Annual Drinking Water Report 2017

Resort Municipality of Whistler

WHISTLER

Contents

1.0 EXECUTIVE SUMMARY

This report summarizes the Resort Municipality of Whistler's drinking water quality program for 2017. The two municipal systems, Community and Emerald Estates, are administered under separate Permits to Operate a Water Supply System. As in previous years, the RMOW satisfied the conditions for the Permits to Operate.

The Community and Emerald Water systems are operated and maintained by the RMOW's Water Utility Operations and are monitored 24 hours/365 days per year via the Supervisory Control and Data Acquisition (SCADA) system to ensure optimal conditions. In addition, the RMOW administers programs relating to leak detection, cross connection control, unidirectional flushing, water conservation and sampling.

The sampling program forms the backbone of compliance under the Permits to Operate. The sampling data are monitored by the RMOW and VCHA as they are processed by the laboratory. This report provides a summary of those results from 2017. Any actions needing to be taken, would have occurred immediately once the results were available.

Sampling at water sources (raw) was performed 28 times across 3 sources in the Emerald Estates System and 273 times at 13 sources in the Community System throughout 2017. Water samples were taken every other week and were tested for:

- E. coli and total coliform bacteria.
- Turbidity
- pH
- Temperature

Sampling in the distribution system (treated) was performed 47 times at 2 locations in the Emerald Estates System and 483 times over 21 Sampling Stations in the Community System throughout 2017. Water samples were taken every other week and were tested for:

- E. coli and total coliform bacteria
- Turbidity
- pH
- Temperature
- Free Chlorine Residual

Sampling at both the source and throughout the distribution system for additional physical and chemical parameters is conducted annually. Bi-products of disinfection are tested once quarterly at distribution sites.

There were no exceedances for E.Coli or Total Coliform over all source and distribution samples. In February 2017, the Guidelines for Canadian Drinking Water Quality (GCDWQ) with respect to pH was updated and published. This changed the recommended operational pH range from 6.5 – 8.5 to 7 – 10.5. Testing for pH levels throughout the distribution system indicate that the water supplied has pH levels between 6.5 and 7.5. The new guidelines means the water in the Whistler system sometimes falls outside the current guidelines for this parameter (please see Section 5.5 for a further reference related to this discussion).

The RMOW's water Supply and distribution system are governed by the following Regulations:

Regulation	Jurisdiction	Link
Drinking Water Protection Act and Regulation	Province of British Columbia	https://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/laws-related-to-health-in-bc/drinking-water-protection-act
Water Sustainability Act	Province of British Columbia	https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/laws-rules/water-sustainability-act
Ground Water Protection Regulation	Province of British Columbia	https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/laws-rules/groundwater-protection-regulation
Permit to Operate	Vancouver Coastal Health	http://www.vch.ca/public-health/environmental-health-inspections/drinking-water
Guidelines for Drinking Water Quality	Province of British Columbia	https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines
Guidelines for Canadian Drinking Water Quality	Health Canada	https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html

The RMOW completed several operational and capital improvements in 2017, each of which will increase system reliability and ensure long-term availability.

2.0 GENERAL DESCRIPTION

In Whistler there are two private water distribution systems (Function Junction (Van West Water Utility), and Whistler Blackcomb) and two municipal (RMOW) managed systems, Community and Emerald Estates.

The two municipal systems, Community and Emerald Estates are administered under separate Permits to Operate. These water systems are Class IV Water Distribution Facilities, as classified by the Environmental Operators Certification Program (EOCP). The systems consist of:

- One (1) surface water intake;
- Twelve (12) groundwater wells;
- 13 storage reservoirs;
- 20 individual pressure zones;
- Nine (9) Pump stations;
- 8 Treatment locations
- a Supervisory Control and Data Acquisition (SCADA) monitoring system;
- approximately 197 km of water pipes;
- approximately 10,156 Residential water service connections and 190 commercial and other water service connections and;
- 496 municipal fire hydrants.

The benefit of having many sources of clean drinking water means that the RMOW has very good redundancy at a source level. However to meet the demand for treated water, there are infrastructure management challenges that drive the need for water conservation and investment in the water system, for example:

- More prescriptive drinking water guidelines;
- An increase in population equivalence related to both permanent population increase, and growth in resort visitation;
- Due to the location of public and private infrastructure relative to interface zones, the need to be adequately prepared for wildfire emergencies;
- Increased human presence surrounding the 21 Mile Creek watershed;
- The impact of climate change on source waters if the glaciers recede and snowpack is lower than usual;
- Although the infrastructure is “relatively new” it is aging, and ongoing replacement is necessary.

The RMOW supplies water to the private Van West Water Utility in Function Junction and is presently operating the system (results provided in a separate report), and the Whistler Blackcomb system operates independently acquiring its water supply from 8 deep wells located on the mountain[1].

[1] Data sourced from Whistler Blackcomb Mountain Drinking Water system summary, 2016

3.0 WATER SOURCES

The Resort Municipality of Whistler has the ability to obtain its water from numerous sources:

Surface Water

- Twenty-One Mile Creek
- Blackcomb Creek (not used for Drinking Water, taken offline and locked out in 2012)

Groundwater

- Emerald Estates Wells (3):
- Community Wells (4):
- Alpine Meadows Wells (3):
- Twenty-One Mile Creek Aquifer Well (1);
- Function Junction Wells (2);
- Cheakamus Crossing Well (1).

The RMOW uses both a surface water intake, and groundwater wells to provide domestic drinking water and fire protection supply for the municipality. The Twenty-One Mile Creek surface water intake comprised 38% of the water used in the distribution system in 2017, making it the single greatest source for the municipality. The Community water system, of which the Twenty-One Mile Creek intake is a part, supplied 95% of Whistler's potable water in 2017 with the remainder being supplied by the Emerald Estates water system.

Surface Water - Twenty-One Mile Creek

When online, the surface water from Twenty-One Mile Creek is the single largest source of RMOW's drinking water. The use of this source is limited by periods of high turbidity. Turbidity is continuously monitored, and the intake is suspended at an NTU of 1 and above.

Protection Program

Maintenance of the Source Water Protection Plan (SWPP) is a requirement of the Permit to Operate. The objective of the SWPP is to ensure that exposure to unacceptable concentrations of contaminants in the source water are minimized and to implement procedures and policies that will support the long-term sustainability of the surface water resource.

The SWPP was completed in September 2015 and contains recommendations for annual work programs. The work program is updated annually based on the results of the previous year's monitoring and the results of a watershed hike that takes place in approximately July each year.

The SWPP is available on RMOW's website.

Blackcomb Creek

The Blackcomb Creek source may not be used without consent of VCH and was not used 2017. The RMOW would only consider using this source in an emergency (e.g. wildfire) situation only, and would follow the Emergency Response and Contingency Plan (ERCP) to deploy it (Boil Water Order would be necessary).

Groundwater - Wells

Protection Program

Maintenance of the Groundwater Water Protection Plan (GPP) is a requirement of the Permit to Operate. Completed in 2008 the plan is comprised of several measures designed to facilitate enhanced protection of the quantity and quality of groundwater used for Whistler's drinking water.

The primary objectives are:

1. To ensure exposure to unhealthy concentrations of contaminants in the drinking water is minimized; and
2. To implement procedures and policies that support long-term sustainability of the groundwater resource.

Table A Groundwater Resource Protection Plan Framework

Groundwater Resource Protection	
Wellhead Protection Area Initiative	Identifies areas that have a higher potential risk of contamination and targets these areas for enhanced management and protection of the long term water quality and sustainability of the groundwater supply. These are visible on the RMOW Source Water Map in Appendix D
Groundwater Pollution Areas of Concern	Identifies the potential groundwater pollution risk factors, providing an assessment of the areas of concern.
Management Options	Promotes public awareness, formulates appropriate well decommission procedures, and addresses legislative considerations, provincial regulations, bylaws, municipal policies, and community plans.
Contingency and Spill Response Plans	Groundwater monitoring plan in place is maintained by geotechnical and hydrological consultants. Emergency situation response to pollutant/contaminant spill and aquifer contamination are also incorporated.
Water Quality Monitoring	Regular sampling, review, and reporting procedures are in place to ensure safe and clean groundwater supply.

Monitoring Program

The groundwater sources are monitored annually by geotechnical & hydrogeological consultants. The RMOW's Groundwater Resource Protection Plan requires annual analysis of groundwater from W212-1, W217, W218, W205-1, W205-2, W205-3, W211, and monitoring wells (MW) for potable water quality parameters and Potential Contaminants of Concern (PCOCs).

The 2016 report by Piteau Associates concludes that concentrations of potential contaminants in groundwater collected from monitoring wells and water supply wells at Function Junction are in compliance with Guidelines for Canadian Drinking Water Quality and standards for the protection of groundwater used for drinking water, and drinking water standards from the BC Contaminated Sites Regulation. Minor water quality concerns include low pH (<6.5) at both W212-1 and W217. These are non-anthropogenic in origin.

The 2017 report is presently under review (once completed this report will be revised to include that content).

4.0 TREATMENT & DISTRIBUTION SYSTEMS

4.1 Community System

Surface Water - Twenty-One Mile Creek

Treatment

Water drawn from the Twenty-One Mile Creek surface water source undergoes primary and secondary chlorine disinfection sourced from an on-site sodium hypochlorite generation system and UV treatment to ensure water disinfection. The water then receives residual chlorine treatment after the UVDI process.

Groundwater - Wells

Treatment

The wells are combined into single treatment points where feasible. The water then receives secondary chlorine disinfection via addition of sodium hypochlorite.

The following sections contain more details at each of the specified well sites.

Community Wells

Aquifer

The Village Wells W205-1, W205-2, W205-3 and W211 are located in the day skier parking lots off Blackcomb Way. “The wells are all screened in channels of fill sediments deposited by Fitzsimmons Creek". The capacity of the aquifer appears to be limited by the maximum rate of recharge from the creek. Water levels in this aquifer at TW04-2, which is an observation well screened within this aquifer, have been continuously recorded since June 2004 (Piteau, 2017).

Improvements

Pump #1 was overhauled at station P247 (Community Booster Pump and PRV).

Alpine Meadows Wells

Aquifer

Alpine Meadows is supplied by wells W202, W210 and W213 and is also integrated with the surface water supply for the Community System. Wells W202 and W210 have their screens placed in alluvial sediments deposited by Nineteen Mile Creek.

Improvements

The Alpine Reservoir Level Control (E108) project will result in better utilization of the gravity-fed 21 Mile Creek water supply, rather than pumping well water from Alpine Meadows wells. This project was substantially completed in 2017. Some minor deficiency and communications items are scheduled to be completed in 2018.

The scope of this project includes the necessary design, materials, installation and programming in order to automatically control the connection between the Alpine Meadows water system and the Whistler Village system with a series of new valves, altitude valve sensor and automated communications and control system.

Twenty-One Mile Creek Aquifer Wells

Aquifer

The Twenty-One Mile Creek Aquifer Well W218 is located on the Valley Trail in between Rainbow Park and Lorimer Road. This was constructed in 2007 and put into service in 2009. It is limited to a flow inferior to 75L/s. This well is supplemented by W219, located 50m west of W218, which draws from the same aquifer. This second well, constructed in 2013, is not in operation and was created as a redundancy and for possible emergency use.

Improvements

The existing Rainbow Park well is a critical high-volume supply source, with very good water quality, and an underlying large-capacity aquifer.

The improvement project (scheduled for completion in October 2018) seeks to:

- Add a second well to provide emergency supply in the event of a major water shortage;
- Upgrade electrical equipment in accordance with WorkSafe BC requirements.

Function Junction Well

Aquifer

Production well W212-1 is located in Function Junction and was drilled for Intrawest in 2000 as part of a program to supply additional water to Whistler South in support of their Spring Creek development. The well has subsequently been taken over by RMOW. It is screened in coarse gravel and coarse sand.

Cheakamus Crossing Well

Aquifer

Production well W217 was commissioned in 2008 to supply the Olympics Athlete's Village. This well supplies groundwater from the same aquifer as the Function Junction wells.

4.2 Emerald Estates System

Aquifer

The community of Emerald Estates is located on the west shores of Green Lake and is serviced by a local water distribution system supplied by three groundwater wells identified as W201-1, W201-2 and W201-3. While W201-1 and W201-2 service drinking water, W201-3 is run infrequently and serves only the purpose of testing. The wells are all screened in the fan of Rideau Brook. Due to the shallow depths and absence of confining

materials, groundwater resources at Emerald Estates are considered to be “vulnerable to contamination” which has led to system improvements, summarized in this section.

Improvements

Chlorination Plan

In 2014 VCHA recommended maintaining a minimum free chlorine residual of 0.4 mg/l. This level has been maintained since 2014 and is being tested for levels three times a week. These levels have been consistent since implementing this plan and no detectable contamination has been noted.

Emerald UV Treatment Facility

To address any potential vulnerability to contamination, a water treatment facility is presently under construction to perform treatment on groundwater from W201-1, W201-2 and W201-3 using ultra-violet light in addition to chlorine disinfection. This facility is being commissioned June 2018.

4.3 System Maintenance and Upgrades

The Resort Municipality of Whistler maintains and continues to improve its water distribution system to provide the best service possible. The following were some of the key successes from 2017:

Maintenance – Hydrants

Each year the RMOW contracts a service provider to inspect and maintain the fire hydrants.

Maintenance – Reservoirs

Each year the RMOW contracts a service provider for reservoir inspections.

Program – Reservoir Chlorine Decay Rate

Due to a combination of the fire storage requirement, and low turn-over rates in the Stonebridge, Sunridge, and Taluswood reservoirs, sometimes the chlorine residual values are lower than the target for the serviced distribution system. The RMOW is continuing to explore methods to address the chlorine decay rate in these reservoirs.

Upgrade - Utilities SCADA

It was identified in 2015 that the Utilities SCADA HMI software system required a significant upgrade to bridge software versions. As this upgrade occurred, other issues, mostly related to the volume of data being sent across the radio network surfaced. This project was substantially completed in 2017. Some minor deficiency items are scheduled to be completed in 2018.

Upgrade - Cheakamus Way

During the paving project it was determined there was aged infrastructure in poor condition and leaking an issue with the piping system along Cheakamus Way. The RMOW authorized for this section of infrastructure to be replaced.

Upgrade - Northlands Blvd

A major water main break occurred that required repair.

5.0 STANDARDS & TESTING RESULTS

The Community and Emerald Estates are operated under separate Permits to Operate. These permits include conditions that must be met in order to maintain these permits including sampling parameters and frequency which is what this section focuses on.

A copy of the permits are included in Appendix C – Permits to Operate.

5.1 Sampling Program – Sources (Raw)

Table B RMOW Water Source Sampling Program

Sample Period	Testing Parameter
Two Weeks	pH, Temperature, Turbidity, E. Coli, Total Coliforms
Quarterly	Total Organic Carbon (TOC), Heterotrophic Plate Count (HPC), Polycyclic Aromatic Hydrocarbons (PAH), Iron and Manganese
Annually	Water Chemistry

5.2 Sampling Program – Distribution System (Treated)

The DWPR states that the water supplier (RMOW) must monitor its drinking water source and system at a frequency established by the regulations laid out in its operating permit. The RMOW is required to sample its distribution system 25 times per month for the Community Water System and 4 times per month for the Emerald Estates Water System. The RMOW has established a water quality sampling and testing program that samples the potable water supply quality at 35 locations throughout the municipality.

Table C RMOW Water Distribution Sampling Program

Sample Period	Testing Parameter
Two Weeks	pH, Temperature, Turbidity, Free CL2 (Residual Chlorine), E. Coli, Total Coliforms
Quarterly	Total Organic Carbon (TOC), Heterotrophic Plate Count (HPC), Trihalomethane (THM), Polycyclic Aromatic Hydrocarbons (PAH), Iron and Manganese
Annually	Water Chemistry

5.3 Bacteriological Sampling

The RMOW must complete a minimum bacteriological sampling frequency of 25 per month in the Community Water System distribution system and a frequency of 4 per month in the Emerald Estates Water System distribution system.

The sampling intervals and standards for bacteriological testing are as follows:

Drinking Water Protection Act

DRINKING WATER PROTECTION REGULATION

[includes amendments up to B.C. Reg. 352/2005, December 9, 2005]

Parameter:	Standard:
Fecal coliform bacteria	No detectable fecal coliform bacteria per 100 ml
Escherichia coli	No detectable *Escherichia coli* per 100 ml
Total coliform bacteria	
(a) 1 sample in a 30 day period	No detectable total coliform bacteria per 100 ml
(b) more than 1 sample in a 30 day period	At least 90% of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml

Table D summarizes the bacteriological testing results for 2017.

