2014 Annual Drinking Water Report

Resort Municipality of Whistler

Infrastructure Services

WHISTLER

The following is the 2014 Annual Water System Monitoring Report for the Resort Municipality of Whistler (RMOW).

This report summarizes the RMOW water system performance in 2014, and is prepared in accordance with a *Permit to Operate a Water Supply System* from the Vancouver Coastal Health Authority.

Executive Summary

The RMOW has the permission to operate two water supply systems in Whistler, as defined by the Vancouver Coastal Health Permit to Operate. One permit applies to the Emerald Estates Water System, and the other to the Community Water System. In 2014 the RMOW supplied a base resident population of 10,447[1], with an additional daily average bed unit population of 18,362[2] and potential peak occupancy population of 53,954[2]. The total water consumption for the year was over 5.36 billion litres, 47% sourced from 21 Mile Creek Intake surface water with the remainder from the 14 groundwater wells in Whistler. The RMOW uses two primary disinfection methods in its water systems to maintain clean, safe, and healthy drinking water; ultraviolet light and chlorination. Currently, 21 Mile Creek is the only supply that uses an ultraviolet disinfection system in tandem with chlorination prior to the water entering the distribution system. All of the other water comes from groundwater sources, which use a chlorination method for primary disinfection. In order to comply with our water supply systems Permit to Operate, regular bacteriological sampling and monitoring is done.

There are several key water infrastructure projects that were underway in 2014 that contributed to the maintenance, improvement, and upgrade of the system. The Unidirectional Flushing Program had a successful season flushing over 85 kilometres of RMOW water mains. The Hydrant Servicing Program serviced, maintained, and certified all 532 RMOW fire hydrants as being in good working order. The Groundwater Monitoring Program, Reservoir Cleaning Program, Backflow Prevention program, and the Corrosion Mitigation Program all operated accordingly to ensure the system functioned at optimal condition.

The 2014 bi-weekly, quarterly, and annual water sampling measured each of the key water quality parameters used to maintain Whistler's clean and safe drinking water. The pH levels in the distribution system indicated an overall lower than neutral pH, averaging around 6.7, well within safe and aesthetic objectives. Temperature is measured to monitor an aesthetic objective of less than or equal to 15° C, this objective was met 98% of the time. Temperature is monitored not managed, as it is primarily an aesthetic objective. Turbidity is measured at both surface and ground water sources throughout the distribution system. Turbidity levels only triggered the 21 Mile Creek surface water source intake to temporarily shut down twice in 2014 due to elevated turbidity levels. Free Chlorine levels were within the RMOW defined thresholds 78% of the time, however free chlorine levels used in Whistler's drinking water are too low to for any risk to public health and evidently high enough to safely disinfect; as the microbiological parameters E. coli and Heterotrophic Plate Count were always zero with Total Coliforms turning up a single elevated value that was verified as inaccurate. Total Organic Content was outside RMOW

[1] Data sourced from BC Statistics as the 2014 population estimate for Whistler, BC
[2] Data sourced from Whistler Community Monitoring as the 2014 estimated daily population for Whistler, BC

guidelines (< 2.5mg/L) in 4 instances, but does not pose any direct hazard to water quality or public health. Iron levels were elevated in Alpine and Function wells, Manganese was elevated in Function Junction wells, both solely aesthetic values with no hazard to public health. Both Polycyclic Aromatic Hydrocarbons and Disinfection By-products always sampled within acceptable guidelines.

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1. RMOW Water Systems Overview

In 2014 the RMOW supplied potable drinking water to a permanent resident population of 10,447[1], serviced 53,954[2] developed bed units in Whistler, and hosted approximately 2.7 million visitors[3] equating to an average daily serviceable population of 28,831[4]. In servicing the resident and tourism population of Whistler in 2014 the RMOW supplied 5,361,797m³ of potable drinking water.

In addition to the significant weekend and seasonal population fluctuations in Whistler there are a number of factors that affect both planning, and how the municipal water distribution system is operated. For example, the water system has been designed to operate at maximum population (100% build out); however, maximum daily population has been and will remain an estimate. In Whistler approximately 31% of the total assigned bed units are allocated to tourist accommodation and there are many residences that are used primarily as second homes, making them often vacant.

