2/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9707 87th St.	May 3/16	May 5/16	<1	<1
9103 100th Ave.	May 10/16	May 12/16	<1	<1
9707 87th St.	May 17/16	May 19/16	<1	<1
9103 100th Ave.	May 24/16	May 26/16	<1	<1
9707 87th St.	May 31/16	June 2/16	13	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5001 107th St.	May 3/16	May 5/16	<1	<1
10021 42nd Ave.	May 10/16	May 12/16	<1	<1
5001 107th St.	May 17/16	May 19/16	<1	<1
10021 42nd Ave.	May 24/16	May 26/16	<1	<1
5001 107th St.	May 31/16	June 2/16	<1	<1

June 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
Well #3	Jun 7/16	Jun 9/16	<1	<1
9111 92nd	Jun 7/16	Jun 9/16	<1	<1
5302 Lombadry Lane	Jun 14/16	Jun 16/16	<1	<1
Well #1	Jun 14/16	Jun 16/16	<1	<1
6006 89th St	Jun 21/16	Jun 22/16	<1	<1
8405 87th St	Jun 21/16	Jun 22/16	<1	<1
Well #8	Jun 28/16	Jun 29/16	<1	<1
Well #3	Jun 28/16	Jun 29/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9707 87th St.	Jun 7/16	Jun 9/16	<1	<1
9103 100th Ave.	Jun 14/16	Jun 16/16	<1	<1
9103 100th Ave.	Jun 21/16	Jun 22/16	<1	<1
10408 89th St.	Jun 28/16	Jun 29/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave	Jun 7/16	Jun 9/16	<1	<1
5001 107th St	Jun 14/16	Jun 16/16	<1	<1
10021 42nd Ave	Jun 21/16	Jun 22/16	<1	<1
5001 107th St	Jun 28/16	Jun 29/16	<1	<1

July 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
Well #3	Jul 5/16	Jul 6/15	<1	<1
Well #1	Jul 5/16	Jul 6/15	<1	<1
5705 Lombardy Lane	Jul 12/16	Jul 13/16	<1	<1
8405 87th St.	Jul 12/16	Jul 13/16	<1	<1
Well #3	Jul 19/16	Jul 20/16	<1	<1
4010 Lobelia Drive	Jul 19/16	Jul 20/16	<1	<1
6006 89th St.	Jul 26/16	Jul 27/16	<1	<1
5302 Lombardy Lane	Jul 26/16	Jul 27/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9103 100th Ave	Jul 5/16	Jul 6/15	<1	<1
9707 87th St.	Jul 12/16	Jul 13/16	<1	<1
9103 100th Ave	Jul 19/16	Jul 20/16	<1	<1
9707 87th St.	Jul 26/16	Jul 27/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave	Jul 5/16	Jul 6/15	<1	<1
5001 107th St.	Jul 12/16	Jul 13/16	<1	<1
10021 42nd Ave	Jul 19/16	Jul 20/16	<1	<1
5001 107th St.	Jul 26/16	Jul 27/16	<1	<1

August 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
Well #3	Aug 2/16	Aug 3/16	<1	<1
Well #1	Aug 2/16	Aug 3/16	<1	<1
5302 Lombardy Lane	Aug 9/16	Aug 10/16	<1	<1
Well #1	Aug 9/16	Aug 10/16	<1	<1
8405 87th St.	Aug 16/16	Aug 17/16	<1	<1
4010 Lobelia Drive	Aug 16/16	Aug 17/16	<1	<1
Well #3	Aug 23/16	Aug 24/16	<1	<1
Well #8	Aug 23/16	Aug 24/16	<1	<1
5302 Lombardy Lane	Aug 30/16	Aug 31/16	<1	<1
Well #1	Aug 30/16	Aug 31/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9103 100th Ave.	Aug 2/16	Aug 3/16	<1	<1
10408 89th St.	Aug 9/16	Aug 10/16	<1	<1
9103 100th Ave.	Aug 16/16	Aug 17/16	<1	<1
9103 100th Ave.	Aug 23/16	Aug 24/16	40	<1
9103 100th Ave.	Aug 30/16	Aug 31/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave.	Aug 2/16	Aug 3/16	<1	<1
5001 107th St.	Aug 9/16	Aug 10/16	<1	<1
10021 42nd Ave.	Aug 16/16	Aug 17/16	<1	<1
5001 107th St.	Aug 23/16	Aug 24/16	<1	<1
10021 42nd Ave.	Aug 30/16	Aug 31/16	<1	<1