Table D Summary of bacteriological testing results for 2017

				E. coli (MPN/100ml)			Total Coliform (MPN/100ml)		
Water Sample Location	**Raw or Treated**	**Water System**	**# Samples**	**Min**	**Max**	**Avg**	**Min2**	**Max3**	**Avg4**
W201-1	Raw	Emerald	10	<1	<1	n/a	<1	<1	n/a
W201-2	Raw	Emerald	7	<1	1	1	<1	1	1
W201-3	Raw	Emerald	11	<1	<1	n/a	<1	1	n/a
9225 Lakeshore Drive - S131 - SS#403	Treated	Emerald	24	<1	<1	n/a	<1	<1	n/a
9525 Emerald Drive - R238 - SS#406	Treated	Emerald	23	<1	<1	n/a	<1	<1	n/a
19 Mile Ck Aquifer; Well No. W202 SS#418	Raw	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
19 Mile Ck Aquifer; Well No. W210 SS#419	Raw	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
19 Mile Ck Aquifer; Well No. W213 SS#420	Raw	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
21 Mile Creek; R-231 SS#436	Raw	Whistler Main	24	<1	3.1	1.6	5.2	210.5	1.6
Alta Lake Aquifer, Well No. W218	Raw	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Athlete's Village Aquifer, W217	Raw	Whistler Main	14	<1	<1	n/a	<1	<1	n/a
Blackcomb Creek, R-232/ SS#439	Raw	Whistler Main	23	<1	31.3	2.2	13.2	686.7	36.7
Fitzsimmons Creek Aquifer, W205-1 SS#444	Raw	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Fitzsimmons Creek Aquifer, W205-2 SS#445	Raw	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Fitzsimmons Creek Aquifer, W205-3 SS#446	Raw	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Fitzsimmons Creek Aquifer, W211 SS#447	Raw	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Function Junction Aquifer W212 SS#483	Raw	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Alpine Meadows 8319 Mountainview Dr.- P245 - SS#412 (22-9-LD, 58B8)	Treated	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Alpine Meadows 8330 Rainbow Dr. - S101 - SS#421	Treated	Whistler Main	25	<1	<1	n/a	<1	<1	n/a
Alta Vista 3333 Carleton Way - S104 - SS#459	Treated	Whistler Main	25	<1	<1	n/a	<1	<1	n/a
Athlete's Village 1300 Mount Fee Rd.	Treated	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Blackcomb Benchlands 4700 Glacier Dr. - P256 - SS#441	Treated	Whistler Main	25	<1	<1	n/a	<1	<1	n/a
Millar's Pond 2773 Cheakamus Way S121 SS#477	Treated	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Nicklaus North 8407 Golden Bear Pl. P266/S123 SS#424	Treated	Whistler Main	26	<1	<1	n/a	<1	<1	n/a
Spring Creek 1559 Spring Creek Road. P273/S132 SS#480	Treated	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Spruce Grove 7314 Blackcomb Way P267/S126 SS#427	Treated	Whistler Main	25	<1	<1	n/a	<1	<1	n/a
Stonebridge 5483 Stonebridge Dr. P275	Treated	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Sunridge Plateau 3840 Sunridge Drive P265 SS#456	Treated	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Twin Lake / Tamarisk 1300 Block Alta Lake Rd. SS#482	Treated	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Upper Taluswood 2400 Tauswood Pl. P270 SS#465	Treated	Whistler Main	24	<1	<1	n/a	<1	<1	n/a
Whistler Cay Heights 6295 Palmer Dr. Snowflake Prk SS#430	Treated	Whistler Main	26	<1	<1	n/a	<1	<1	n/a
Whistler Creek 2149 Lake Placid Rd - S106 - SS#471 (14-2-MD, 58F9)	Treated	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Whistler Village 4297 Mountain Square - Mountain Ln - SS#453 (16-3-MD, 58ED)	Treated	Whistler Main	23	<1	<1	n/a	<1	<1	n/a
Whistler Village 4335 Main Street - Main St. - SS#450 (16-2-MD, 58EC)	Treated	Whistler Main	22	<1	<1	n/a	<1	<1	n/a
Function Junction S107 - 1092 Millar Creek Road	Treated	Whistler Main	18	<1	<1	n/a	<1	<1	n/a
Function Junction Home Plaza	Treated	Whistler Main	7	<1	<1	n/a	<1	<1	n/a
Function Junction Delish	Treated	Whistler Main	26	<1	<1	n/a	<1	<1	n/a
Rainbow 8925 Hwy. 99 - S137	Treated	Whistler Main	23	<1	<1	n/a	<1	<1	n/a

5.4 Physical and Chemical Parameters

Water is tested for a wide range of physical and chemical parameters to ensure that the potable water delivered meets the *Guidelines for Canadian Drinking Water Quality (GCDWQ)*.

In the RMOW systems, sampling for these parameters occurs annually at each of the sampling stations in the distribution system and at the sources. The results of the laboratory reports for 2017 are included in Appendix A – Water Consumption and Sampling.

5.5 Corrosivity Factor

Please refer to the RMOW Council Report "Drinking Water Guidelines Update" May 8, 2018.

6.0 OTHER CONDITIONS OF PERMIT TO OPERATE

6.1 Cross-Connection Control Plan

For the Community System

- The Cross-Connection Control Program is an ongoing project and the RMOW continues to work with community stakeholders to install necessary back-flow prevention devices and comply with necessary premise isolation requirements.

For the Emerald System

- The RMOW continues to work with community stakeholders to install necessary back-flow prevention devices and comply with necessary premise isolation requirements.

6.2 Uni-Directional Flushing Program

This annual flushing program begins in May each year generally completing by the end of September. In 2017, unidirectional flushing was performed on the available water lines in 10 areas/neighbourhoods. These areas were flushed in sections and can be identified as the following: Function Junction, Westside (along Alta Lake Road), Stonebridge North, Nicklaus North, Montebello, Rainbow, Alpine Meadows North and South, Emerald and Cheakamus Crossing, Several pipe lines are not flushed since they achieve the minimum flushing velocity required several times throughout the year and therefore are considered self-cleaning. There are also a few small sections of pipe that do not have the necessary connections/equipment required to be flushed.

7.0 SIGNIFICANT EVENTS & PUBLIC NOTIFICATION

7.1 Drinking Water Advisory/Boil Water Advisory

No Drinking Water Advisory/Boil Water Advisories were required in 2017.

8.0 OPERATOR QUALIFICATIONS AND TRAINING

According to the Drinking Water Protection Regulation, under the *Drinking Water Protection Act*, staff working within the water system must have a minimum level of certification under the Environmental Operators Certification Program (EOCP). This ensures that the RMOW's staff are adequately trained to operate, maintain and repair the water supply and distribution systems in order to maintain the safety and quality of drinking water.

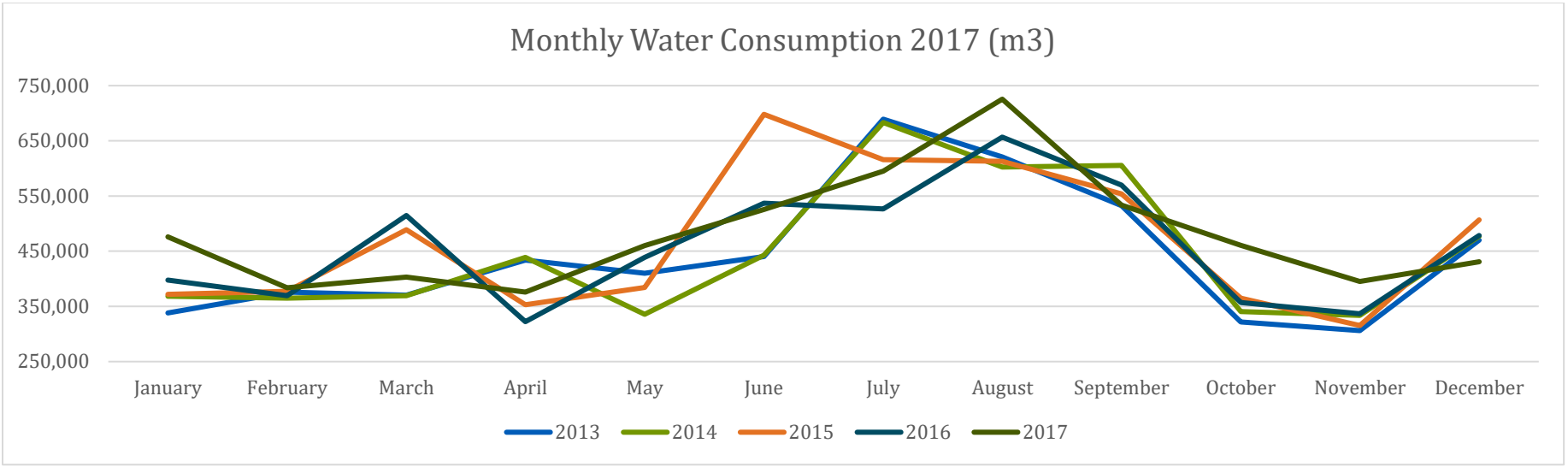
Table 2 Operations Staff EOCP Certifications 2017.

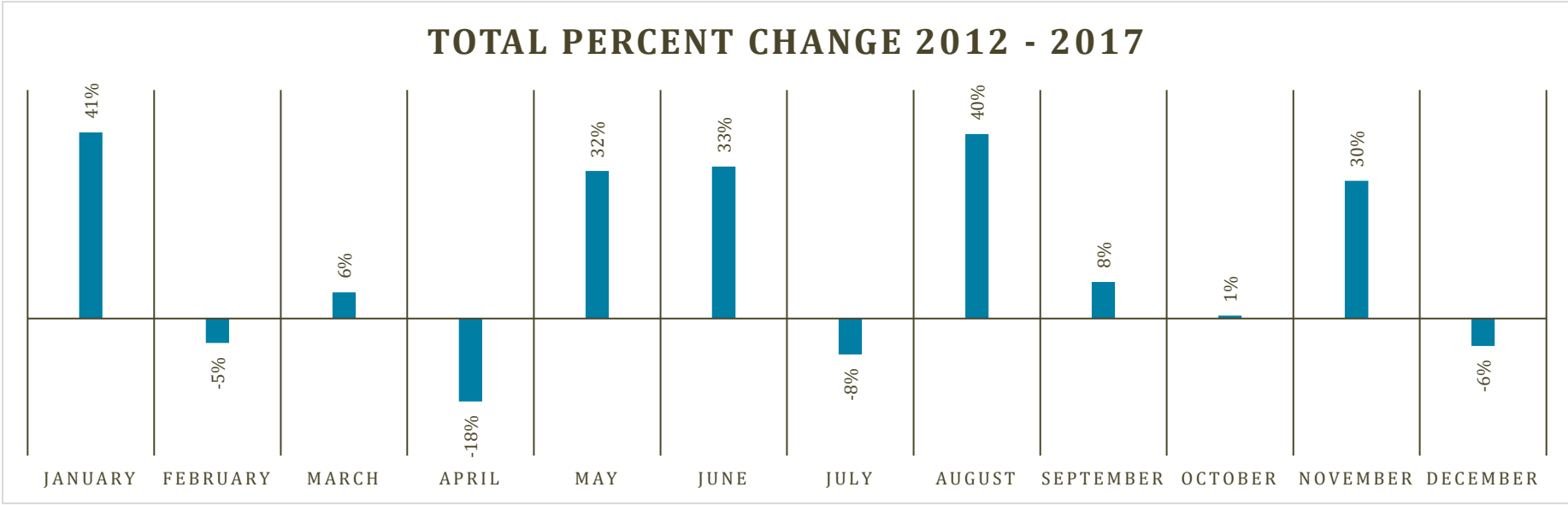
Certification	Number of Employees Certified
WD - IV	3
WD - III	2
WD - II	4
WD - I	1
WWC – III	3
WWC - II	5
WWC - I	1
None	8

APPENDIX A –CONSUMPTION AND SAMPLING DATA

Monthly Consumption Summary 2017

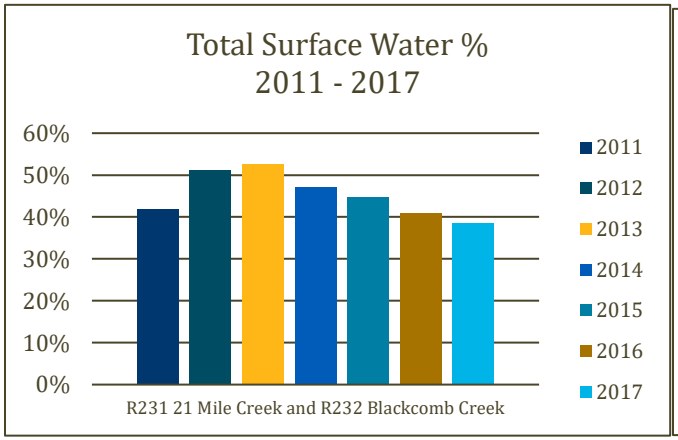
Monthly Water Consumption Percent Change 2017													
	2017	**% Change**	**2016**	**% Change**	**2015**	**% Change**	**2014**	**% Change**	**2013**	**% Change**	**2012**	**% Change**	**Total Percent Change**
January	476,162	20%	397,727	7%	371,817	1%	368,414	9%	338,324	0%	338,324	-4%	**41%**
February	383,768	4%	369,240	-2%	377,507	4%	364,722	-3%	376,055	-7%	405,506	-22%	**-5%**
March	402,972	-22%	514,847	5%	488,889	32%	369,247	0%	370,200	-3%	381,065	-12%	**6%**
April	375,896	17%	322,290	-9%	353,026	-20%	438,730	1%	433,944	-6%	459,341	21%	**-18%**
May	459,921	5%	438,857	14%	384,361	14%	335,721	-18%	410,157	18%	347,627	-12%	**32%**
June	525,346	-2%	536,885	-23%	697,981	58%	442,836	1%	440,513	12%	394,211	-17%	**33%**
July	594,848	13%	526,483	-14%	615,593	-10%	683,140	-1%	689,232	7%	645,777	37%	**-8%**
August	725,523	10%	656,726	7%	612,770	2%	602,495	-3%	620,990	20%	516,917	-27%	**40%**
September	533,616	-6%	569,839	3%	553,712	-9%	605,319	14%	532,394	8%	494,041	13%	**8%**
October	460,420	29%	356,780	-2%	365,046	7%	340,677	6%	321,850	-30%	457,579	25%	**1%**
November	395,108	17%	336,448	7%	315,323	-5%	333,660	9%	306,120	1%	303,577	-1%	**30%**
December	430,903	-10%	478,613	-6%	506,709	6%	476,836	1%	470,288	3%	458,429	9%	**-6%**
Total Water Consumption (m^3)	**5,764,483**	**5%**	**5,504,736**	**-2%**	**5,642,734**	**5%**	**5,361,797**	**1%**	**5,310,067**	**2%**	**5,202,394**	**-1%**	**11%**

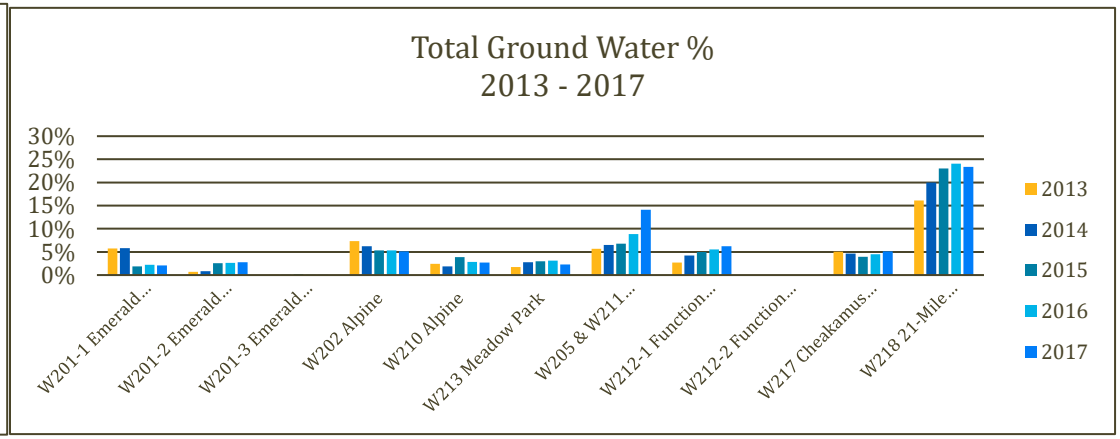

Monthly Water Consumption 2017 (m3)
750,000
650,000
550,000
450,000
350,000
250,000
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015
2016
2017


TOTAL PERCENT CHANGE 2012 - 2017
41%
-5%
6%
-18%
32%
33%
-8%
40%
8%
1%
30%
-6%
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