Whistler's drinking water supply is sourced primarily from surface water derived from annual precipitation and snowmelt in the surrounding mountains. The water quality is excellent, with a neutral pH, low turbidity (cloudiness), good flavor, and low odour. Due to the superior quality of Whistler's source water only disinfection is required. There were several lead projects in 2014 that were implemented by the RMOW to improve and maintain Whistler's water supply and distribution system (Table 1.).

Table 1. RMOW Key Water Distribution System Accomplishments.

Key Projects	Description
Unidirectional Flushing Program (UDF)	Part of an ongoing effort to maintain mainline infrastructure, and integral to a multi-barrier approach to protect the quality and safety of Whistler's drinking water supply.
Annual Maintenance Program	Developed to review the structural integrity of system assets, conduct leak checks, and provide regular service checks and preventative maintenance on equipment.
Hydrant Maintenance Program	All RMOW Whistler fire hydrants are annually inspected and maintained by an external contractor; additionally the utilities department completes weekly hydrant checks and inspections.
Annual Reservoir Cleaning	A number of RMOW water storage reservoirs are inspected annually, cleaned, and necessary repairs done. Each reservoir is cleaned approximately once every five years.
Groundwater Monitoring Program	As part of the Groundwater Resource Protection Plan the RMOW contracts a geotechnical and hydrogeological consultant to perform annual monitoring of the system. Water quality, water levels, well capture zones, aquifer capacity, and groundwater extraction levels are all checked and reported on.

[1] Data sourced from BC Statistics as the 2014 population estimate for Whistler, BC
[2] Data sourced from the RMOW Planning Department as the 2014 developed residential bed units for Whistler, BC
[3] Data sourced from Tourism Whistler as the 2014 estimated total number of visitors for Whistler, BC
[4] Data sourced from Whistler Community Monitoring as the 2014 estimated daily average population for Whistler, BC

Groundwater Resource Protection Plan	In an effort to maintain a healthy groundwater system the RMOW conducts enhanced monitoring of the quantity and quality of groundwater used within Whistler, including the identification of wellhead protection areas and groundwater pollution areas. The program also identifies areas of concern, weighing management options and proceeding accordingly; additionally, there are contingency and spill response plans in the event of a disaster.
Corrosion Study and Mitigation Plan	In an effort to determine whether there is an internal corrosion risk based on the low pH and alkalinity levels that are found in groundwater, Kerr Wood Leidal Associates Ltd. were tasked with identifying and evaluating the potential corrosion risk regarding potential mitigation strategies. The 2014 study found that there are several high risk water sources and recommended developing a detailed monitoring and mitigation program.
Comprehensive Water Conservation and Supply Plan	The RMOW is working strongly towards a comprehensive water consumption reduction plan with the replacement of ageing and leaking infrastructure.
Backflow Prevention Plan	In conjunction with Vancouver Coastal Health the RMOW implemented a Cross Connection Control Program in 2014. A hazard assessment on all ICI service connection in the whistler distribution system were evaluated and rated on their potential hazard to the system. These results were presented to each ICI building owner along with required actions to comply with existing backflow prevention standards.

1.1 Water Sources

The RMOW uses both a surface water intake, and groundwater wells to provide domestic drinking water and fire protection supply for the municipality. The 21 Mile Creek surface water source supplied 47% of the consumed water in 2014, making it the single greatest source for the municipality. When only the Community water system is considered 21 Mile Creek accounts for 50% of the water.

Surface Water

- 21 Mile Creek
- Blackcomb Creek (taken offline and locked out in 2012)

Groundwater

- Emerald Estates Wells (3), Community Wells (4), Alpine Wells (3), 21 Mile Creek Well (1), Function Wells (2), Cheakamus Crossing Well (1)

1.2 Water Distribution System

The water system provided by the RMOW is a Class IV Water Distribution Facility, as classified by the Environmental Operators Certification Program (EOCP), the highest level of complexity in the EOCP classification system. The system includes the following components: 2 separate water distribution systems operated under two separate Permits to Operate (Whistler Main and Emerald Estates); 1 operating surface water intake; 14 groundwater wells; 15 storage reservoirs; 31 individual pressure zones; 10 Pump stations; 37 pressure reducing valve stations; 9 altitude valve stations; a real-time Supervisory Control and Data Acquisition (SCADA) monitoring system with process control;

approximately 160 km of water main; approximately 3685 water service connections; 934 fire hydrants; and 2,113 mainline valves.