September 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
Well #6	Sep 06/16	Sept 07/16	<1	<1
Well #3	Sep 06/16	Sept 07/16	<1	<1
5302 Lombardy Lane	Sept 13/16	Sept 14/16	<1	<1
Well #6	Sept 13/16	Sept 14/16	<1	<1
4010 Lobelia Drive	Sept 20/16	Sept 21/16	<1	<1
Well #1	Sept 20/16	Sept 21/16	<1	<1
Well #3	Sept 27/16	Sept 28/16	<1	<1
Well #8	Sept 27/16	Sept 28/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
12418 87th St	Sep 06/16	Sept 07/16	<1	<1
9103 100th Ave.	Sept 13/16	Sept 14/16	<1	<1
10408 89th St	Sept 20/16	Sept 21/16	<1	<1
9103 100th Ave.	Sept 27/16	Sept 28/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5001 107st	Sep 06/16	Sept 07/16	<1	<1
10021 42nd Ave	Sept 13/16	Sept 14/16	<1	<1
5001 107 st	Sept 20/16	Sept 21/16	<1	<1
10021 42nd Ave	Sept 27/16	Sept 28/16	<1	<1

October 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5302 Lombardy	Oct 04/16	Oct 05/16	<1	<1
4220 Lobelia	Oct 04/16	Oct 05/16	<1	<1
8707 78th Ave	Oct 11/16	Oct 12/16	<1	<1
Well #3	Oct 11/16	Oct 12/16	<1	<1
5302 Lombardy	Oct 18/16	Oct 19/16	<1	<1
4220 Lobelia	Oct 18/16	Oct 19/16	<1	<1
Well #3	Oct 25/16	Oct 26/16	<1	<1
8707 78th Ave	Oct 25/16	Oct 26/16	1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10408 89th St	Oct 04/16	Oct 05/16	<1	<1
9103 100th Ave	Oct 11/16	Oct 12/16	<1	<1
9707 87th St	Oct 18/16	Oct 19/16	<1	<1
9103 100th Ave	Oct 25/16	Oct 26/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5001 107th St	Oct 04/16	Oct 05/16	<1	<1
10021 42nd Ave	Oct 11/16	Oct 12/16	<1	<1
5001 107th St	Oct 18/16	Oct 19/16	<1	<1
10021 42nd Ave	Oct 25/16	Oct 26/16	<1	<1

November 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
4220 Lobelia Dr	Nov 1/16	Nov 2/16	1	<1
5302 Lombardy Ln	Nov 1/16	Nov 2/16	<1	<1
8708 62nd Ave.	Nov 8/16	Nov 9/16	2	<1
Well #3	Nov 8/16	Nov 9/16	<1	<1
7008 Nighthawk Drive	Nov 15/16	Nov 16/16	6	<1
5705 Lombardy Ln	Nov 15/16	Nov 16/16	<1	<1
8707 78th Ave	Nov 22/16	Nov 23/16	<1	<1
Well #3	Nov 22/16	Nov 23/16	<1	<1
5302 Lombardy Ln	Nov 29/16	Nov 30/16	<1	<1
Well #1	Nov 29/16	Nov 30/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9707 87th St	Nov 1/16	Nov 2/16	<1	<1
9103 100th Ave.	Nov 8/16	Nov 9/16	<1	<1
9707 87th St	Nov 15/16	Nov 16/16	<1	<1
9103 100th Ave.	Nov 22/16	Nov 23/16	<1	<1
9707 87th St	Nov 29/16	Nov 30/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
5001 107th St	Nov 1/16	Nov 2/16	<1	<1
10021 42nd Ave.	Nov 8/16	Nov 9/16	<1	<1
5001 107th St	Nov 15/16	Nov 16/16	<1	<1
10021 42nd Ave.	Nov 22/16	Nov 23/16	<1	<1
5001 107th St	Nov 29/16	Nov 30/16	<1	<1