Source Water Summary 2017

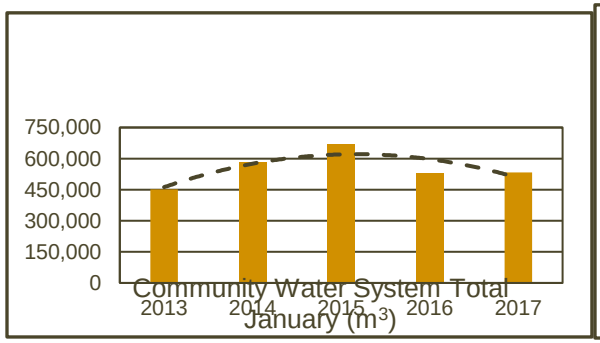
Source Water Sites	2017		2016		2015		2014		2013	
	m^3	%	m^3	%	m^3	%	m^3	%	m^3	%
R231 21 Mile Creek	2,241,453	38%	2,303,292	41%	2,520,437	45%	2,522,414	47%	2,794,284	53%
R232 Blackcomb Creek	-	-	-	-	-	-	-	-	-	-
Total Surface Water	2,241,453	38%	2,303,292	41%	2,520,437	45%	2,522,414	47%	2,794,284	53%
W201-1 Emerald Estates	118,471	2%	124,349	2%	105,350	2%	311,469	6%	304,014	6%
W201-2 Emerald Estates	156,417	3%	148,678	3%	142,423	3%	45,724	1%	35,562	1%
W201-3 Emerald Estates * RUNS TO WASTE	1,129	0%	1,964	0%	11,354	0%	3,552	0%	1,608	0%
W202 Alpine	288,532	5%	301,268	5%	298,432	5%	335,077	6%	387,681	7%
W210 Alpine	153,501	3%	158,422	3%	220,204	4%	99,707	2%	127,192	2%
W213 Meadow Park	127,437	2%	175,818	3%	168,999	3%	149,543	3%	90,657	2%
W205 & W211 Community Wells (P247 Pump Station)	792,672	14%	497,866	9%	380,922	7%	349,257	7%	300,409	6%
W212-1 Function Junction	351,841	6%	312,097	6%	279,604	5%	225,673	4%	143,678	3%
W212-2 Function Junction	0	0%	0	0%	0	0%	0	0%	0	0%
W217 Cheakamus Crossing	290,282	5%	252,352	4%	220,290	4%	247,466	5%	268,295	5%
W218 21-Mile Well #1	1,316,459	23%	1,354,525	24%	1,294,719	23%	1,071,915	20%	856,687	16%
W219 21-Mile Well #2	0	-	-	-	-	-	-	-	-	-
Total Ground Water	3,595,612	62%	3,325,375	59%	3,110,943	55%	2,835,831	53%	2,514,175	47%
Total Water	5,764,483	100%	5,628,667	100%	5,631,380	100%	5,358,245	100%	5,308,459	100%

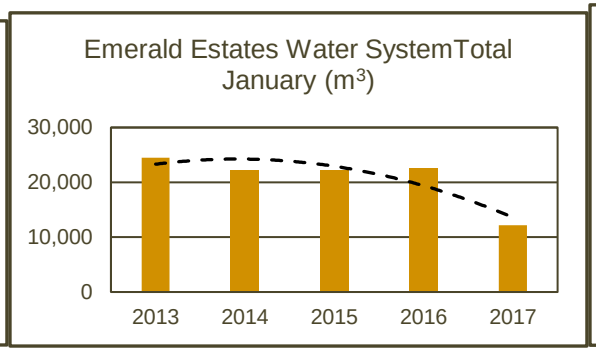


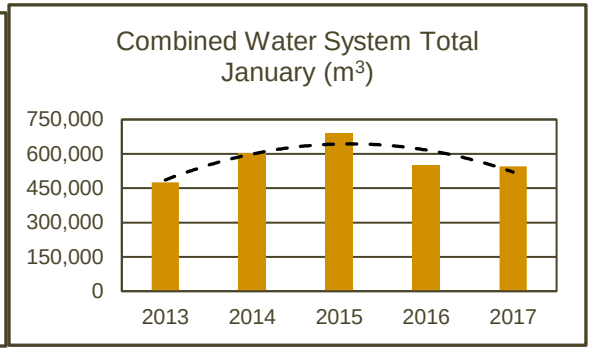


Monthly Water Consumption Reports January to December 2017

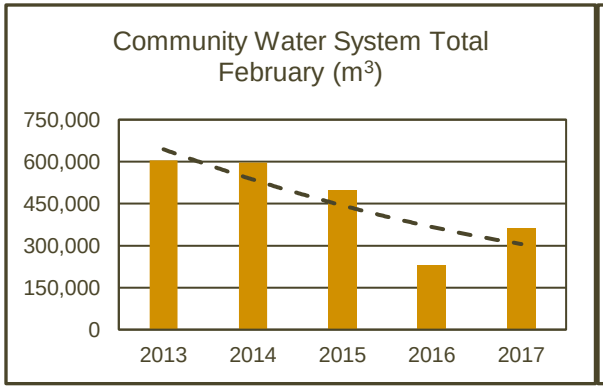
Resort Municipality of Whistler	January 2017 Water Consumption Report									
	Jan-17	YTD	Jan-16	YTD	Jan-15	YTD	Jan-14	YTD	Jan-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	267,945	267,945	249,376	249,376	185,831	185,831	254,791	254,791	218,471	218,471
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	34,512	34,512	22,181	22,181	24,977	24,977	52	52	8,388	8,388
W210 Alpine	7,795	7,795	13,015	13,015	9,478	9,478	20,315	20,315	17,021	17,021
W213 Meadow Park	6,201	6,201	15,483	15,483	7,645	7,645	15,674	15,674	14,446	14,446
W205 & W211 Community Wells (P247 Pump Station)	29,700	29,700	12,125	12,125	22,100	22,100	4,951	4,951	6,377	6,377
W212-1 Function Junction	18,306	18,306	0	0	19,169	19,169	3,804	3,804	2,895	2,895
W212-2 Function Junction	0	0	9,099	9,099	0	0	0	0	0	0
W217 Cheakamus Crossing	19,560	19,560	0	0	17,208	17,208	18,900	18,900	17,683	17,683
W218 Rainbow Well	67,681	67,681	9,667	9,667	58,101	58,101	27,483	27,483	29,630	29,630
Surface Water Total (m^3)	267,945	267,945	249,376	249,376	254,791	254,791	218,471	218,471	218,471	218,471
Ground Water Total (m^3)	183,755	183,755	330,946	330,946	413,469	413,469	309,650	309,650	314,911	314,911
Community Water System Total (m^3)	451,700	451,700	580,322	580,322	668,260	668,260	528,121	528,121	533,382	533,382
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	10,573	10,573	9,463	9,463	9,463	9,463	22,399	22,399	3,737	3,737
W201-2 Emerald Estates	13,822	13,822	12,551	12,551	12,551	12,551	18	18	71	71
W201-3 Emerald Estates * RUNS TO WASTE	67	67	167	167	167	167	27	27	8,388	8,388
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	24,462	24,462	22,181	22,181	22,181	22,181	22,444	22,444	12,196	12,196
Emerald Estates Water System Total (m^3)	24,462	24,462	22,181	22,181	22,181	22,181	22,444	22,444	12,196	12,196
Surface Water Total (m^3)	267,945	267,945	249,376	249,376	254,791	254,791	218,471	218,471	218,471	218,471
Ground Water Total (m^3)	208,217	208,217	353,127	353,127	435,650	435,650	332,094	332,094	327,107	327,107
Total Water (m^3)	476,162	476,162	602,503	602,503	690,441	690,441	550,565	550,565	545,578	545,578

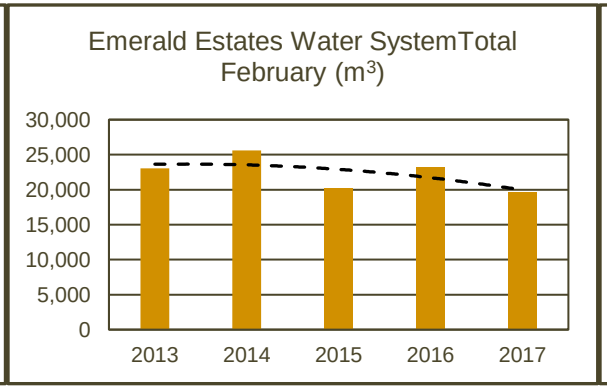


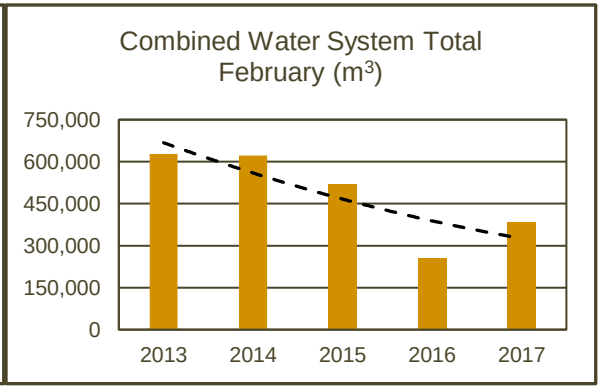




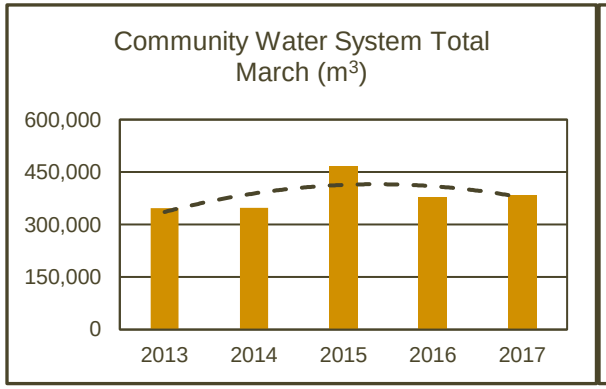
Resort Municipality of Whistler	February 2017 Water Consumption Report									
	Feb-17	YTD	Feb-16	YTD	Feb-15	YTD	Feb-14	YTD	Feb-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	180,922	448,867	99,629	349,005	142,720	397,511	257,377	475,848	251,446	469,917
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	22,600	57,112	23,224	45,405	14,538	14,590	9,035	17,423	18,203	26,591
W210 Alpine	10,307	18,102	0	13,015	12,927	33,242	18,275	35,296	14,300	31,321
W213 Meadow Park	7,927	14,128	25,472	40,955	10,716	26,390	14,638	29,084	9,930	24,376
W205 & W211 Community Wells (P247 Pump Station)	31,261	60,961	17,500	29,625	31,160	36,111	2,651	9,028	3,516	9,893
W212-1 Function Junction	16,027	34,333	0	0	33,721	37,525	1,661	4,556	1,378	4,273
W212-2 Function Junction	0	9,099	48,059	57,158	0	0	0	0	0	0
W217 Cheakamus Crossing	17,592	37,152	0	0	17,218	36,118	19,710	37,393	17,765	35,448
W218 Rainbow Well	77,501	145,182	17,117	26,784	94,296	121,779	15,767	45,397	36,482	66,112
Surface Water Total (m^3)	180,922	448,867	99,629	349,005	142,720	397,511	257,377	475,848	251,446	469,917
Ground Water Total (m^3)	183,215	644,014	131,372	462,318	357,296	770,765	339,114	648,764	353,020	667,931
Community Water System Total (m^3)	364,137	1,092,881	231,001	811,323	500,016	1,168,276	596,491	1,124,612	604,466	1,137,848
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	8,430	19,003	13,324	22,787	8,475	17,938	25,383	47,782	22,823	26,560
W201-2 Emerald Estates	11,127	24,949	9,730	22,281	11,046	23,597	50	68	79	150
W201-3 Emerald Estates * RUNS TO WASTE	74	141	170	337	690	857	175	202	133	8,521
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	19,631	44,093	23,224	45,405	20,211	42,392	25,608	48,052	23,035	35,231
Emerald Estates Water System Total (m^3)	19,631	44,093	23,224	45,405	20,211	42,392	25,608	48,052	23,035	35,231
Surface Water Total (m^3)	180,922	448,867	99,629	349,005	142,720	397,511	257,377	475,848	251,446	469,917
Ground Water Total (m^3)	202,846	688,107	154,596	507,723	377,507	813,157	364,722	696,816	376,055	703,162
Total Water (m^3)	383,768	1,136,974	254,225	856,728	520,227	1,210,668	622,099	1,172,664	627,501	1,173,079

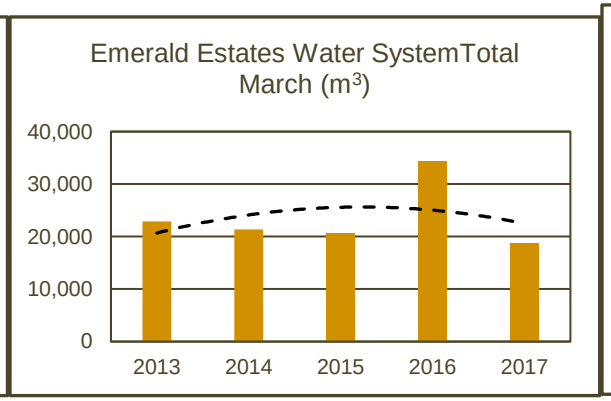


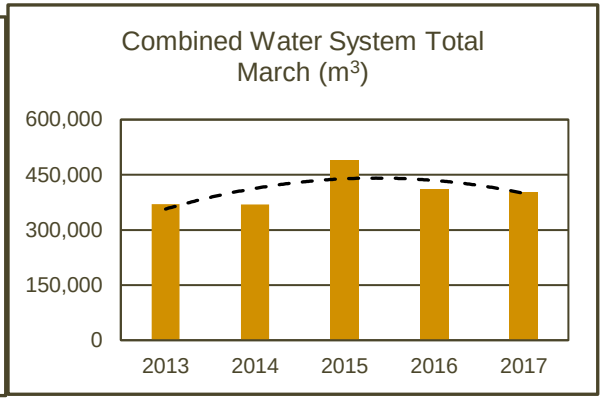




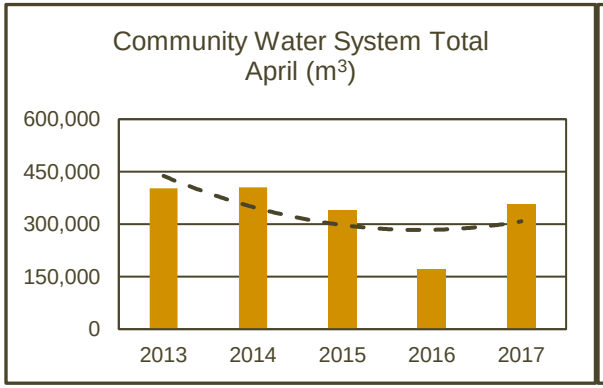
Resort Municipality of Whistler	March 2017 Water Consumption Report									
	Mar-17	YTD	Mar-16	YTD	Mar-15	YTD	Mar-14	YTD	Mar-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	158,616	607,483	255,388	604,394	234,712	632,223	246,784	722,632	208,007	677,924
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	26,482	83,594	34,299	79,704	232	14,822	24,890	42,313	40,062	66,653
W210 Alpine	6,792	24,894	6,642	19,657	25,733	58,975	9,359	44,655	456	31,777
W213 Meadow Park	5,538	19,666	25,049	66,004	20,501	46,891	6,818	35,902	0	24,376
W205 & W211 Community Wells (P247 Pump Station)	43,383	104,344	20,849	50,474	36,180	72,291	9,244	18,272	16,201	26,094
W212-1 Function Junction	29,814	64,147	0	0	23,911	61,436	4,728	9,284	13,508	17,781
W212-2 Function Junction	0	9,099	8,814	65,972	0	0	0	0	0	0
W217 Cheakamus Crossing	16,989	54,141	0	0	15,908	52,026	17,771	55,164	16,509	51,957
W218 Rainbow Well	96,678	241,860	26,466	53,250	111,007	232,786	28,277	73,674	52,593	118,705
Surface Water Total (m^3)	158,616	607,483	255,388	604,394	234,712	632,223	246,784	722,632	208,007	677,924
Ground Water Total (m^3)	225,676	869,690	122,119	584,437	233,472	1,004,237	101,087	749,851	139,329	807,260
Community Water System Total (m^3)	384,292	1,477,173	377,507	1,188,831	468,184	1,636,460	347,871	1,472,483	347,336	1,485,184
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	8,014	27,017	18,035	40,822	8,205	26,143	21,334	69,116	22,611	49,171
W201-2 Emerald Estates	10,502	35,451	16,125	38,406	10,843	34,440	17	85	78	228
W201-3 Emerald Estates * RUNS TO WASTE	164	305	139	476	1,657	2,514	25	227	175	8,696
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	18,680	62,773	34,299	79,704	20,705	63,097	21,376	69,428	22,864	58,095
Emerald Estates Water System Total (m^3)	18,680	62,773	34,299	79,704	20,705	63,097	21,376	69,428	22,864	58,095
Surface Water Total (m^3)	158,616	607,483	255,388	604,394	234,712	632,223	246,784	722,632	208,007	677,924
Ground Water Total (m^3)	244,356	932,463	156,418	664,141	254,177	1,067,334	122,463	819,279	162,193	865,355
Total Water (m^3)	402,972	1,539,946	411,806	1,268,535	488,889	1,699,557	369,247	1,541,911	370,200	1,543,279