1.3 Operating Staff Qualifications

The Drinking Water Protection Regulation (DWPR) defines the qualification standards for persons operating water supply systems, this includes maintenance and repair of the systems. These qualification standards are established in British Columbia by the Environmental Operators Certification Program Society.

The RMOW Water Distribution System is classified by the Environmental Operators Certification Program (EOCP) as a WD-IV facility and currently meets the facility operator requirements. The following table (Table 2.) summarizes the current EOCP certification levels for each of the facility operators in the utilities department at the RMOW.

Table 2. Operations Staff EOCP Certifications 2014.

Certification	Number of Employees
WD - IV	4
WD - III	3
WD - II	3
WD - I	2
None	1

1.4 Disinfection System

The RMOW's source water quality is high enough that it does not require treatment to achieve required quality levels, however, the RMOW does disinfect surface and groundwater by the following methods (Table 3.):

- Dilute solutions of calcium hypochlorite are added to disinfect by chlorination,
- Salt pucks are used to add chlorination, and,
- Ultraviolet Germicidal Irradiation (UVGI).

UVGI operates by inundating clear water with shortwave ultraviolet light, sufficiently incapacitating microorganism in the water. To ensure the water is fully disinfected residual chlorine is added after the UVGI process.

1.4.1 Chlorination

Table 3. Source water chlorination methods used by the RMOW.

Source Water	Chlorination Method	Contact Time (CT)
Cheakamus Crossing - W217	*Calcium Hypochlorite* Chlorination chemical that is a white, dry and solid product containing approximately 65% chlorine and used in tablet form.	A *minimum* Log 4 reduction is calculated based on, minimum temperature, maximum pH, and minimum chlorine residual (0.02mg/L) in the distribution system are used to determine the required CT for each injection site. Once the required CT is known the actual CT is achieved by measuring the minimum residual chlorine in the system and the time spent in pipe since source, which is a function of the measured water flow rate. Evidence the chlorine disinfection CT method working as intended can be seen in the weekly sampling results: there are no verified occurrences E. coli or Total Coliform found in the distribution system samples (Appendix B).
Function Junction - W2012-1, W212-2		
21 Mile Creek Intake	*Sodium Hypochlorite* Produced by adding elemental chlorine to sodium hydroxide.	
Rainbow Park - W218		
Emerald Estates - W201-1, W201-2, W201-3		
Alpine – W202, W210, W213		
Community – W205-1, W205-2, W205-3		

1.4.2 Ultraviolet Germicidal Irradiation

The RMOW's UVGI system inundates clear water with shortwave ultraviolet light at sufficient amounts to incapacitate microorganisms in the water that may be harmful to humans. The UVGI unit manages the dosage of ultraviolet light by moderating the power intensity of the bulbs, increasing the power in order to reach the necessary transmissivity level. If the maximum safe power limit of the bulbs is reached prior to an effective transmissivity level being reached, then the UVGI will automatically shut the flow off preventing the water from contaminating the water distribution system. Once the UVGI has shut off the flow manual operator intervention is required for the system to come back online. This is a failsafe that is in place to prevent any untreated surface water from entering the distribution system.

2. Water Quantity Monitoring

In 2014 the RMOW water system supplied 5,361,797m^3 of water to Whistler, 47% from the surface water source 21 Mile Creek, and 53% from ground water sources (Table 4. and Figure 1.). Usage in 2014 was up by 51,730m^3, 0.96% over 2013. Monthly water consumption data and analysis can be found in Appendix B.

Table 4. Source Water Consumption 2010 through 2014.