December 2016

TOWN SYSTEM

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
8707 78th Ave	Dec 6/16	Dec 17/16	3	<1
Well #3	Dec 6/16	Dec 17/16	<1	<1
4010 Lobelia Drive	Dec 13/16	Dec 14/16	<1	<1
5705 Lombardy Lane	Dec 13/16	Dec 14/16	<1	<1
Well #3	Dec 20/16	Dec 21/16	<1	<1
8707 78th Ave	Dec 20/16	Dec 21/16	<1	<1
5705 Lombardy Lane	Dec 28/16	Dec 29/16	<1	<1
4011 Lobelia Drive	Dec 28/16	Dec 29/16	<1	<1

SYSTEM 8

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
9103 100th Ave	Dec 6/16	Dec 17/16	<1	<1
9707 87th St	Dec 13/16	Dec 14/16	<1	<1
10408 89th St	Dec 20/16	Dec 21/16	<1	<1
9707 87th St	Dec 28/16	Dec 29/16	<1	<1

SYSTEM 9

LOCATION	DATE COLLECTED	DATE ANALYZED	COLIFORM TOTAL	E.COLI
10021 42nd Ave	Dec 6/16	Dec 17/16	<1	<1
5001 107th	Dec 13/16	Dec 14/16	<1	<1
10021 42nd Ave	Dec 20/16	Dec 21/16	<1	<1
5001 107th St	Dec 28/16	Dec 29/16	<1	<1

APPENDIX B

Water Supply Well
Full Spectrum Water Quality Analysis

CARO ANALYTICAL SERVICES

RECEIVED
SEP 2 8 2016

SAMPLE ANALYTICAL DATA COPY

REPORTED TO Osoyoos, Town of
PROJECT General Potability

WORK ORDER 6091503
REPORTED 2016-09-28

Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Well #3 (6091503-01) [Water] Sampled: 2016-09-20 08:15							
Anions							
Chloride	**17.6**	AO ≤ 250	0.10	mg/L	N/A	2016-09-22	
Fluoride	**0.25**	MAC = 1.5	0.10	mg/L	N/A	2016-09-22	
Nitrate (as N)	**2.77**	MAC = 10	0.010	mg/L	N/A	2016-09-22	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	N/A	2016-09-22	
Sulfate	**62.4**	AO ≤ 500	1.0	mg/L	N/A	2016-09-22	
General Parameters							
Alkalinity, Total (as CaCO3)	**287**	N/A	2	mg/L	N/A	2016-09-22	
Alkalinity, Phenolphthalein (as CaCO3)	< 1	N/A	2	mg/L	N/A	2016-09-22	
Alkalinity, Bicarbonate (as CaCO3)	**287**	N/A	2	mg/L	N/A	2016-09-22	
Alkalinity, Carbonate (as CaCO3)	< 1	N/A	2	mg/L	N/A	2016-09-22	
Alkalinity, Hydroxide (as CaCO3)	< 1	N/A	2	mg/L	N/A	2016-09-22	
Colour, True	< 5	AO ≤ 15	5	CU	N/A	2016-09-22	
Conductivity (EC)	**696**	N/A	2	µS/cm	N/A	2016-09-22	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	N/A	2016-09-28	
pH	**7.82**	6.5-8.5	0.01	pH units	N/A	2016-09-22	HT2
Temperature	**22**	N/A		°C	N/A	2016-09-22	HT2
Turbidity	**0.10**	OG < 0.1	0.10	NTU	N/A	2016-09-21	
Calculated Parameters							
Hardness, Total (as CaCO3)	**331**	N/A	4.99	mg/L	N/A	N/A	
Langelier Index	**0.8**	N/A	-5.0	-	N/A	2016-09-28	
Solids, Total Dissolved	**421**	AO ≤ 500	2.00	mg/L	N/A	N/A	
Total Metals							
Aluminum, total	< 0.050	OG < 0.1	0.005	mg/L	2016-09-22	2016-09-23	
Antimony, total	< 0.0010	MAC = 0.006	0.0001	mg/L	2016-09-22	2016-09-23	
Arsenic, total	< 0.0050	MAC = 0.01	0.0005	mg/L	2016-09-22	2016-09-23	
Barium, total	**0.092**	MAC = 1	0.005	mg/L	2016-09-22	2016-09-23	
Boron, total	**0.141**	MAC = 5	0.004	mg/L	2016-09-22	2016-09-23	
Cadmium, total	< 0.00010	MAC = 0.005	0.00001	mg/L	2016-09-22	2016-09-23	
Calcium, total	**86.9**	N/A	0.2	mg/L	2016-09-22	2016-09-23	
Chromium, total	< 0.0050	MAC = 0.05	0.0005	mg/L	2016-09-22	2016-09-23	
Cobalt, total	< 0.00050	N/A	0.00005	mg/L	2016-09-22	2016-09-23	
Copper, total	< 0.0020	AO ≤ 1	0.0002	mg/L	2016-09-22	2016-09-23	
Iron, total	< 0.10	AO ≤ 0.3	0.01	mg/L	2016-09-22	2016-09-23	
Lead, total	< 0.0010	MAC = 0.01	0.0001	mg/L	2016-09-22	2016-09-23	
Magnesium, total	**27.7**	N/A	0.01	mg/L	2016-09-22	2016-09-23	
Manganese, total	**0.0086**	AO ≤ 0.05	0.0002	mg/L	2016-09-22	2016-09-23	
Mercury, total	< 0.00002	MAC = 0.001	0.00002	mg/L	2016-09-22	2016-09-22	
Molybdenum, total	**0.0079**	N/A	0.0001	mg/L	2016-09-22	2016-09-23	
Nickel, total	< 0.0020	N/A	0.0002	mg/L	2016-09-22	2016-09-23	
Potassium, total	**7.28**	N/A	0.02	mg/L	2016-09-22	2016-09-23	
Selenium, total	< 0.0050	MAC = 0.05	0.0005	mg/L	2016-09-22	2016-09-23	
Sodium, total	**31.2**	AO ≤ 200	0.02	mg/L	2016-09-22	2016-09-23	
Uranium, total	**0.0142**	MAC = 0.02	0.00002	mg/L	2016-09-22	2016-09-23	
Zinc, total	< 0.040	AO ≤ 5	0.004	mg/L	2016-09-22	2016-09-23	