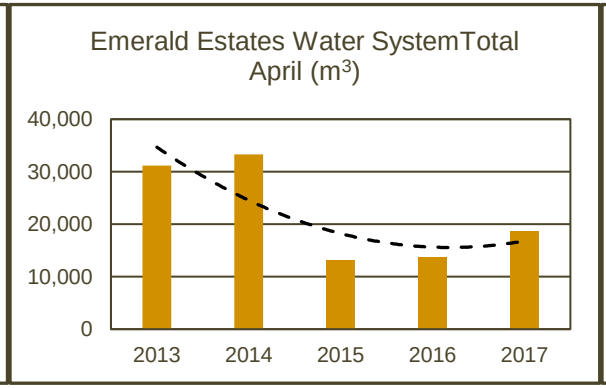


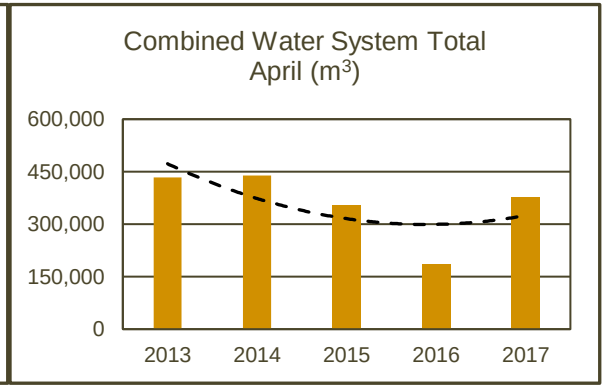




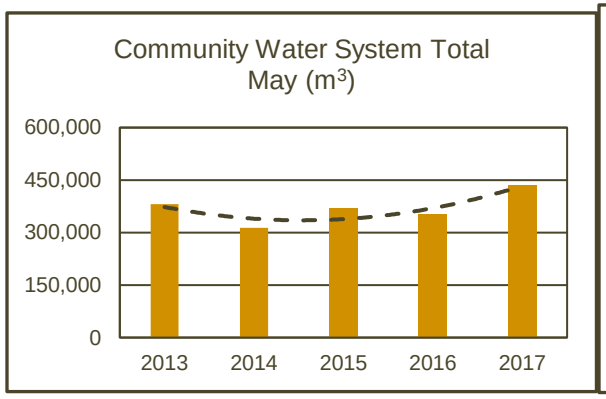
Resort Municipality of Whistler	April 2017 Water Consumption Report									
	Apr-17	YTD	Apr-16	YTD	Apr-15	YTD	Apr-14	YTD	Apr-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	0	607,483	48,712	653,106	231,423	863,646	101,575	824,207	211,072	888,996
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	20,013	103,607	13,774	93,478	2,384	17,206	26,467	68,780	48,927	115,580
W210 Alpine	9,913	34,807	24,596	44,253	16,198	75,173	10,137	54,792	2,292	34,069
W213 Meadow Park	7,073	26,739	0	66,004	15,792	62,683	7,879	43,781	0	24,376
W205 & W211 Community Wells (P247 Pump Station)	64,980	169,324	14,392	64,866	7,391	79,682	42,686	60,958	27,904	53,998
W212-1 Function Junction	65,087	129,234	0	0	23,002	84,438	54,627	63,911	22,122	39,903
W212-2 Function Junction	0	9,099	52,129	118,101	0	0	0	0	0	0
W217 Cheakamus Crossing	17,296	71,437	0	0	14,444	66,470	22,063	77,227	18,758	70,715
W218 Rainbow Well	172,942	414,802	17,294	70,544	29,343	262,129	139,991	213,665	71,715	190,420
Surface Water Total (m^3)	0	607,483	48,712	653,106	231,423	863,646	101,575	824,207	211,072	888,996
Ground Water Total (m^3)	357,304	1,226,994	122,185	706,622	108,554	1,112,791	303,850	1,053,701	191,718	998,978
Community Water System Total (m^3)	357,304	1,834,477	170,897	1,359,728	339,977	1,976,437	405,425	1,877,908	402,790	1,887,974
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	7,924	34,941	5,934	46,756	5,471	31,614	33,146	102,262	30,153	79,324
W201-2 Emerald Estates	10,475	45,926	7,675	46,081	7,114	41,554	43	128	776	1,004
W201-3 Emerald Estates * RUNS TO WASTE	193	498	165	641	464	2,978	116	343	225	8,921
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	18,592	81,365	13,774	93,478	13,049	76,146	33,305	102,733	31,154	89,249
Emerald Estates Water System Total (m^3)	18,592	81,365	13,774	93,478	13,049	76,146	33,305	102,733	31,154	89,249
Surface Water Total (m^3)	0	607,483	48,712	653,106	231,423	863,646	101,575	824,207	211,072	888,996
Ground Water Total (m^3)	375,896	1,308,359	135,959	800,100	121,603	1,188,937	337,155	1,156,434	222,872	1,088,227
Total Water (m^3)	375,896	1,915,842	184,671	1,453,206	353,026	2,052,583	438,730	1,980,641	433,944	1,977,223

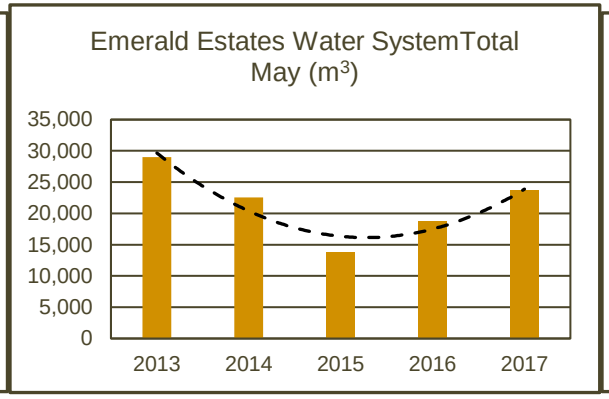


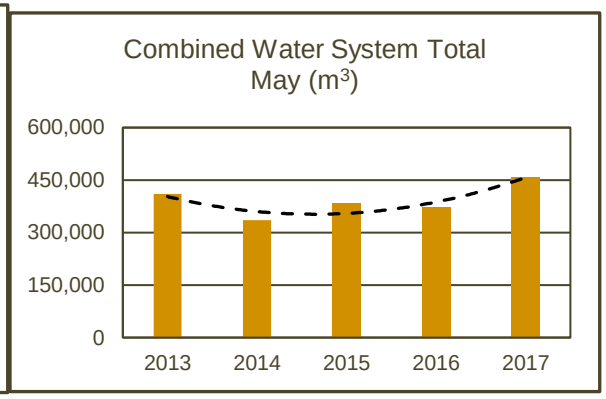




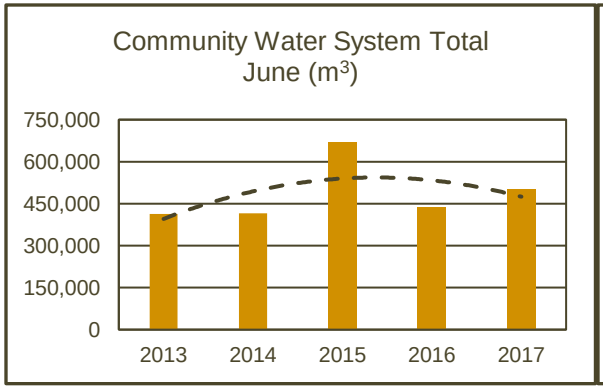
Resort Municipality of Whistler	May 2017 Water Consumption Report									
	May-17	YTD	May-16	YTD	May-15	YTD	May-14	YTD	May-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	22,129	629,612	239,614	892,720	253,562	1,117,208	66,011	890,218	141,534	1,030,530
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	15,853	119,460	18,767	112,245	24,850	42,056	34,493	103,273	47,788	163,368
W210 Alpine	11,944	46,751	34,821	79,074	12,052	87,225	2,215	57,007	3,889	37,958
W213 Meadow Park	9,631	36,370	0	66,004	9,390	72,073	1,533	45,314	0	24,376
W205 & W211 Community Wells (P247 Pump Station)	109,240	278,564	17,627	82,493	8,290	87,972	27,484	88,442	36,925	90,923
W212-1 Function Junction	38,284	167,518	0	0	7,771	92,209	39,702	103,613	36,511	76,414
W212-2 Function Junction	0	9,099	20,160	138,261	0	0	0	0	0	0
W217 Cheakamus Crossing	63,866	135,303	0	0	17,237	83,707	16,707	93,934	18,832	89,547
W218 Rainbow Well	165,301	580,103	22,549	93,093	37,452	299,581	125,020	338,685	95,682	286,102
Surface Water Total (m^3)	22,129	629,612	239,614	892,720	253,562	1,117,208	66,011	890,218	141,534	1,030,530
Ground Water Total (m^3)	414,119	1,641,113	113,924	820,546	117,042	1,229,833	247,154	1,300,855	239,627	1,238,605
Community Water System Total (m^3)	436,248	2,270,725	353,538	1,713,266	370,604	2,347,041	313,165	2,191,073	381,161	2,269,135
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	10,164	45,105	8,059	54,815	4,923	36,537	22,412	124,674	28,659	107,983
W201-2 Emerald Estates	13,242	59,168	10,565	56,646	8,411	49,965	30	158	106	1,110
W201-3 Emerald Estates * RUNS TO WASTE	267	765	143	784	423	3,401	114	457	231	9,152
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	23,673	105,038	18,767	112,245	13,757	89,903	22,556	125,289	28,996	118,245
Emerald Estates Water System Total (m^3)	23,673	105,038	18,767	112,245	13,757	89,903	22,556	125,289	28,996	118,245
Surface Water Total (m^3)	22,129	629,612	239,614	892,720	253,562	1,117,208	66,011	890,218	141,534	1,030,530
Ground Water Total (m^3)	437,792	1,746,151	132,691	932,791	130,799	1,319,736	269,710	1,426,144	268,623	1,356,850
Total Water (m^3)	459,921	2,375,763	372,305	1,825,511	384,361	2,436,944	335,721	2,316,362	410,157	2,387,380

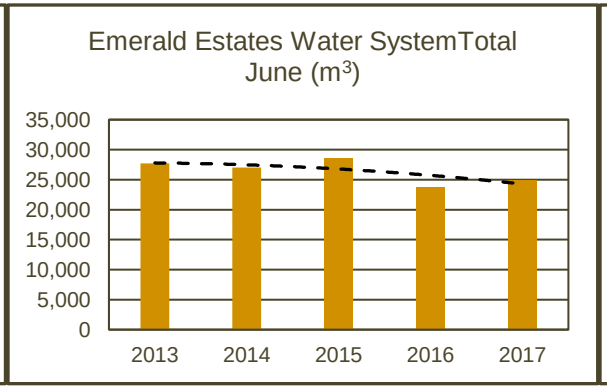


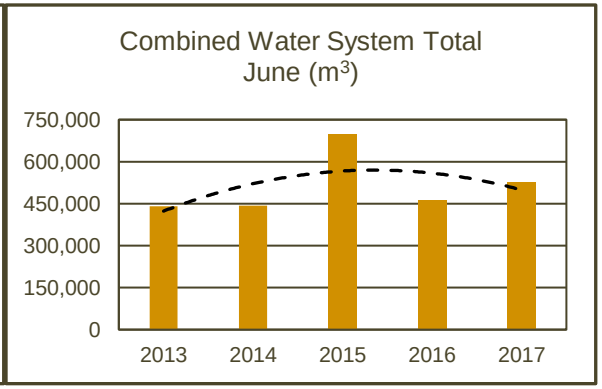




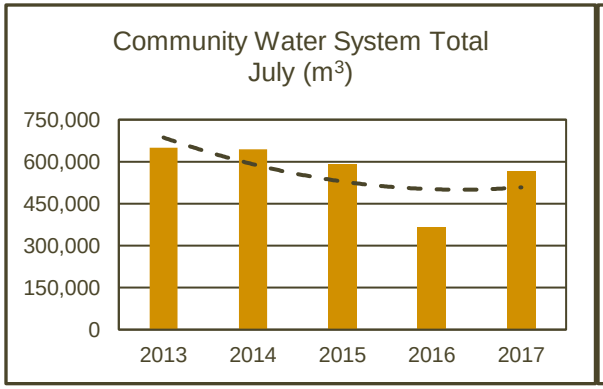
Resort Municipality of Whistler	June 2017 Water Consumption Report									
	Jun-17	YTD	Jun-16	YTD	Jun-15	YTD	Jun-14	YTD	Jun-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	207,764	837,376	302,396	1,195,116	337,006	1,454,214	218,112	1,108,330	259,134	1,289,664
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	27,752	147,212	23,705	135,950	38,842	80,898	40,777	144,050	48,923	212,291
W210 Alpine	12,161	58,912	42,176	121,250	24,136	111,361	1,941	58,948	3,233	41,191
W213 Meadow Park	9,598	45,968	1,057	67,061	21,043	93,116	8,440	53,754	373	24,749
W205 & W211 Community Wells (P247 Pump Station)	82,210	360,774	18,241	100,734	44,250	132,222	26,381	114,823	13,369	104,292
W212-1 Function Junction	44,894	212,412	0	0	10,599	102,808	9,924	113,537	8,815	85,229
W212-2 Function Junction	0	9,099	22,530	160,791	0	0	0	0	0	0
W217 Cheakamus Crossing	22,766	158,069	0	0	28,670	112,377	23,353	117,287	22,201	111,748
W218 Rainbow Well	93,228	673,331	28,274	121,367	164,813	464,394	86,889	425,574	56,758	342,860
Surface Water Total (m^3)	207,764	837,376	302,396	1,195,116	337,006	1,454,214	218,112	1,108,330	259,134	1,289,664
Ground Water Total (m^3)	292,609	1,933,722	135,983	956,529	332,353	1,562,186	197,705	1,498,560	153,672	1,392,277
Community Water System Total (m^3)	500,373	2,771,098	438,379	2,151,645	669,359	3,016,400	415,817	2,606,890	412,806	2,681,941
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	10,804	55,909	10,137	64,952	11,583	48,120	26,810	151,484	27,707	135,690
W201-2 Emerald Estates	14,089	73,257	13,327	69,973	15,386	65,351	137	295	0	1,110
W201-3 Emerald Estates * RUNS TO WASTE	80	845	241	1,025	1,653	5,054	72	529	0	9,152
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	24,973	130,011	23,705	135,950	28,622	118,525	27,019	152,308	27,707	145,952
Emerald Estates Water System Total (m^3)	24,973	130,011	23,705	135,950	28,622	118,525	27,019	152,308	27,707	145,952
Surface Water Total (m^3)	207,764	837,376	302,396	1,195,116	337,006	1,454,214	218,112	1,108,330	259,134	1,289,664
Ground Water Total (m^3)	317,582	2,063,733	159,688	1,092,479	360,975	1,680,711	224,724	1,650,868	181,379	1,538,229
Total Water (m^3)	525,346	2,901,109	462,084	2,287,595	697,981	3,134,925	442,836	2,759,198	440,513	2,827,893

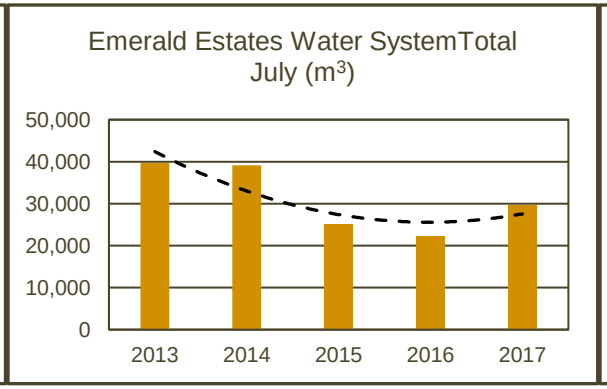


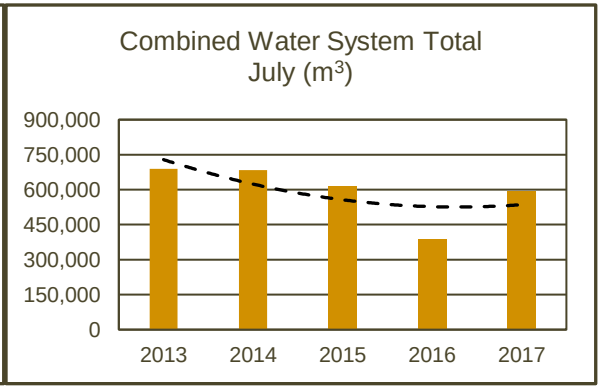




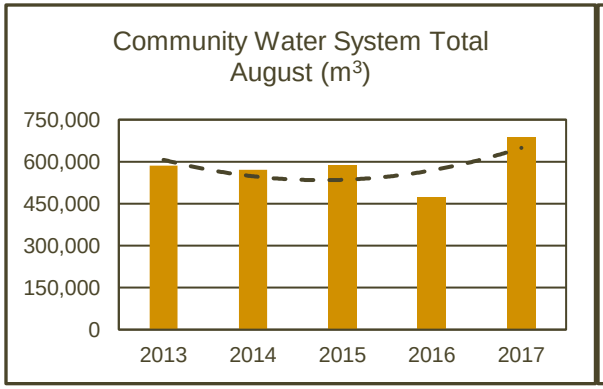
Resort Municipality of Whistler	July 2017 Water Consumption Report									
	Jul-17	YTD	Jul-16	YTD	Jul-15	YTD	Jul-14	YTD	Jul-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	274,411	1,111,787	260,327	1,455,443	271,618	1,725,832	320,771	1,429,101	348,414	1,638,078
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	31,364	178,576	22,381	158,331	31,210	112,108	49,421	193,471	48,904	261,195
W210 Alpine	9,081	67,993	35,973	157,223	22,442	133,803	266	59,214	21,479	62,670
W213 Meadow Park	8,077	54,045	13,054	80,115	17,826	110,942	32,036	85,790	16,811	41,560
W205 & W211 Community Wells (P247 Pump Station)	85,830	446,604	5,584	106,318	44,330	176,552	41,870	156,693	44,741	149,033
W212-1 Function Junction	17,584	229,996	0	0	9,096	111,904	21,477	135,014	10,631	95,860
W212-2 Function Junction	0	9,099	5,374	166,165	0	0	0	0	0	0
W217 Cheakamus Crossing	24,107	182,176	0	0	20,822	133,199	30,195	147,482	37,494	149,242
W218 Rainbow Well	114,852	788,183	23,928	145,295	173,066	637,460	147,944	573,518	121,066	463,926
Surface Water Total (m^3)	274,411	1,111,787	260,327	1,455,443	271,618	1,725,832	320,771	1,429,101	348,414	1,638,078
Ground Water Total (m^3)	290,895	2,224,617	106,294	1,062,823	318,792	1,880,978	323,209	1,821,769	301,126	1,693,403
Community Water System Total (m^3)	565,306	3,336,404	366,621	2,518,266	590,410	3,606,810	643,980	3,250,870	649,540	3,331,481
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	12,703	68,612	9,565	74,517	10,525	58,645	28,779	180,263	36,176	171,866
W201-2 Emerald Estates	16,839	90,096	12,637	82,610	14,168	79,519	10,289	10,584	3,421	4,531
W201-3 Emerald Estates * RUNS TO WASTE	0	845	179	1,204	490	5,544	92	621	95	9,247
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	29,542	159,553	22,381	158,331	25,183	143,708	39,160	191,468	39,692	185,644
Emerald Estates Water System Total (m^3)	29,542	159,553	22,381	158,331	25,183	143,708	39,160	191,468	39,692	185,644
Surface Water Total (m^3)	274,411	1,111,787	260,327	1,455,443	271,618	1,725,832	320,771	1,429,101	348,414	1,638,078
Ground Water Total (m^3)	320,437	2,384,170	128,675	1,221,154	343,975	2,024,686	362,369	2,013,237	340,818	1,879,047
Total Water (m^3)	594,848	3,495,957	389,002	2,676,597	615,593	3,750,518	683,140	3,442,338	689,232	3,517,125