Year	2014	2013	2012	2011	2010
Total Volume (m^3)	5,361,797	5,310,067	5,243,423	5,269,489	5,705,956
Total Surface (m^3)	2,522,414	2,794,284	2,680,751	2,210,879	2,235,603
Total Ground (m^3)	2,839,383	2,515,783	2,562,672	3,058,610	3,470,353
% Surface	47%	53%	51%	42%	39%
% Ground	53%	47%	49%	58%	61%

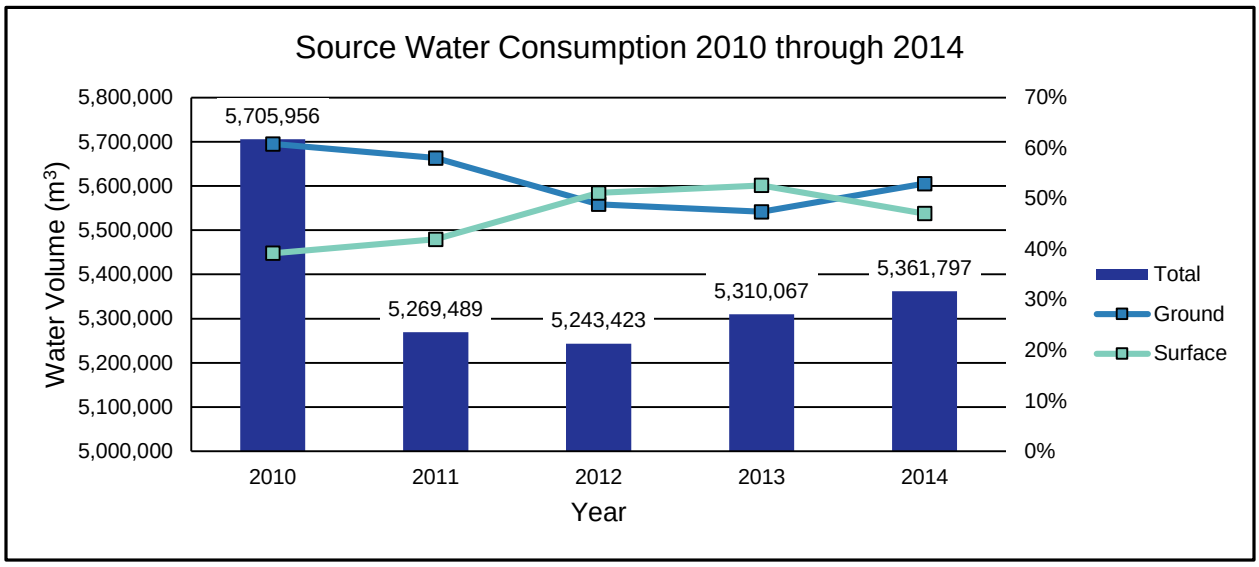


Figure 1. Graphical representation of the RMOW source water consumption 2010-2014.

3. Water Quality Monitoring

3.1 Sampling and Testing Program

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 by its operating permit. The RMOW is required to sample its distribution system 25 time 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 quality of the potable water being supplied at 35 locations throughout the municipality.

In 2014 the Utilities Department tested a total of 933 samples throughout the year, 807 bi-weekly samples from 35 sites, 109 quarterly samples from 38 sites, and 17 annual samples. These samples are tested for various water quality parameters as detailed in table 5.

Table 5. RMOW Water Sampling Program

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

All samples required for the testing listed above are collected by the RMOW Utilities Department. All the bi-weekly water testing parameter analysis were carried out by the RMOW Utilities Department apart from the Coliform tests which require regulatory reporting. Testing for E-coli and Total Coliforms was carried out by the British Columbia Centre for Disease Control; HPC, TOC, THM's and water chemistry testing was carried out by 3rd party testing facilities, Maxxam and Caro Analytical Services. All sample results data was uploaded and stored in the WaterTrax online data repository. Detailed summary reports of the weekly, quarterly and annual sample results can be found in Appendix B of this report.