CARO ANALYTICAL SERVICES

SAMPLE ANALYTICAL DATA

COPY

REPORTED TO	Osoyoos, Town of	**WORK ORDER**	6091503
PROJECT	General Potability	**REPORTED**	2016-09-28

Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Well #3 (6091503-01) [Water] Sampled: 2016-09-20 08:15, Continued							
Microbiological Parameters							
Coliforms, Total	< 1	MAC = None Detected	1	CFU/100 mL	N/A	2016-09-21	
E. coli	< 1	MAC = None Detected	1	CFU/100 mL	N/A	2016-09-21	

Sample / Analysis Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

BRITISH COLUMBIA

Ministry of Forests, Lands and Natural Resource Operations
Water Management Branch
Annual Water System Return

E-MAILED JAN 10/17 CB

January 10, 2017

TOWN OF OSOYOOS

COPY

Return Report by: March 15, 2017
Client No: 37953
Water System No: 0380
Water System Name: TOWN OF OSOYOOS
Owner: OSOYOOS TOWN OF

The information in this report will be considered in the calculation of your next annual rental. Failure to verify this information, and complete and return the form by the due date, may result in being charged at the maximum level as determined by the Comptroller of Water Rights.

For Calendar Year: 2016

Purpose:	Total Volume (cubic meters)	Metered Location	Is any of your water supply from a Groundwater Source?	If Yes, what percentage of the Total Supply?
Water Works	2,367,511.10	At the Source ____ At the customer ____ or Not Metered 2,367,511.10	YES	100%
Irrigation	7,163,653.20	At the Source ____ At the customer ____ or Not Metered 7,163,653.20	YES	100%

Minimum Daily Demand:	Date:	Maximum Daily Demand:	Date:
741.1 Cubic meters	January	13,481.10 Cubic meters	August

Source(s) of Water Used

Please indicate the source name(s) and the percentage of supply obtained from each.

1	Osoyoos Lake	75.16%
2	Wells	24.84%

Attach a list to report additional sources.