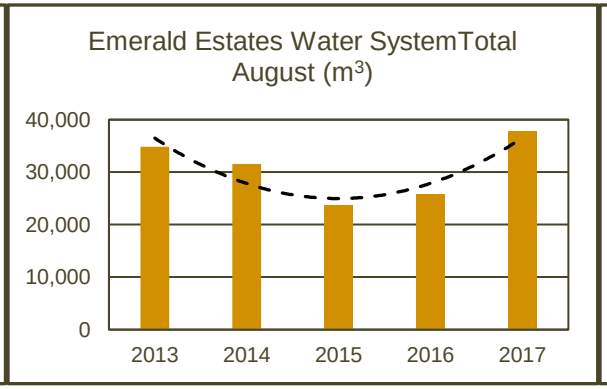


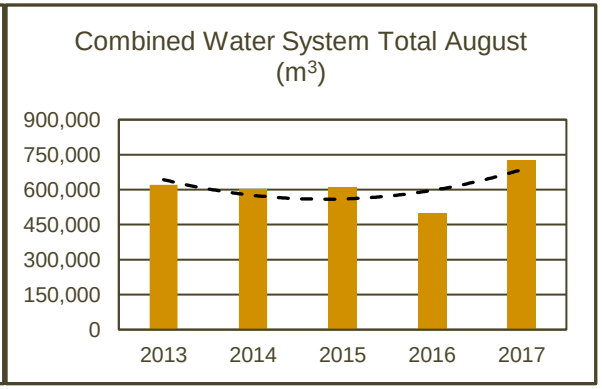




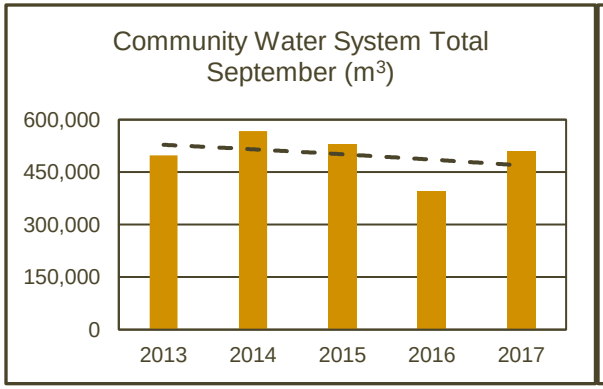
Resort Municipality of Whistler	August 2017 Water Consumption Report									
	Aug-17	YTD	Aug-16	YTD	Aug-15	YTD	Aug-14	YTD	Aug-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	295,231	1,407,018	347,356	1,802,799	273,554	1,999,386	315,323	1,744,424	300,190	1,938,268
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	29,675	208,251	25,880	184,211	36,965	149,073	36,679	230,150	41,270	302,465
W210 Alpine	24,764	92,757	27,653	184,876	24,712	158,515	0	59,214	12,508	75,178
W213 Meadow Park	22,333	76,378	23,170	103,285	21,651	132,593	21,280	107,070	10,670	52,230
W205 & W211 Community Wells (P247 Pump Station)	112,120	558,724	19,348	125,666	34,710	211,262	56,010	212,703	61,188	210,221
W212-1 Function Junction	6,968	236,964	0	0	2,771	114,675	22,407	157,421	3,161	99,021
W212-2 Function Junction	0	9,099	5,051	171,216	0	0	0	0	0	0
W217 Cheakamus Crossing	31,191	213,367	0	0	19,215	152,414	27,069	174,551	28,095	177,337
W218 Rainbow Well	165,476	953,659	25,469	170,764	175,492	812,952	92,192	665,710	129,082	593,008
Surface Water Total (m^3)	295,231	1,407,018	347,356	1,802,799	273,554	1,999,386	315,323	1,744,424	300,190	1,938,268
Ground Water Total (m^3)	392,527	2,617,144	126,571	1,189,394	315,516	2,196,494	255,637	2,077,406	285,974	1,979,377
Community Water System Total (m^3)	687,758	4,024,162	473,927	2,992,193	589,070	4,195,880	570,960	3,821,830	586,164	3,917,645
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	16,099	84,711	10,992	85,509	9,745	68,390	29,102	209,365	19,309	191,175
W201-2 Emerald Estates	21,574	111,670	14,750	97,360	13,224	92,743	2,249	12,833	15,324	19,855
W201-3 Emerald Estates * RUNS TO WASTE	92	937	138	1,342	731	6,275	184	805	193	9,440
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	37,765	197,318	25,880	184,211	23,700	167,408	31,535	223,003	34,826	220,470
Emerald Estates Water System Total (m^3)	37,765	197,318	25,880	184,211	23,700	167,408	31,535	223,003	34,826	220,470
Surface Water Total (m^3)	295,231	1,407,018	347,356	1,802,799	273,554	1,999,386	315,323	1,744,424	300,190	1,938,268
Ground Water Total (m^3)	430,292	2,814,462	152,451	1,373,605	339,216	2,363,902	287,172	2,300,409	320,800	2,199,847
Total Water (m^3)	725,523	4,221,480	499,807	3,176,404	612,770	4,363,288	602,495	4,044,833	620,990	4,138,115

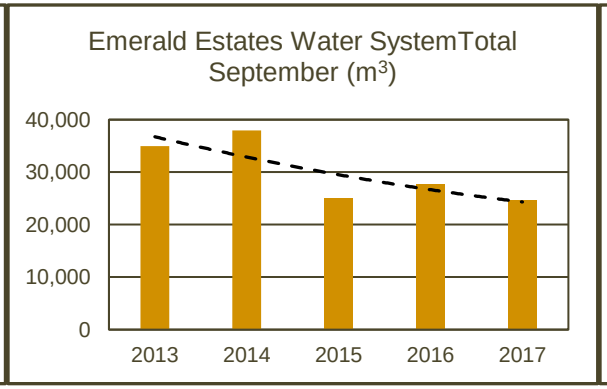


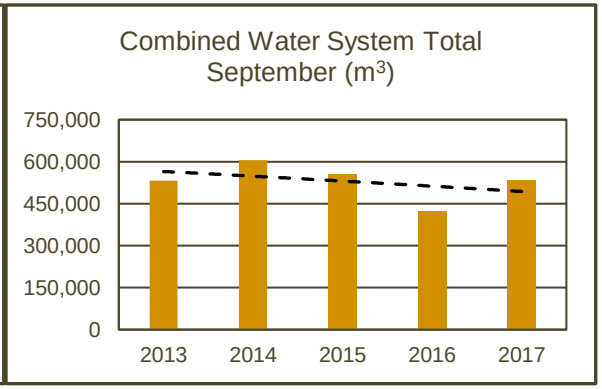




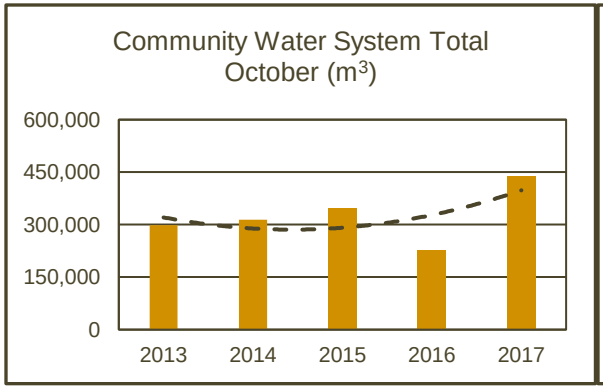
Resort Municipality of Whistler	September 2017 Water Consumption Report									
	Sep-17	YTD	Sep-16	YTD	Sep-15	YTD	Sep-14	YTD	Sep-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	309,869	1,716,887	265,820	2,068,619	233,126	2,232,512	357,508	2,101,932	246,974	2,185,242
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	12,428	220,679	27,624	211,835	43,974	193,047	36,418	266,568	35,021	337,486
W210 Alpine	24,036	116,793	37,916	222,792	29,612	188,127	9,869	69,083	13,793	88,971
W213 Meadow Park	19,995	96,373	17,040	120,325	20,683	153,276	18,770	125,840	11,131	63,361
W205 & W211 Community Wells (P247 Pump Station)	55,268	613,992	10,850	136,516	36,481	247,743	28,310	241,013	43,342	253,563
W212-1 Function Junction	5,017	241,981	0	0	14,265	128,940	37,533	194,954	12,679	111,700
W212-2 Function Junction	0	9,099	9,845	181,061	0	0	0	0	0	0
W217 Cheakamus Crossing	21,549	234,916	0	0	19,781	172,195	22,351	196,902	27,731	205,068
W218 Rainbow Well	60,852	1,014,511	27,665	198,429	130,827	943,779	56,603	722,313	106,772	699,780
Surface Water Total (m^3)	309,869	1,716,887	265,820	2,068,619	233,126	2,232,512	357,508	2,101,932	246,974	2,185,242
Ground Water Total (m^3)	199,145	2,816,289	130,940	1,320,334	295,623	2,492,117	209,854	2,287,260	250,469	2,229,846
Community Water System Total (m^3)	509,014	4,533,176	396,760	3,388,953	528,749	4,724,629	567,362	4,389,192	497,443	4,415,088
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	10,426	95,137	11,697	97,206	10,355	78,745	37,761	247,126	24,196	215,371
W201-2 Emerald Estates	14,078	125,748	15,732	113,092	13,956	106,699	0	12,833	10,607	30,462
W201-3 Emerald Estates * RUNS TO WASTE	98	1,035	195	1,537	652	6,927	196	1,001	148	9,588
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	24,602	221,920	27,624	211,835	24,963	192,371	37,957	260,960	34,951	255,421
Emerald Estates Water System Total (m^3)	24,602	221,920	27,624	211,835	24,963	192,371	37,957	260,960	34,951	255,421
Surface Water Total (m^3)	309,869	1,716,887	265,820	2,068,619	233,126	2,232,512	357,508	2,101,932	246,974	2,185,242
Ground Water Total (m^3)	223,747	3,038,209	158,564	1,532,169	320,586	2,684,488	247,811	2,548,220	285,420	2,485,267
Total Water (m^3)	533,616	4,755,096	424,384	3,600,788	553,712	4,917,000	605,319	4,650,152	532,394	4,670,509

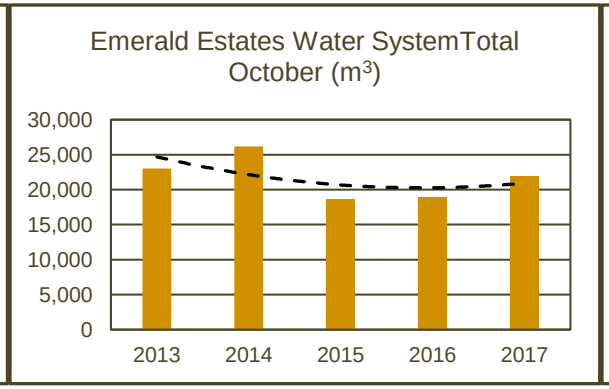


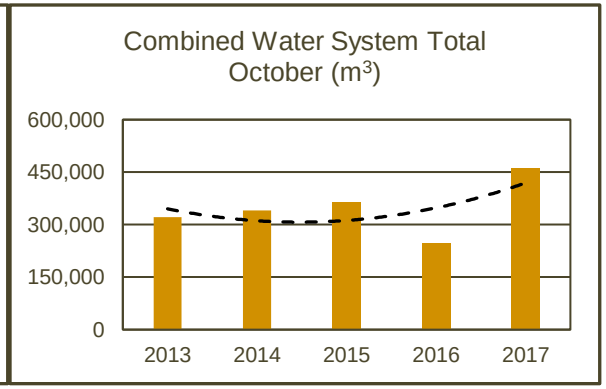




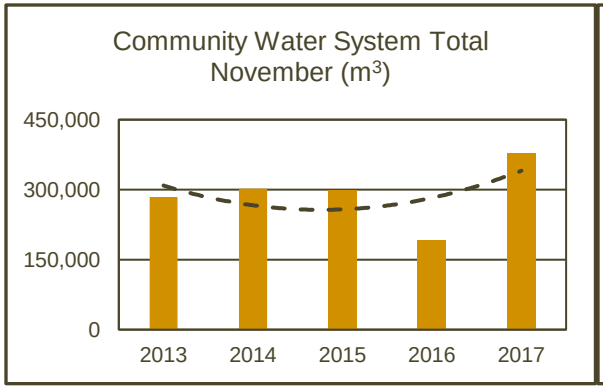
Resort Municipality of Whistler	October 2017 Water Consumption Report									
	Oct-17	YTD	Oct-16	YTD	Oct-15	YTD	Oct-14	YTD	Oct-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	189,254	1,906,141	116,945	2,185,564	41,430	2,273,942	140,558	2,242,490	135,819	2,321,061
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	28,037	248,716	18,992	230,827	30,485	223,532	22,326	288,894	20,500	357,986
W210 Alpine	12,940	129,733	24,948	247,740	17,230	205,357	8,374	77,457	9,077	98,048
W213 Meadow Park	10,769	107,142	8,722	129,047	3,618	156,894	6,825	132,665	6,543	69,904
W205 & W211 Community Wells (P247 Pump Station)	69,208	683,200	6,959	143,475	49,410	297,153	30,170	271,183	15,914	269,477
W212-1 Function Junction	19,030	261,011	0	0	51,449	180,389	1,706	196,660	22,829	134,529
W212-2 Function Junction	0	9,099	34,688	215,749	0	0	0	0	0	0
W217 Cheakamus Crossing	20,139	255,055	0	0	14,948	187,143	13,994	210,896	18,540	223,608
W218 Rainbow Well	89,120	1,103,631	17,284	215,713	137,863	1,081,642	90,554	812,867	69,607	769,387
Surface Water Total (m^3)	189,254	1,906,141	116,945	2,185,564	41,430	2,273,942	140,558	2,242,490	135,819	2,321,061
Ground Water Total (m^3)	249,243	3,065,532	111,593	1,431,927	305,003	2,797,120	173,949	2,461,209	163,010	2,392,856
Community Water System Total (m^3)	438,497	4,971,673	228,538	3,617,491	346,433	5,071,062	314,507	4,703,699	298,829	4,713,917
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	9,383	104,520	8,070	105,276	7,465	86,210	26,049	273,175	22,162	237,533
W201-2 Emerald Estates	12,446	138,194	10,680	123,772	9,985	116,684	10	12,843	804	31,266
W201-3 Emerald Estates * RUNS TO WASTE	94	1,129	242	1,779	1,163	8,090	111	1,112	55	9,643
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	21,923	243,843	18,992	230,827	18,613	210,984	26,170	287,130	23,021	278,442
Emerald Estates Water System Total (m^3)	21,923	243,843	18,992	230,827	18,613	210,984	26,170	287,130	23,021	278,442
Surface Water Total (m^3)	189,254	1,906,141	116,945	2,185,564	41,430	2,273,942	140,558	2,242,490	135,819	2,321,061
Ground Water Total (m^3)	271,166	3,309,375	130,585	1,662,754	323,616	3,008,104	200,119	2,748,339	186,031	2,671,298
Total Water (m^3)	460,420	5,215,516	247,530	3,848,318	365,046	5,282,046	340,677	4,990,829	321,850	4,992,359