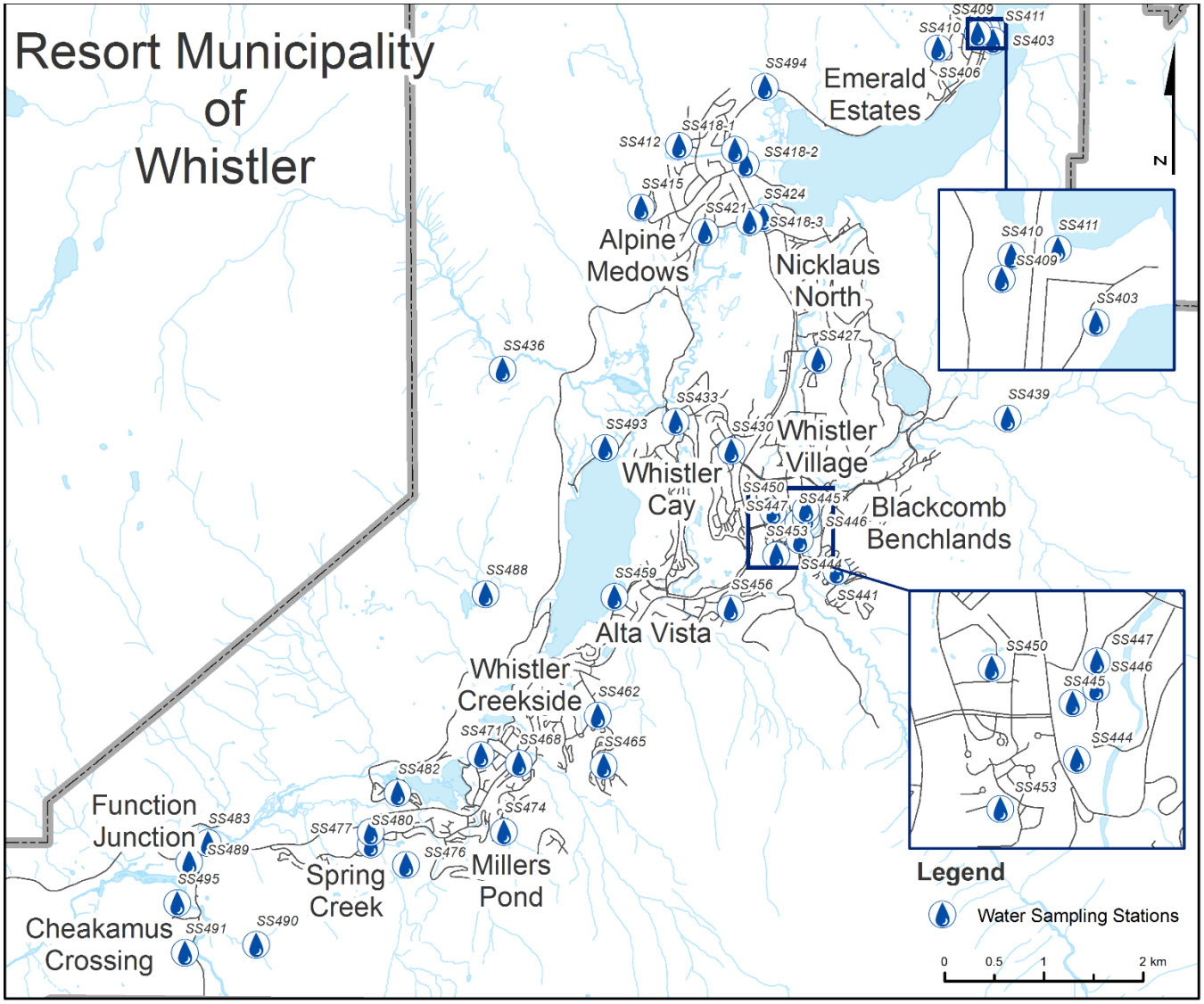
3.2 Sampling Locations

There are 35 water stations sampled on a bi-weekly basis (Table 6.). These sampling stations are distributed across the municipality at various locations (Map 1).