Please provide the following information about Your Customers:

Number of Residential Connections: 3,765
Number of Other Connections: 1,177
Total Population: 4,800
Basis of Estimate: Best local estimates (reviewed annually)
Cultivated Area: 1,611 Acres

A listing of existing licenses held in your name is enclosed. If any of these licenses are not used and do not form part of your development plan, you should consider their abandonment.

I certify that the above information is correct.

Signature of Official: Jim Dinwoodie Position/Title: DIRECTOR OF OPERATIONS

Print Name: JIM DINWOODIE Phone No.(: 250 495 6213 Date: JAN 10/17

Ministry of Forests, Lands and Natural Resource
Water Management Branch
Mailing Address: 9340 STN PROV GOVT Victoria BC V8W 9M1
Location: 9340 STN PROV GOVT Victoria BC V8W 9M1
Fax: (250) 356-0605
Web: http://www.env.gov.bc.ca/wsd

APPENDIX C

SUMMARY OF NITRATE MONITORING

Summary of Nitrate Data					
	Well #1	Well #3	Well #4-5	Well #6	Well #8
Jun-07	5.09	5.46	1.04		0.37
Nov-07			1.52 (305)		0.26 (166)
Jun-08	5.12		1.51		0.529 (158)
Sep-08	5.59	4.8	0.88 (279)		
Sep-08			0.7 (262)	2.69 (299)	0.27 (154)
Jun-09	3.87		1.81	1.62	0.34
Aug-09	4.76			1.57 (306)	
Sep-09		4.09	1.04	2.03	0.34
Dec-09		3.44		1.9	
Jun-10	4.7	3.02			0.6
Jul-10	4.62	2.78		1.51	0.47
Oct-10	4.45	3.13			
Dec-10		2.72		2.54	2.76
Sep-11	4.96	3.09	0.13 (216)		0.5
Dec-11		0.5		2.68	
Sep-12					0.35 (139)
Sep-13					0.26 (155)
Sep-13	4.99	3.05			1.56
Jun-14		2.14	0.01		0.45
Oct-14			<0.01 (240)		
Oct-14			<0.01 (244)		
Sep-15		2.05			1.69
Dec-16	4.31	2.59		2.96	
Averages	4.77	3.06	1.08	2.18	0.91