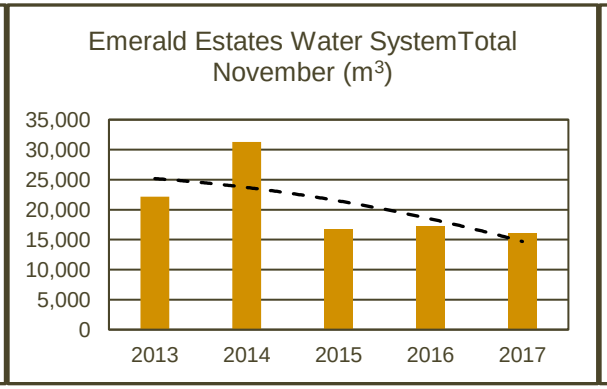


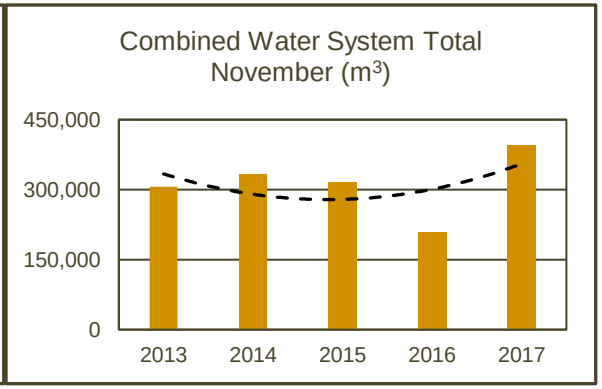




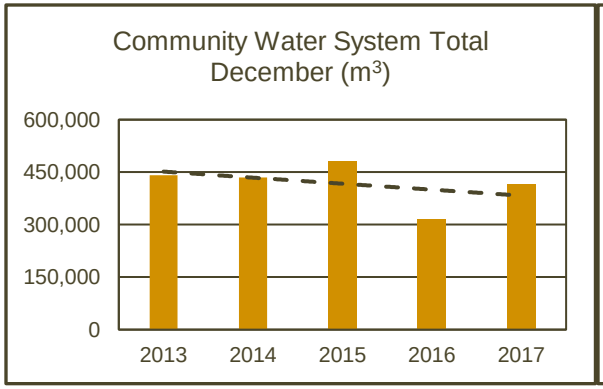
Resort Municipality of Whistler	November 2017 Water Consumption Report									
	Nov-17	YTD	Nov-16	YTD	Nov-15	YTD	Nov-14	YTD	Nov-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	83,714	1,989,855	52,404	2,237,968	47,160	2,321,102	54,013	2,296,503	178,276	2,499,337
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	28,737	277,453	17,208	248,035	17,934	241,466	33,296	322,190	21,357	379,343
W210 Alpine	6,304	136,037	32,174	279,914	12,326	217,683	6,335	83,792	8,364	106,412
W213 Meadow Park	5,516	112,658	8,697	137,744	9,523	166,417	5,000	137,665	4,143	74,047
W205 & W211 Community Wells (P247 Pump Station)	48,462	731,662	15,358	158,833	29,730	326,883	48,500	319,683	11,751	281,228
W212-1 Function Junction	58,447	319,458	0	0	54,483	234,872	7,702	204,362	3,446	137,975
W212-2 Function Junction	0	9,099	50,159	265,908	0	0	0	0	0	0
W217 Cheakamus Crossing	16,526	271,581	0	0	14,174	201,317	15,191	226,087	18,890	242,498
W218 Rainbow Well	131,288	1,234,919	15,973	231,686	113,311	1,194,953	132,316	945,183	37,728	807,115
Surface Water Total (m^3)	83,714	1,989,855	52,404	2,237,968	47,160	2,321,102	54,013	2,296,503	178,276	2,499,337
Ground Water Total (m^3)	295,280	3,360,812	139,569	1,571,496	251,481	3,048,601	248,340	2,709,549	105,679	2,498,535
Community Water System Total (m^3)	378,994	5,350,667	191,973	3,809,464	298,641	5,369,703	302,353	5,006,052	283,955	4,997,872
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	6,969	111,489	7,445	112,721	6,861	93,071	21,183	294,358	21,943	259,476
W201-2 Emerald Estates	9,145	147,339	9,691	133,463	9,045	125,729	9,905	22,748	71	31,337
W201-3 Emerald Estates * RUNS TO WASTE	0	1,129	72	1,851	776	8,866	219	1,331	151	9,794
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	16,114	259,957	17,208	248,035	16,682	227,666	31,307	318,437	22,165	300,607
Emerald Estates Water System Total (m^3)	16,114	259,957	17,208	248,035	16,682	227,666	31,307	318,437	22,165	300,607
Surface Water Total (m^3)	83,714	1,989,855	52,404	2,237,968	47,160	2,321,102	54,013	2,296,503	178,276	2,499,337
Ground Water Total (m^3)	311,394	3,620,769	156,777	1,819,531	268,163	3,276,267	279,647	3,027,986	127,844	2,799,142
Total Water (m^3)	395,108	5,610,624	209,181	4,057,499	315,323	5,597,369	333,660	5,324,489	306,120	5,298,479

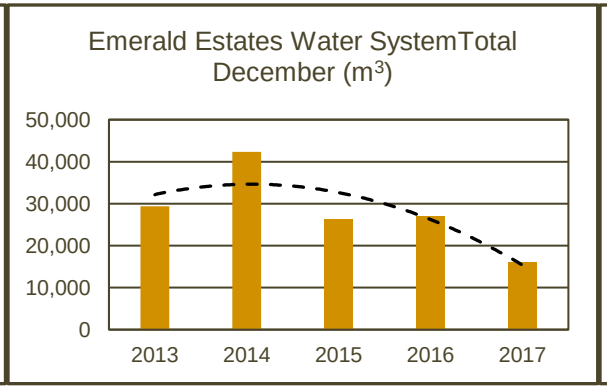


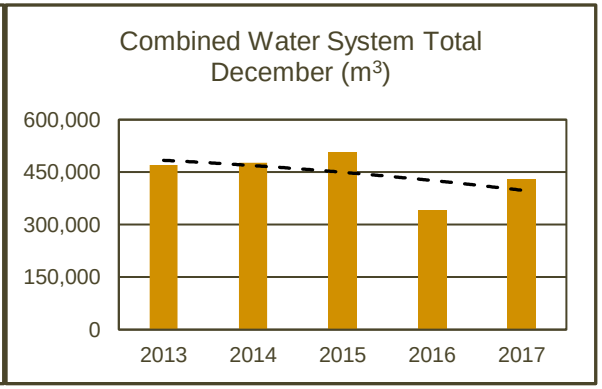




Resort Municipality of Whistler	December 2017 Water Consumption Report									
	Dec-17	YTD	Dec-16	YTD	Dec-15	YTD	Dec-14	YTD	Dec-13	YTD
RMOW Community Water System Ministry of Health Facility #1110299										
R231 21 Mile Creek	177,887	2,167,742	162,304	2,400,272	268,295	2,589,397	189,591	2,486,094	294,947	2,794,284
R232 Blackcomb Creek	0	0	0	0	0	0	0	0	0	0
W202 Alpine	11,079	288,532	26,956	274,991	32,041	273,507	21,223	343,413	8,338	387,681
W210 Alpine	17,464	153,501	21,354	301,268	13,358	231,041	12,621	96,413	20,780	127,192
W213 Meadow Park	14,779	127,437	20,678	158,422	10,611	177,028	10,650	148,315	16,610	90,657
W205 & W211 Community Wells (P247 Pump Station)	61,010	792,672	16,985	175,818	36,890	363,773	31,000	350,683	19,181	300,409
W212-1 Function Junction	32,383	351,841	0	0	29,367	264,239	20,402	224,764	5,703	143,678
W212-2 Function Junction	0	9,099	46,189	312,097	0	0	0	0	0	0
W217 Cheakamus Crossing	18,701	290,282	0	0	20,665	221,982	20,162	246,249	25,797	268,295
W218 Rainbow Well	81,540	1,316,459	20,666	252,352	69,148	1,264,101	128,879	1,074,062	49,572	856,687
Surface Water Total (m^3)	177,887	2,167,742	162,304	2,400,272	268,295	2,589,397	189,591	2,486,094	294,947	2,794,284
Ground Water Total (m^3)	236,956	3,597,768	152,828	1,724,324	212,080	3,260,681	244,937	2,954,486	145,981	2,644,516
Community Water System Total (m^3)	414,843	5,765,510	315,132	4,124,596	480,375	5,850,078	434,528	5,440,580	440,928	5,438,800
RMOW Emerald Estates Water System Ministry of Health Facility #11076										
W201-1 Emerald	6,982	118,471	11,628	124,349	10,916	103,987	17,111	311,469	28,670	288,146
W201-2 Emerald Estates	9,078	156,417	15,215	148,678	14,227	139,956	22,976	45,724	559	31,896
W201-3 Emerald Estates * RUNS TO WASTE	0	1,129	113	1,964	1,191	10,057	2,221	3,552	131	9,925
Surface Water Total (m^3)	0	0	0	0	0	0	0	0	0	0
Ground Water Total (m^3)	16,060	276,017	26,956	274,991	26,334	254,000	42,308	360,745	29,360	329,967
Emerald Estates Water System Total (m^3)	16,060	276,017	26,956	274,991	26,334	254,000	42,308	360,745	29,360	329,967
Surface Water Total (m^3)	177,887	2,167,742	162,304	2,400,272	268,295	2,589,397	189,591	2,486,094	294,947	2,794,284
Ground Water Total (m^3)	253,016	3,873,785	179,784	1,999,315	238,414	3,514,681	287,245	3,315,231	175,341	2,974,483
Total Water (m^3)	430,903	6,041,527	342,088	4,399,587	506,709	6,104,078	476,836	5,801,325	470,288	5,768,767







Annual Water Sampling Results 2017

			W-201-1	W-201-2	W-201-3	W-202	W-210	W-213 SS#420	R-231/SS#436	R-232/ SS#439
Test Parameter	**GCDWQ Standard**	**Units**	2017-11-23	2017-11-23	2017-11-22	2017-11-22	2017-11-23	2017-11-23	2017-12-06	2017-11-22
Aluminum	< 0.1	mg/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0134	< 0.0050	0.0496	1.01
Antimony	0.006	mg/L	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Arsenic	0.01	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Barium	1	mg/L	0.0078	< 0.0050	0.0059	0.0288	0.008	0.0219	0.0069	0.0275
Boron	5	mg/L	0.0064	< 0.0050	0.0073	< 0.0050	< 0.0050	< 0.0050	0.0098	0.0082
Cadmium	0.005	mg/L	< 0.000010	0.000011	< 0.000010	0.000026	< 0.000010	0.000011	< 0.000010	< 0.000010
Calcium	-	mg/L	17.1	18	13	27.4	8.59	25.3	5.03	5.31
Chloride	250	mg/L	16	8.56	6.66	14.8	0.22	9.66	0.33	0.17
Chromium	0.05	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0005	0.00071	0.00156
Cobalt	-	mg/L	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.10	0.0005
Colour	≤ 15	TCU	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	10	30
Conductivity	-	µS/cm	188	154	142	198	57.6	196	30.7	32.7
Copper	≤ 1	mg/L	0.0802	0.0648	0.0223	0.00932	0.00062	0.00738	0.00045	0.0033
Fluoride	1.5	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Hardness (CaCO3)	-	mg/L	46.5	48.3	34.6	72.4	23.1	67.2	13.6	16
Iron	0.3	mg/L	< 0.010	< 0.010	0.019	< 0.010	0.012	0.135	0.025	0.903
Lead	0.01	mg/L	0.00041	0.00027	< 0.00020	0.00055	< 0.00020	0.00037	< 0.00020	< 0.00020
Magnesium	-	mg/L	0.901	0.808	0.493	0.918	0.402	0.939	0.252	0.661
Manganese	0.05	mg/L	< 0.00020	< 0.00020	0.00058	< 0.00020	0.00023	0.00132	0.00088	0.024
Mercury	0.01	µg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	10	mg/L	0.293	0.1	< 0.010	0.234	0.013	0.22	< 0.010	0.019
Nitrite	1	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
pH	7.0 - 10.5	-	6.71	6.9	6.98	6.78	7.13	6.85	6.85	7.41
Potassium	-	mg/L	0.72	0.43	0.34	0.78	0.41	1.09	0.43	0.63
Selenium	0.01	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Sodium	200	mg/L	19.3	9.26	9.9	7.18	0.66	5.34	0.83	0.54
Sulphate	500	mg/L	13.8	14	< 1.0	38.4	8.1	38.5	3.2	1.9
Turbidity	1	NTU	< 0.10	< 0.10	0.18	< 0.10	0.35	1.16	0.15	13.2
Uranium	0.02	mg/L	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000047	0.000037
Zinc	5	mg/L	0.0237	0.0177	0.0067	0.0161	< 0.0040	0.0067	< 0.0040	0.0045

			W205-1 SS#444	W205-1 SS#444	W205-2 SS#445	W205-3 SS#446	W211 SS#447	2601 Gondola Way - R228 - SS#474	W-212 SS#483	W212-2	W217	W218
Test Parameter	**GCDWQ Standard**	**Units**	2017-01-19	2017-11-16	2017-11-16	2017-11-16	2017-11-16	2017-11-16	2017-11-16	2017-11-23	2017-11-16	2017-11-16
Aluminum	< 0.1	mg/L	< 0.005	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0057	< 0.0050	0.0328	9	< 0.0050m
Antimony	0.006	mg/L	< 0.0001	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.20	< 0.00020
Arsenic	0.01	mg/L	< 0.0005	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.50	< 0.00050
Barium	1	mg/L	0.023	0.0177	0.035	0.0129	0.0156	0.0267	0.0301	0.0214	16.8	0.015
Boron	5	mg/L	0.016	< 0.0050	0.0063	< 0.0050	< 0.0050	0.0052	0.005	0.0086		0.0082
Cadmium	0.005	mg/L	0.00002	0.000014	0.000026	0.000016	0.000016	< 0.000010	0.000024	0.000071	0.015	< 0.000010
Calcium	-	mg/L	60.3	45.2	90.5	32.9	35.9	11.4	11.7	12	11.8	11.6
Chloride	250	mg/L	37	23.7	64.1	15.7	11.7	21.5	30.1	47.6	6.13	1.27
Chromium	0.05	mg/L	< 0.0005	< 0.00050	< 0.00050	0.00066	0.00067	< 0.00050	< 0.00050	< 0.00050	< 0.50	< 0.00050
Cobalt	-	mg/L	< 0.00005	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.10	< 0.00010	< 0.10	< 0.10	< 0.10
Colour	≤ 15	TCU	< 5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Conductivity	-	µS/cm	388	341	671	256	257	182	208	295	100	89.4
Copper	≤ 1	mg/L	0.0211	0.015	0.00831	0.0352	0.00981	0.0312	0.00654	0.0039	1.67	0.00133
Fluoride	1.5	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Hardness (CaCO3)	-	mg/L	157	157	117	234	94	34.5	36.2	41.4	32.8	31.9
Iron	0.3	mg/L	0.02	0.02	< 0.010	< 0.010	< 0.010	0.022	0.114	0.168	< 10	< 0.010
Lead	0.01	mg/L	0.0005	0.0005	0.00035	0.00114	0.00064	0.00095	0.00042	0.00034	0.00029	0.00022
Magnesium	-	mg/L	1.53	1.53	1.05	1.85	1.02	1.43	1.71	2.76	0.782	0.707
Manganese	0.05	mg/L	0.0003	0.0003	< 0.00020	0.00108	0.0008	0.0218	0.0691	1.25	< 0.20	0.00022
Mercury	0.01	µg/L	< 0.02	< 0.02	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	10	mg/L	0.191	0.191	0.1	0.605	0.123	0.077	0.096	0.042	0.1095**	0.025
Nitrite	1	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
pH	7.0 - 10.5	-	6.58	6.58	6.55	6.59	6.51		6.31		6.5	6.7
Potassium	-	mg/L	1.63	1.04	1.44	0.67	0.77	1.49	1.79	3.04	0.67	0.7
Selenium	0.01	mg/L	< 0.0005	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.50	< 0.00050
Sodium	200	mg/L	20.6	15.1	31.7	11.2	8.79	19.1	23.7	46	3.85	1.99
Sulphate	500	mg/L	75.6	77.4	137	51.6	58.9	12.8	11.1	7.5	11.8	22.1
Turbidity	1	NTU	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	0.21	0.52	< 0.10	< 0.10
Uranium	0.02	mg/L	0.00003	0.000026	0.00006	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000057	0.033	< 0.000020
Zinc	5	mg/L	0.007	0.0062	< 0.0040	< 0.0040	0.0054	0.0058	0.0046	0.0058	4.8	< 0.0040

APPENDIX B –EMERGENCY RESPONSE AND CONTINGENCY PLAN

Water Systems Emergency Response and Contingency Plan

Resort Municipality of Whistler 2018

WHISTLER

ANNUAL DRINKING

EXECUTIVE SUMMARY

The Drinking Water Protection Regulation (B.C. Reg. 200/2003) requires all purveyors of water systems to have an emergency response and contingency plan which can be referred to in case of an emergency which might cause a disruption in service or present a threat to the health of people drawing water from the system. This Water System Emergency Response Plan fulfills this requirement.