Table 6. Bi-weekly sampled water stations

Week 1			Week 2		
SS – Station No.	*W – Well*	*P – Pump Station*	*S – Siphon Site*		*R - Reservoir*
WTX #	**RMOW #**	**Description**	**WTX #**	**RMOW #**	**Description**
SS-409	W201-1	Emerald Well 1	SS-403	S131	Emerald SLS
SS-410	W201-2	Emerald Well 2	SS-406	R238	Emerald Reservoir
SS-411	W201-3	Emerald Well 3	SS-418	W202	Parkwood Drive Well
SS-412	P245	Mountain View PRV	SS-419	W210	High School Well
SS-424	P266/S123	Nicklaus North PRV	SS-420	W213	Meadow Park Well
SS-430		Snowflake Park	SS-421	S101	Alpine SLS
SS-436	R231	21 Mile Creek Intake	SS-427	P267/S126	Blackcomb Way PRV
SS-439	R232	Blackcomb Creek Intake	SS-444	W205-1	Community Well 1
SS-441	P256	Glacier Drive PRV	SS-445	W205-2	Community Well 2
SS-453		Mountain Square	SS-446	W205-3	Community Well 3
SS-459	S104	Lakeside SLS	SS-447	W211	Whistler Village Well
SS-465	P270	Taluswood II PRV	SS-450		Whistler Village

SS-480	P273/S132	Spring Creek PRV/SLS	SS-456	P265	Sunridge Drive PRV
SS-482		1300 Alta Lake Road	SS-471	S106	Gondola SLS
SS-483	W212-1	Function Junction Well 1	SS-477	S121	Millers Pond SLS
SS-489	W217	Cheakamus Crossing Well	SS-488	P275	Stonebridge PRV
SS-491		1300 Mount Fee Road	SS-493	W218	Rainbow Park Well
			SS-494	S137	Rainbow SLS



Map 1. RMOW water sampling locations.

3.3 Sampling Parameters

The Guidelines for Canadian Drinking Water Quality (GCDWQ) are established by the Federal-Provincial-Territorial Committee on Drinking Water (CDW) and are published by Health Canada. Health

Canada's guidelines for Canadian drinking water quality summary table can be found at: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php. The RMOW tests several drinking water quality parameters using the GCDWQ limits under standard operating requirements.

The GCDWQ are set according to three primary criteria on contaminant considerations:

1. Could exposure to the contaminant lead to adverse health effects in humans?
2. Is the contaminant frequently detected, and therefore expected to be found in drinking water supplies?
3. Is the contaminant detected at levels that are of possible significance to human health?

3.3.1 Chemical and Physical

The chemical and physical parameter guidelines are set out by the GCDWQ and are measured using three tiers of consideration: (1) Maximum Acceptable Concentration (MAC) of a given contaminant based on health considerations, (2) Aesthetic Objective (AO), such as taste, odour, and colour, (3) Operational Guidance value (OG), which takes into consideration operational guidelines and requirements. The RMOW's chemical and physical sample parameters are detailed below in table 7.

The GCDWQ do not set a safe level for chlorine (primary disinfectant used by the RMOW) due to its low toxicity at concentrations used in drinking water distribution systems. Free chlorine (Cl_2) concentrations in most Canadian drinking water distribution systems range from 0.04 to 2.0 mg/L; the RMOW maintains a range between 0.2mg/L – 0.6mg/L at all points throughout the distribution system. Chlorine injection and residual levels are monitored in real-time through an online monitoring and alarm system – SCADA – at strategic points throughout the system. The RMOW water treatment facilities subject the source water to chloride containing disinfectants, the active chlorine compounds react with natural organic matter in the water producing chlorinated disinfection by-products.

Table 7. Detailed chemical parameters tested by the RMOW.

Inorganic Chemical Parameters	
Parameter: Free Chlorine (Cl_2) Units: Milligrams per Litre (mg/L) Source: Disinfectant Additive Tested: Bi-weekly	The amount of residual chlorine in the water distribution system is an indicator of the effectiveness of the disinfection process, therefore chlorine residual is measured at all sampling sites where bacteriological samples are collected. RMOW's water is treated at source with higher amounts of chlorine in order to provide adequate levels of residual chlorine throughout the distribution network.
Organic Chemical Parameters – Polycyclic Aromatic Hydrocarbons (PAHs)	
Parameter: *Benzo[a]pyrene (BaP)* Units: Micrograms per Litre (µg/L) MAC: < 0.05 µg/L Source: Incomplete combustion of organic materials e.g. Forest fires	BaP is a health concern for its known carcinogenic properties. It has very low solubility in water, but can be found in both surface and groundwater bound to particulate matter. It is most often removed by filtration at the water intake before entering the distribution system.