APPENDIX D

CROSS CONNECTION CONTROL PROGRAM

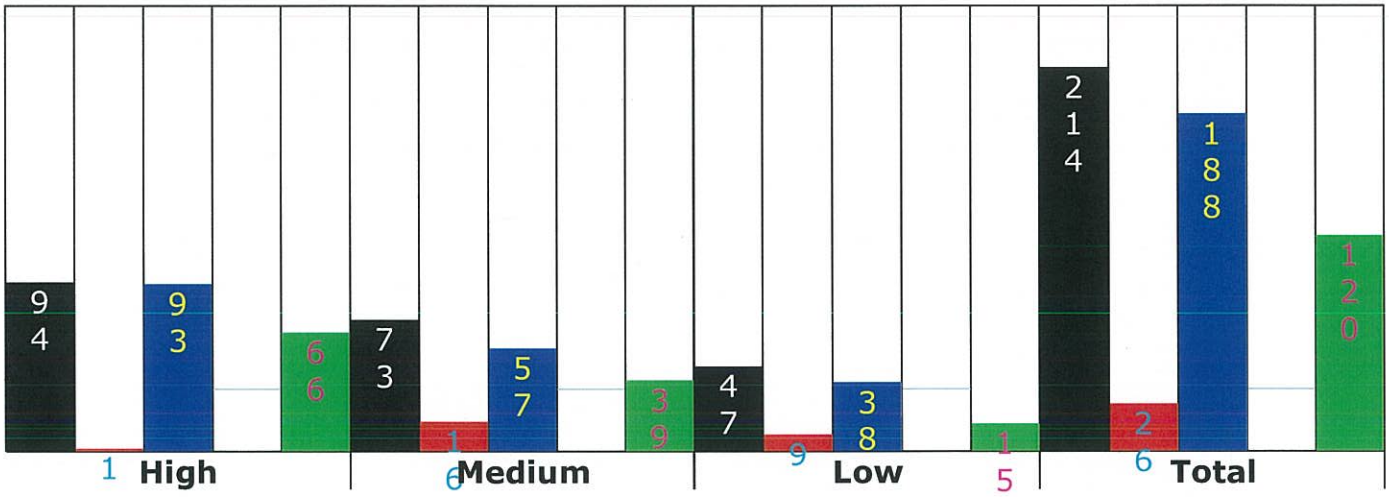
Cross-Connection Control Program

Town of Osoyoos

Summary Report - Jan 24, 2017

Customers	224
BFP's Tracked	309

Hazards	Quantity	Not Surveyed	Surveyed	Vacant	Compliant
High	94	1	93	0	66
Medium	73	16	57	0	39
Low	47	9	38	0	15
Totals	214	26	188	0	120



Legend
Total
Not Surveyed
Surveyed
Vacant
Compliant

APPENDIX E

NOTICE OF WATER RESTRICTIONS



WATER RESTRICTIONS

NORMAL Residential Lawn Watering/Irrigation Schedule

To ensure adequate water supply during peak (high consumption) times, new watering restrictions will be in effect as of 2016.

Town and Rural Water Districts 8 & 9

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Water Days	ODD Numbered Addresses		EVEN Numbered Addresses	ODD Numbered Addresses	EVEN Numbered Addresses	ODD Numbered Addresses	EVEN Numbered Addresses
Manual	6am – 10am 7pm – 12am	NO WATERING	6am – 10am 7pm – 12am	6am – 10am 7pm – 12am	6am – 10am 7pm – 12am	6am – 10am 7pm – 12am	6am – 10am 7pm – 12am
Automatic	12am – 6am		12am – 6am	12am – 6am	12am – 6am	12am – 6am	12am – 6am

Osoyoos
Canada's warmest welcome

Use of water hoses with automatic shut off nozzle, micro-irrigation and drip-irrigation are permitted for the following: watering of flowers and vegetable gardens, decorative planters, shrubs and trees, washing boats or motor vehicles.

For more information:

(T) 250.495.6515 (E) water@osoyoos.ca (W) www.osoyoos.ca

Your New 2016 Watering Restrictions Sticker is safe, removable and repositionable. Attach to a smooth surface that is clean and dry. This removable sticker will leave little to no residue behind when removed.

Osoyoos
Canada's warmest welcome

APPENDIX F

Decomissioning of Well No. 2

TRUE CONSULTING

May 24, 2017

Our File: 302-421

Ground Water Data Technician
Water Stewardship Division
Ministry of Environment
PO Box 9362 Stn Prov. Govt
Victoria, BC V8W 9M2

Dear Sirs:

RE: *Well Closure Report – Town of Osoyoos*

Please accept this letter and attached form as well closure information submitted on behalf of the Town of Osoyoos. The well that was decommissioned (closed) is designated water supply #2 and was used by the Town for water supply purposes to the mid 1990's. Declining yield and sand intrusions resulted in the Town discontinuing use of the well. Available information for the well is summarized as follows:

Driller – Osoyoos Tile Works

Type – Dug with 1.2m (48")
Precast concrete casing

Year of construction: 1965

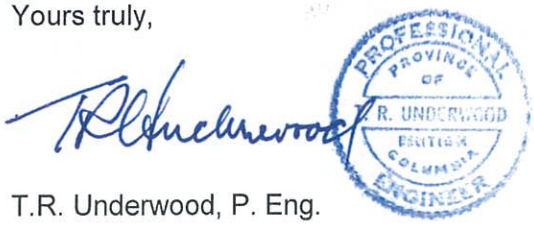
Depth: 10.3m (34')

As per the attached, the well was decommissioned by the Town Public Works department on May 11, 2017. Decommissioning comprised filling with gravel and a concrete cap at the surface 0.75m (2.5 feet) thick.

The well location as reported on the attached form is from a survey by TRUE Staff.

Should questions arise or additional information be required, please contact the undersigned.

Yours truly,



T.R. Underwood, P. Eng.

TRU/kc

Enclosure

cc: Jim Dinwoodie, Town of Osoyoos

201-2079 Falcon Road ■ Kamloops BC ■ V2C 4J2 ■ www.true.ca ■ tel 250.828.0881 ■ fax 250.828.0717

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Environment

☐ Well Construction Report
☑ Well Closure Report
☐ Well Alteration Report

Stamp company name/address/ phone/fax/e-mail here, if desired.