The Water System Emergency Response Plan details the plan of action for staff to prepare for and respond to emergency situations and disruptions in service to the water system. The Plan provides staff with an understanding of the resources available to them, instructions on when to operate the Emergency Operations Centre (EOC) and identifies external resources that can be called upon if required.

The plan outlines Utilities emergency procedures for potentially hazardous situations such as, extended loss of BC Hydro supply, failure of SCADA system, failure of disinfection system, primary water main failure, bacteriological contamination of the distribution system, utilities building fire, water source high turbidity readings and spills or chemical/ biological contamination.

This plan follows a standardized emergency management concept known as the Incident Command System for managing and coordinating emergency responses. The plan will be available to RMOW Utilities staff and management, the RMOW Emergency Program Coordinator, the RMOW Communication's Officer and the Vancouver Coastal Health Drinking Water Officer.

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EMERGENCY RESPONSE & CONTINGENCY PLAN

Purpose of the Plan

The RMOW is responsible for providing adequate supplies of clean potable water to its residents. In addition, the municipality maintains water storage volumes in the reservoirs for the provision of fire-fighting for dwellings/structures within the developed areas of the Whistler. Disruptions in water quality and delivery may result from emergencies such as natural disasters (such as, floods, forest fires and/or earthquakes), accidents, or intentional acts. The municipality maintains effective response and recovery practices in the event of an emergency through Emergency planning and coordinated communication planning.

This ERCP was prepared in accordance with Section 13 of the Drinking Water Protection Regulation (BC Reg. 200/2003). The document summarizes possible emergencies, staff roles and responsibilities, and the procedures that are in place to effectively and adequately respond to emergencies that significantly threaten the municipal water distribution system.

The ERCP is intended to guide municipal management, staff, and response agencies in the best practices in the event of an emergency. These practices include:

- Early response guidelines;
- Ensuring that the highest levels of water quality and public health are maintained;
- Ensuring the highest levels of safety for employees and first responders;
- Ensuring that adequate water levels are maintained for fighting fires;
- Safeguarding of drinking water distribution infrastructure;
- Restoring normal water system operations as soon as possible;
- Protecting the environment from potential impacts associated with system operation during emergency event response.

Emergency Response and Contingency Plans must be accessible to every staff member and must be readily available in an emergency. A copy of this plan must also be sent to the Drinking Water Officer and be updated at least once a year to reflect changes in personnel, contact information, and system operation. A synopsis or summary of this plan must be available for public access.

Steps undertaken in an Emergency

1. **Assess the situation**. Can the situation be remedied as part of normal operations, or will the emergency response plan be initiated? Is there a possible threat to drinking water quality? Consult with Drinking Water Officer.
2. **Protective life and limb**. Evacuation may take precedence over repairs. No not attempt to respond to an emergency or undertake repairs until it is safe to do so.
3. **Reduce the potential for further damage or threat to water quality**. The threat may be removed; parts of the system may be shut down.
4. **Inform the public**. Public notices may be issued to prevent further contamination or threat to public health.
5. **Perform repairs based on priority**. Priority is determined by the Supervisor in conjunction with VCH.
6. **Return system to normal levels of operation**. Evaluate the situation as the water system returns to normal. Do not remove any public advisories until the water is declared safe to drink, but provide updates on a regular basis to keep the public informed.
7. **Evaluate plan and emergency response**. During and after operations, note communications gaps, operational difficulties, or anything that affected the utility's ability to restore services to normal levels.
8. **Revise plan if necessary**. Make changes to the plan, and be sure to update it after any improvements or changes to the system, including changes in personnel.

Every water system has key components that are essential to its continued operation.

These include:

1. **Administration** – personnel, records, emergency plans, computers, SCADA system.
2. **Source** – watershed, wellhead area.
3. **Intakes** – pumps and pump houses, intake structures.
4. **Transmission** – pumps, piping and valves.
5. **Storage** – reservoirs, standpipes, pump stations.
6. **Treatment** – chlorination, stations, filtration plants, other treatment
7. **Distribution** – piping, pumps, valves, hydrants.
8. **Facilities and equipment** – buildings or warehouses, works yards, spare parts, vehicles and construction equipment, etc.
9. **Communications** – phone system, radio, computers and e-mail, signals transmission from reservoirs or pump stations.

ROLES AND RESPONSIBILITIES

Operators

The RMOW Utilities Department Operators are the personnel most likely to discover a situation that may present a threat to the municipal water supply; Utilities is most likely to receive calls from residents about tastes, odours, lack of pressure and/or other indications of a problem in the water system. When responding to a potential emergency situation the operators are required to notify the Chief Operator and Supervisor as soon as possible.

Utilities Supervisor

Once apprised of the potential emergency situation by operations staff, the Utilities Supervisor (**Chris Wike**) must decide if there is a potential threat to the drinking water supply; and whether the necessary response falls under normal operating procedures or if additional staff and/or contractor resources will be required to contain the situation. If public notification is required or extraordinary measures are implemented, the Supervisor will contact the Utilities Group Manager (**Gillian Woodward**). The Supervisor will also contact the Utilities Group Manager if the situation exceeds the capacity of the operations department and other departments or agencies are required for assistance. The Supervisor will also monitor general operating conditions, weather conditions, maintain a safe working environment, and ensure that staff has appropriate equipment and necessary resources to effectively respond to the emergency.

Utilities Group Manager

If the Supervisor has indicated a potential threat to the drinking water supply (either quality or quantity) the Utilities Group Manager will determine the next steps which may include:

- Determining the emergency level and evaluating whether or not it exceeds the utility departments capacity to respond effectively and if so, notify the General Manager of Infrastructure Services. The RMOW Emergency Operations Centre Activation Flowchart is provided in Appendix C.
- Contacting the Drinking Water Officer and working with them to issue the necessary public notifications.
- Authorizing the contact of priority water users to make them aware of the possibility of a problem with the water quantity or quality, in order for them to initiate their own emergency response plans.
- Coordinate with the Utilities Supervisor to ensure that the response team have all the appropriate equipment and training in order to respond to the emergency situation.

Drinking Water Officer

The Drinking Water Protection Regulation (BC Reg. 200/2003) and the Drinking Water Protection Act give the Drinking Water Officer (DWO) significant authority over removing potential and real threats to drinking water supplies. The DWO must be informed of anything that may present a potential threat to drinking water quality.

During an emergency, the DWO and other health authority staff can provide advice about public notification and assistance with monitoring water quality and outbreaks of waterborne disease. It is assumed that the RMOW Communications Department will take the lead role as spokesperson for media enquiries and releases. Sample public notification templates are provided in Appendix B.

EMERGENCY SITUATIONS

Defining Emergency Levels

In this plan there are three categories of severity with different response actions, the category of severity for each emergency situation can be used to determine appropriate response actions.

- **Alert Condition:** considered to be routine emergencies, such as distribution line breaks, short power outages, and minor mechanical issues.
- **Emergency Condition:** more significant emergencies. These types of emergencies usually require the issuing of a Boil or Do Not Use Water Advisory Notice to protect the public.
- **Disaster Conditions:** emergency situations that have a significant impact on the system. These are serious emergencies and require immediate notification of the Utilities Group Manager. If deemed necessary the Utilities Group Manager will contact the General Manager to activate the RMOW Emergency Operations Centre (EOC).

Vandalism/Security Issues

If vandalism occurs or there are security concerns at any facility that threaten drinking water quality:

1. Determine the Emergency Level.
2. Contact the facility concerned to alert regarding the vandalism / security issue
3. Contact the RCMP
4. Contact the Supervisor, Utilities Group Manager and advise the Drinking Water Officer or Medical Health Officer
5. If the Utilities Group Manager and the DWO agree there is a threat to drinking water quality, issue "Boil Water" alerts for suspected microbiological contamination or "Do Not Drink the Water" alert for suspected chemical or unknown contamination.
6. Implement appropriate measures for cleaning / decontaminating facilities
7. Do not remove the public advisories until instructed by the Drinking Water Officer
8. Complete a post-incident response report

NOTE: Notify the Drinking Water Officer or Medical Health Officer of any vandalism or deliberate acts of contamination to any part of the water system.

The Drinking Water Protection Act prohibits any person from introducing anything into domestic water source, a well recharge zone, or an area adjacent to a drinking water source that will or is likely to result in a health hazard related to drinking water or destroying, damaging, or tampering with any part of a domestic water system if that would limit the use of the water system on the basis that there may be a risk of a health hazard.

Spills or Chemical/Biological Contamination

When an Operator or Supervisor reports a spill or chemical/biological contamination that may threaten drinking water quality:

1. Determine the Emergency Level.
2. Immediately notify the Supervisor and Utilities Group Manager.
3. Assess nature of contaminant, soil and weather conditions to determine best course of action to address the spill situation. Deploy appropriate remedial action, which may include hydro-excavation to remove contaminants as soon as possible.
4. Contact the Drinking Water Officer or Medical Health Officer and divide level of risk.
5. Contact the **Spill Reporting Centre: 1-800-663-3456**
6. Utilities Group Manager to issue a "Do Not Drink the Water" alert for the affected part of system. Arrange for trucked / bottled water if necessary.
7. If spill enters or is near a fish-bearing stream, contact the Department of Fisheries and Oceans and the BC Ministry of Environment.
8. If the spill is near a well(s), have monitoring wells installed to monitor contaminant plum and take action to mitigate impacts of spill on aquifer. Contact a hydro geologist for assistance. Review wellhead protection plan.
9. If a reservoir is contaminated, it must be drained, cleaned, disinfected, refilled and disinfected a second time. Re-sample the water. Flush and disinfect any downstream piping.
10. Confirm water quality is acceptable to Drinking Water Officer before removing public notices.

If a sample analyzed by the British Columbia Centre for Disease Control rests positive for chemical/biological Contamination:

1. Utilities personnel and Drinking Water Office will be notified via an alert from the laboratory.
2. All outstanding samples will be examined immediately.
3. Repeat samples will be collected immediately.
4. Chlorine residual for the sample will be reviewed to determine if a localized loss of disinfectant residual has occurred.
5. Utilities staff will determine if an interruption of source water disinfection occurred.
6. Utilities staff will determine if localized flushing and/or temporary increase in disinfectant residual dosage is warranted.
7. Turbidity, pH, and temperature values for the affected sample will be reviewed to determine other possible factors which may have contributed to the event.

8. The need for a Boil Water Advisory will be evaluated, and if deemed necessary the RMOW will carry out various means to inform the public.
9. The municipality will coordinate with the Drinking Water Officer on the extent of the Boil Water Advisory.
10. Confirm water quality is acceptable to Drinking Water Officer before removing public notices.
11. Complete a post-incident report.

Floods

Floods may affect water sources by depositing debris and silt in the water or by contaminating wells with surface water. In addition, facilities and equipment may be damaged or rendered inoperable by flood waters. Staff may not be able to gain access to some facilities due to high water.

In the event of a major flood mostly likely the EOC would be activated:

1. Utilities Supervisor assesses the situation and determines the level of emergency.
2. Utilities Supervisor confirms which facilities are functional and accessible.
3. When confirmed that a well is flooded, notify the Utilities Group Manager and the DWO, who will assume it has been contaminated by untreated surface water and will issue a “Boil Water” alert. If chemical storage or application occurred in the vicinity, issue a “Do Not Drink the Water” alert.
4. If there are damaged facilities and lack of water, issue a “Water Use Restriction” Order.
5. Once flood waters have receded, have affected facilities checked for structural integrity. Contact a structural engineer for assistance.
6. Implement appropriate measures for cleaning/ decontaminating facilities.
7. Have water quality in affected wells tested and do not remove public notices until instructed by the drinking water officer.
8. Consider flood proofing affected facilities and ensure wells are sealed and flood proofed.
9. Complete a post-incident response report.

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Earthquakes

Earthquakes can be particularly destructive to both above ground and underground infrastructure. Pipes and well casings can be bent, twisted, or sheared off completely. Reservoirs or storage tanks can be damaged by water sloshing back and forth or by weakening of their foundations or structure. Soils with high water content can liquefy and damage buildings and underground pipes; other types of soils tend to compact, causing similar damage. Unstable slopes may slide, sending debris into a water course or across an access road. Earthquakes often cause ruptured gas mains and fires, so increased demand can be placed on a water system that is under stress. Because many other agencies will be involved it will be essential to coordinate all efforts to most effectively deal with the situation.

In the event of an Earthquake most likely the EOC would be activated.

1. Utilities Supervisor assesses the situation and determines the level of emergency.
2. Utilities Supervisor confirms which facilities are functional and accessible, which may be damaged and whether water quality is affected.
3. Maintain liaison with DWO and, if necessary, issue public alerts and provide bottled/trucked water if possible.
4. Contact the Fire Department and Emergency Operations Centre as required.

5. If there are damaged facilities and lack of water, issue a Water Use Restriction Order.
6. If there is potential for backflow into the system, assume it has been contaminated by untreated surface water and issue a Boil Water Advisory. If chemical storage or application occurred in the vicinity, issue a Do Not Drink Water Advisory.
7. If surface sources are degraded by landslide, switch to alternate sources.
8. If wells are destroyed, switch to backup sources and investigate locations for new wells.
9. Contact a structural engineer for assistance in assessing significant damage to facilities.
10. Make a damage assessment, prepare a plan to begin repairs and identify a schedule to resume normal operations.
11. Have water quality in affected wells tested and do not remove public notices until instructed by the drinking water officer.
12. Complete a post-incident response report.

Wildfires

During a forest fire reservoirs, pump stations or other facilities may be damaged or destroyed by fire. Increased demands may be placed on the system, disrupting normal operations. Chemicals used in fire suppression may enter water courses and the distribution system. The hydrology of a watershed changes after a forest fire, so source waters may become more turbid or coloured. Long term effects may include stream flow alteration and excessive algal growth.

In the event of a Wildfire most likely the EOC would be activated.

1. Report wildfire to **BC Wildfire Service, 1-800-663-5555 or *5555 from a cell phone.**
2. Utilities Supervisor assesses the situation and determines the level of emergency
3. Request regular status information on the situation and possible water contamination
4. If possible, isolate threatened facilities and switch to backup sources to maintain system pressure and supply.
5. If fire suppression activities occur, contact BC Forest Service and Fire Department to determine nature of suppressants used.
6. If surface waters are affected by fire suppressants, issue a Do Not Drink the Water Advisory or apply appropriate treatment approved by the drinking water officer to render the water safe to drink.
7. If long-term impacts to surface waters occur, consider finding alternate sources or installing treatment.
8. If wells are destroyed, switch to backup sources and investigate locations for new wells.
9. Provide bottled / trucked water if required / possible.
10. Once danger of fire has passed, contact a structural engineer for assistance in assessing significant damage to facilities.
11. Make a damage assessment, prepare a plan to begin repairs and identify a schedule to resume normal operations.
12. Have water quality in affected wells tested and do not remove public notices until instructed by the drinking water officer.
13. Complete a post-incident response report.

PUBLIC NOTIFICATION

There are numerous emergency situations that could trigger the RMOW to advise the public to limit their water use. For example the flooding of a well, a backflow incident, or reservoir contamination could result in a Boil Water Advisory or a Do Not Use Advisory (sample notices provided in Appendix D). In some cases boiling the water may render it safe, and in other cases the public may be advised to not use the water at all. In a situation where public health is at risk from a contaminated water supply the responsibility falls to the Drinking Water Officer, who will assist the RMOW and provide recommendations on the steps required to mitigate the threat and restore the municipal water system to a safe level.

NOTE: *The information stated here are guidelines only, the Drinking Water Officer has the authority to undertake actions at variance with the guidelines where necessary.*

"Boil Water" Advisory

The RMOW will administer a Boil Water Advisory when there is a significant enough public health threat posed by the water quality in the distribution system that can effectively be mitigated through sufficient water boiling. Precautionary boil water advisories are issued routinely to buildings affected by any water system maintenance work that has the potential to contaminate the water.

If it is suspected that the water supply is contaminated with pathogenic micro-organisms or volatile chemicals (that can be safely evaporated), then the RMOW will notify and consult with the Drinking Water Officer to issue a Boil Water Advisory. It is possible to make water contaminated by microbiological contaminants safe by bringing the water up to a rolling boil **and** maintaining a rolling boil for **at least** two minutes. While a boil water advisory is in effect the water may safely be used for laundry, and for bathing or showering as long as no water is swallowed. The water should **not** be used for cooking, food preparation, or brushing teeth without first being boiled.

"Do Not Drink Water" Advisory

The RMOW will administer a Do Not Drink Advisory when there is a significant public health threat posed by ingesting contaminated water from the drinking water supply, and the nature of the threat is one that cannot be effectively mitigated by a Boil Water Advisory. The RMOW will notify the Drinking Water Officer and issue a Do Not Drink Water Advisory as soon as possible after discovering the threat.

Residents are instructed not to drink water or use it for cooking, food preparation, brushing teeth, or bathing. In this situation bottled/trucked water will be provided to residents.

"Do Not Use Water" Advisory

The RMOW will administer a Do Not Drink Advisory when a significant public health threat exists in relation to the water supply system and the threat cannot be adequately addressed by a Do Not Drink Advisory or a Boil Water Advisory. If this threat level is reached the RMOW will notify the Drinking Water Officer and issue a Do Not Use Water Advisory to notify the public to not drink the water or use it for any domestic purpose. Under these conditions bottled/trucked water is provided to residents by the RMOW.

If the contaminant is unknown, confirmed, or suspected to be a toxic chemical or mineral, then boiling is not recommended as it may have a concentrating effect on the substance rather than making the water safe. Chemical contaminants may have various negative health effects including skin irritation and respiratory problems, and should be avoided as much as possible. Under a Do Not Use Water Advisory distribution water should not be used for drinking, cooking, food preparation, bathing or brushing teeth.

Public Premises Notice

Due to its unique nature as a resort municipality, the RMOW has numerous restaurants, hotels, and other public establishments. The locations of these public facilities are documented by the RMOW as part of the Drinking Water Protection Regulation, but it is the responsibility of the owner of the public premises to notify the public of any drinking water advisories either verbally and/or by posting a sign at every sink and drinking water source accessible to the public.

It is important to ensure that public premises such as hotels, inns, restaurants, bars, convention centres and sports facilities are made aware of current advisories that effect the water quality so signage can be posted and appropriate action taken. It is the responsibility of the RMOW to post easily visible signs/notices at public water fountains located within municipal owned public facilities.

APPENDIX A – CONTACT LIST

Resort Municipality of Whistler Emergency Contacts						
First Name	Last Name	Position	24 Hour Contact	Office Phone	Cell Phone	E-mail
Chris	Wike	Utilities Supervisor		604-935-8321	604-932-0873	cwike@whistler.ca
Bill	Harvey	Utilities Chief Operator		604-935-8317	604-935-5903	bharvey@whistler.ca
Scott	Morphet	Equipment Operator Leadhand		604-935-8316	604-905-8944	smorphet@whistler.ca
		On-call Operator	604-905-8725			
		Back-up Operator	604-935-9472			
		After-Hours Answering Service	604-935-8320			
Gillian	Woodward	Utilities Group Manager		604-935-8315	604-679-8681	gwoodward@whistler.ca
Erin	Marriner	Emergency Program Coordinator		604-935-8473	604-967-2153	emarriner@whistler.ca
Michele	Comeau	Communications Manager		604-935-8152	604-932-0833	mcomeau@whistler.ca
James	Hallisey	Infrastructure Services General Manager		604-935-8196		jhallisey@whistler.ca

Vancouver Coastal Health Authority Emergency Contacts						
First Name	Last Name	Position	Office Phone	Cell Phone	Home Phone	E-mail
Len	Clarkson	Drinking Water Officer	604-815-6841	604-892-7528	604-892-5447	Len.clarkson@vch.ca
Steve	Chong	Manager VCHA Health Inspection - Sea to Sky	604-983-6813	604-889-7211	604-940-9660	Steve.chong@vch.ca
Dr. Mark	Lysyshyn	Medical Health Officer & Drinking Water Officer	604-983-6701	604-506-3769	604-885-3998	mark.lysyshyn@vch.ca

APPENDIX B – RMOW NOTICES

RESORT MUNICIPALITY OF WHISTLER

BOIL WATER NOTICE

Coliform exceedance in _____ water
(Name of Water Distribution System)

BOIL YOUR WATER BEFORE USING

Bring tap water to a rolling boil, boil for one minute, and cool before using. Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and preparing food until further notice.

This Boil Water Notice applies to _____.
(Describe area or attach map)

Bottled/trucked water will be available at the following locations:_____
(Insert locations)

What Happened?

Regular monitoring showed a violation for total coliform bacteria in your drinking water. During _____ (month) _____ (year), _____ (number or percentage) of the samples taken tested positive, including _____ repeat sample(s) taken on _____ (date).

Coliform bacteria are naturally present in the environment and are used as an indicator that potentially harmful microbes may be present. Harmful microbes in drinking water can cause diarrhea, cramps, nausea, headaches, or other symptoms and may pose a special health risk for infants, some elderly, and people with severely compromised immune systems. But these symptoms are not just caused by microbes in drinking water. If you experience any of these symptoms and they persist, you should seek medical advice.

What is being done? _____

_____
(Describe corrective actions)

It is likely that you will need to boil water for the next _____days _____ hours until the problem is fixed. You will be informed when tests show that you no longer need to boil your water.

For more information, please contact: _____ at the RMOW on _____
(Name of person) (Phone number)
or the _____ at 604-935-XXXX .

Visit www.whistler.ca for further updates or listen to FM 102.1 / FM 101.5

Please share this information with other people who drink this water, especially anyone who may not get this notice directly (for example, people in strata buildings, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Water System Facility #: _____ Date distributed: _____

WHISTLER

RESORT MUNICIPALITY OF WHISTLER

BOIL WATER NOTICE

High turbidity levels found in _____ water
(Name of Water Distribution System)

BOIL YOUR WATER BEFORE USING

Bring tap water to a rolling boil, boil for one minute, and cool before using. Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and preparing food until further notice.

This Boil Water Notice applies to _____.
(Describe area or attach map)

Bottled/trucked water will be available at the following locations:_____
(Insert locations)

What Happened?

Your water is routinely monitored for turbidity (cloudiness) to determine if it is being properly filtered. Water samples taken on _____ (date) had turbidity levels of _____ turbidity units. This is above the allowable standard of _____ turbidity units. Because of the elevated turbidity, there is an increased chance that your drinking water may contain harmful microbes.

Turbidity alone has no health effects. But it can interfere with disinfection, allow harmful microbes to grow, and may indicate the presence of harmful microbes, including bacteria, viruses, and parasites. These can cause diarrhea, cramps, nausea, headaches, or other symptoms and may pose a special health risk for infants, some elderly, and people with severely compromised immune systems. But these symptoms are <u>not</u> just caused by microbes in drinking water. If you experience any of these symptoms and they persist, you should seek medical advice.

What is being done? _____

_____
(Describe corrective actions)

It is likely that you will need to boil water for the next _____ days _____ hours until the problem is fixed. You will be informed when tests show that you no longer need to boil your water.

For more information, please contact: _____ at the RMOW on _____
(Name of person) (Phone number)
or the _____ at 604-935-XXXX .

Visit www.whistler.ca for further updates or listen to FM 102.1 / FM 101.5

Please share this information with other people who drink this water, especially anyone who may <u>not</u> get this notice directly (for example, people in strata buildings, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Water System Facility #: _____ Date distributed: _____

RESORT MUNICIPALITY OF WHISTLER

BOIL WATER NOTICE

E.coli bacteria found in _____ water
(Name of Water Distribution System)

BOIL YOUR WATER BEFORE USING

Bring tap water to a rolling boil, boil for one minute, and cool before using. Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and preparing food until further notice.

This Boil Water Notice applies to _____.
(Describe area or attach map)

Bottled/trucked water will be available at the following locations:_____
(Insert locations)

What Happened?

E. coli bacteria were found in the drinking water on _____(date).
The RMOW considers any confirmed *E. coli* positive sample as a public health hazard and a violation of drinking water standards.

The presence of Escherichia coli (E. coli) bacteria indicates that the water may be contaminated with human or animal wastes. Harmful microbes in these wastes, including E. coli, can cause diarrhea, cramps, nausea, headaches, or other symptoms. These may pose a special health risk for infants, some elderly, and people with severely compromised immune systems. But these symptoms are <u>not</u> just caused by harmful microbes in drinking water. If you experience any of these symptoms and they persist, you should seek medical advice.

What is being done? _____

_____
(Describe corrective actions)

It is likely that you will need to boil water for the next _____days _____ hours until the problem is fixed. You will be informed when tests show that you no longer need to boil your water.

For more information, please contact: _____ at the RMOW on_____
(Name of person) (Phone number)
of the _____ at 604-935-XXXX.

Visit www.whistler.ca for further updates or listen to FM 102.1 / FM 101.5

Please share this information with other people who drink this water, especially anyone who may <u>not</u> get this notice directly (for example, people in strata buildings, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Water System Facility #: _____ Date distributed: _____

WHISTLER

RESORT MUNICIPALITY OF WHISTLER

DO NOT USE WATER NOTICE

_____ contamination in _____water
(Name of Water Distribution System)

DO NOT USE WATER

Do not use tap water. The water issue <u>cannot</u> be addressed by boiling water. Trucked or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, preparing food, bathing and all domestic use until further notice.

This Do Not Use Water Notice applies to _____.
(Describe area or attach map)

Bottled/trucked water will be available at the following locations:_____
(Insert locations)

What Happened?

_____ was found in the drinking water on _____(date)
The RMOW considers any _____ positive sample as a public health hazard and a violation of drinking water standards.

Details of the contaminant _____
Potential adverse health effects from drinking the water (e.g. diarrhea) _____
Population affected including subpopulations which may be particularly vulnerable (e.g. may pose a special health risk for infants, some elderly, and people with severely compromised immune systems)
If you experience any of these symptoms and they persist, you should seek medical advice.

What is being done? _____

_____
(Describe corrective actions)

It is likely that you will need to BOTTLED / TRUCKED water for the next _____days _____ hours until the problem is fixed. You will be informed when tests show that you no longer need to do this.

For more information, please contact: _____ at the RMOW on_____
(Name of person) (Phone number)
or the _____at 604-935-XXXX .

Visit www.whistler.ca for further updates or listen to FM 102.1 / FM 101.5

Please share this information with other people who drink this water, especially anyone who may <u>not</u> get this notice directly (for example, people in strata buildings, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Water System Facility #: _____ Date distributed: _____

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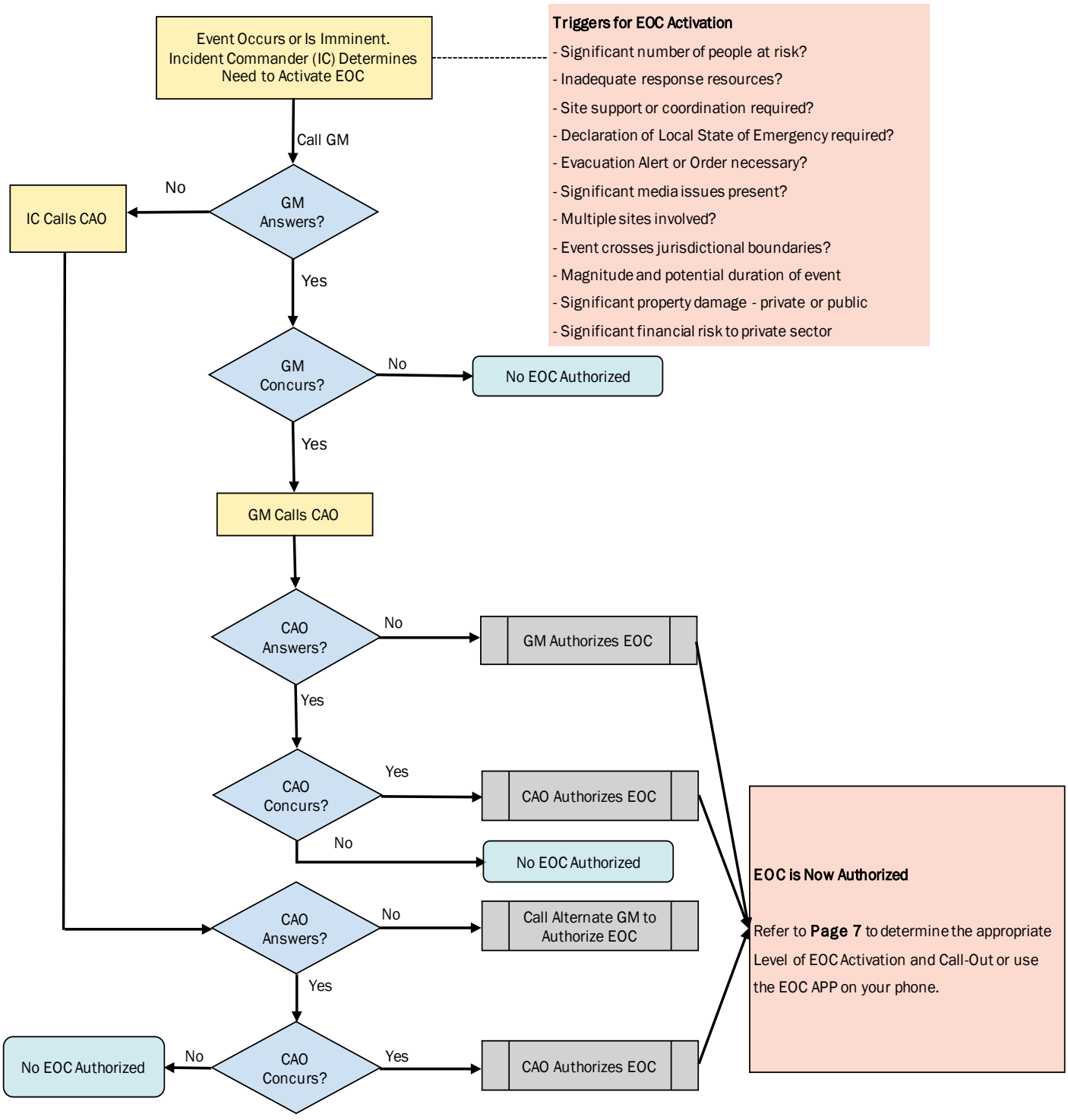
APPENDIX C – EMERGENCY OPERATIONS CENTRE ACTIVATION



APPENDIX C – PERMITS TO OPERATE A WATER SUPPLY SYSTEM

Vancouver Coastal Health

Promoting wellness. Preventing harm.

HEALTH PROTECTION

PERMIT TO OPERATE

A Water Supply System

Purveyor: Resort Municipality Of Whistler
Facility Name: RMOW Community Water System

Conditions of Permit

Implement your Cross-Connection Control Plan.
Maintain the Uni-Directional Flushing Program annually.
Maintain a Drinking Water Quality Sampling Program as prescribed.
Minimum bacteriology sampling frequency is 25 per month (distribution).
Implement the Ground Water Resource Protection Plan.
Review the Emergency Response Plan and update annually.
Blackcomb Creek source may not be used without prior authorization from VCH.
Implement your Source Protection Plan for 21 Mile Creek supply.

July 1, 1992
Effective Date
April 6, 2016
Revised Date

Drinking Water Officer

Vancouver Coastal Health
Expires March 2018
09055

Vancouver Coastal Health

Promoting wellness. Ensuring care.

HEALTH PROTECTION

PERMIT TO OPERATE

A Water Supply System

Purveyor: Resort Municipality Of Whistler
Facility Name: RMOW - Emerald Estates Water System

Conditions of Permit

Confirm Well W201-2 is not GUDI or provide enhanced disinfection.
Implement the Cross-Connection Control Plan.
Maintain the Uni-Directional Flushing Program.
Maintain a Drinking Water Quality Sampling Program as prescribed.
Minimum bacteriology sampling frequency is 4 per month (distribution).
Implement the Ground Water Resource Protection Plan.
Review the Emergency Response Plan and update annually.
Report annually the monitoring results as prescribed.
Maintain FAC level at 0.4 ppm minimum post reservoir.

July 1, 1992
Effective Date
March 25, 2014
Revised Date

Drinking Water Officer

APPENDIX D – MAPS OF WATER SYSTEM

Resort Municipality of WHISTLER

RMOW Water Sources

Production Well
Intake
Well Protection Areas

W201-3
W201-2
W201-1
Emerald Estates Well Protection Area
W202
W210
W213
Alpine Meadows Well Protection Area
Blackcomb Creek Surface Water
21 Mile Creek Surface Water
Rainbow Park Well Protection Area
W218
W211
W205-3
W205-2
W205-1
Whistler Village Well Protection Area
Function Junction Well Protection Area
W212-1
W212-2
W217
Green Lake
Alta Lake
Nineteen Mile Creek
Twenty One Mile Creek
Blackcomb Creek
Horstman Creek
Fitzsimmons Creek
Scamp Creek
Archibald Creek
Gonzales Creek
Scotia Creek
Sproatt Creek
Whistler Creek
No Name Creek
Alpine Creek
Van West Creek
Cheakamus River

N

2
Kilometers

Map prepared for RMOW 2017 Annual Drinking Water Report
This map is not to be used for navigation

Resort Municipality of
WHISTLER

Water Sampling Stations

SS411
SS410
SS403
SS409
SS406
SS494
Green Lake
Nineteen Mile Creek
SS418
SS419
SS412
SS424
SS420
SS421
SS415
H8110
SS427
Blackcomb Creek
SS439
Horstman Creek
Alta Creek
SS433
SS430
SS447
SS446
SS436
Twenty One Mile Creek
SS450
SS444
SS441
SS493
SS453
Alta Lake
SS456
Fitzsimmons Creek
SS459
Scamp Creek
Archibald Creek
Scotia Creek
33488
Gonzales Creek
SS462
SS465
SS471
Whistler Creek
Sproatt Creek
SS474
SS482
SS487
Fitzsimmons Creek
SS477
Van West Creek
Alpha Creek
SS480
Delish
1397 Alpha Lake Road
Home Plaza
SS483A
W9
SS489
SS495
Cheakamus River
SS491

N

2
Kilometers

Map prepared for RMOW
2017 Annual Drinking Water Report
This map is not to be used for navigation