Ministry Well ID Plate Number:
Ministry Well Tag Number:
☐ Confirmation/alternative specs. attached
☐ Original well construction report attached

Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: Town of Osoyoos

Mailing address: PO Box 3010, 8707 Main St. Town Osoyoos Prov. BC Postal Code V0H 1V0

Well Location: Address: Street no. 6406 Street name 89th Street Town Osoyoos

(or) **Legal description:** Lot 32 Plan 1949 D.L. 2450s Block Sec. Twp. Rg. Land District

(or) **PID:** (and) **Description of well location** (attach sketch, if nec.): Within Legion Beach Park

NAD 83: Zone: 11 (see note 2) (and) **UTM Easting:** 5433293 m (or) **Latitude** (see note 3): 49°01'34"
UTM Northing: 319520 m **Longitude:** 119°28'08.14"

Method of drilling: ☐ air rotary ☐ cable tool ☐ mud rotary ☐ auger ☐ driving ☐ jetting ☑ excavating ☐ other (specify):

Orientation of well: ☑ vertical ☐ horizontal Ground elevation: ft (asl) Method (see note 4):

Class of well (see note 5): Water Supply **Sub-class of well:** domestic

Water supply wells: indicate intended water use: ☐ private domestic ☑ water supply system ☐ irrigation ☐ commercial or industrial ☐ other (specify):

Lithologic description (see notes 7-14) or closure description (see notes 15 and 16)

From ft (bgl)	To ft (bgl)	Relative Hardness	Colour	Material Description (Use recommended terms on reverse. List in order of decreasing amount, if applicable)	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathered, well sorted, silty wash), closure details

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe

Screen details

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size

Surface seal: Type: Depth: ft
Method of installation: ☐ Poured ☐ Pumped Thickness: in
Backfill: Type: Depth: ft
Liner: ☐ PVC ☐ Other (specify):
Diameter: in Thickness: in
From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Intake: ☐ Screen ☐ Open bottom ☐ Uncased hole
Screen type: ☐ Telescope ☐ Pipe size
Screen material: ☐ Stainless steel ☐ Plastic ☐ Other (specify):
Screen opening: ☐ Continuous slot ☐ Slotted ☐ Perforated pipe
Screen bottom: ☐ Bail ☐ Plug ☐ Plate ☐ Other (specify):
Filter pack: From: ft To: ft Thickness: in
Type and size of material:

Developed by:

☐ Air lifting ☐ Surging ☐ Jetting ☐ Pumping ☐ Bailing
☐ Other (specify): Total duration: hrs
Notes:

Well yield estimated by:

☐ Pumping ☐ Air lifting ☐ Bailing ☐ Other (specify):
Rate: USgpm Duration: hrs
SWL before test: ft (btoc) Pumping water level: ft (btoc)

Obvious water quality characteristics:

☐ Fresh ☐ Salty ☐ Clear ☐ Cloudy ☐ Sediment ☐ Gas
Colour/odour: Water sample collected: ☐

Final well completion data:

Total depth drilled: ft Finished well depth: ft (bgl)
Final stick up: in Depth to bedrock: ft (bgl)
SWL: ft (btoc) Estimated well yield: USgpm
Artesian flow: USgpm, or Artesian pressure: ft
Type of well cap: Well disinfected: ☐ Yes ☐ No
Where well ID plate is attached:

Well closure information:

Reason for closure: Poor capacity and sand intrusion
Method of closure: ☑ Poured ☐ Pumped
Sealant material: concrete Backfill material: gravel
Details of closure (see note 17): Precast concrete barrel sections left in place.

Well driller (print clearly):

Name (first, last) (see note 19):
Registration no. (see note 20):
Consultant (if applicable; name and company):

Date of work (YYYY/MM/DD):

Started: 2017/05/11 Completed: 2017/05/11
Comments: Work by Town of Osoyoos Staff

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the *Water Act* and the Ground Water Protection Regulation.

Signature of Professional Engineer

PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, alteration or closure, as the case may be. Well yield, well performance and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

white: Customer copy
canary: Driller copy
pink: Ministry copy

Sheet ____ of ____