Tested: Quarterly	
Parameter: Total HMW-PAH Units: Micrograms per Litre (µg/L) Source: Incomplete combustion of organic materials e.g. Forest fires Tested: Quarterly	High Molecular Weight (HMW) PAHs – those containing four to seven rings – are not toxic to aquatic organisms, however several are known carcinogens e.g. BaP.
Parameter: Total LMW-PAH Units: Micrograms per Litre (µg/L) Source: Incomplete combustion of organic materials e.g. Forest fires Tested: Quarterly	Low molecular weight (LMW) PAHs – those containing two to three benzene rings – are acutely toxic to aquatic organisms.
Disinfection By-products	
Parameter: Trihalomethanes (THMs) Units: Milligrams per Litre (mg/L) MAC: 0.1 mg/L	Includes the total of chlorodibromomethane, chloroform, bromodichloromethane and bromoform in the water sample. It is important to make every effort to keep concentrations as low as reasonably achievable without compromising the effectiveness of disinfection.
Parameter: Haloacetic Acids (HAAs) Units: Milligrams per Litre (mg/L) MAC: 0.08 mg/L	Includes the total of monochloroacetic acid (MCA), dichloroacetic acid (DCA), trichloroacetic acid (TCA), monobromoacetic acid (MBA) and dibromoacetic acid (DBA) in the water sample. Several HAAs are probably carcinogenic to humans, which is why HAA levels are limited provided adequate disinfection is occurring.
Physical Parameters	
Parameter: Conductivity Units: Microsiemen per Centimetre (µs/cm) Tested: Annually	Conductivity can be used as a general measure of water quality, as it tends to be relatively constant. Once a baseline has been established comparisons can be made with the regular measurement. However, it is affected by the presence of inorganic dissolved solids such as, chloride, nitrate, sulfate, sodium, and magnesium. Temperature will also effect conductivity, therefore reporting is done at a standard 25 °C.
Parameter: pH Guideline: between 6.5 – 8.5 Tested: Bi-weekly	The normal range in pH for surface waters is 6.5 to 8.5, low pH (< 6.5) can be acidic, soft, and corrosive; high pH (> 8.5) can be alkaline, hard, and deposit scale on piping and fixtures.
Parameter: Temperature Units: Degrees Celsius (°C) AO: ≤ 15 °C Tested: Bi-weekly	High water temperatures can promote growth of microorganisms. This can cause problems with taste, odour, colour, and corrosion.
Parameter: Total Dissolved Solids Units: Milligrams per Litre (mg/L) AO: ≤ 500 mg/L Tested: Quarterly	“Dissolved Solids” refers to any minerals, salts, metals, cations or anions dissolved in water. Elevated levels of total dissolved solids in the drinking water supply can result in bitter or salty tasting water; incrustation, films, or precipitates on fixtures; corrosion, and reduced efficiency of water filtration equipment.
Parameter: True Colour Units: Color Unit	True colour refers to the appearance of water after it has been filtered. It is often a result of decaying organic matter (producing a yellowish tea

AO: ≤ 15 Tested: Annually	colour), but is a nontoxic characteristic and monitored as an aesthetic parameter affecting appearance and palatability.
Parameter: Total Hardness ($CaCO_3$) Units: Milligrams per Litre (mg/L) Tested: Annually	Elevated levels of total hardness in the water distribution system can cause scaly deposits in plumbing, appliances, and boilers. Ideally the water distribution system should not contain more than 80mg/L of total water hardness as $CaCO_3$.
Parameter: Total Organic Carbon (TOC) Units: Milligrams per Litre (mg/L) OG: ≤ 15 mg/L Tested: Quarterly	Detects the presence of all carbon-baring molecules, in turn identifying the presence of any organic contaminants. Used to provide a method of detecting organic contaminants that could pose a threat to public health.

3.3.2 Microbiological

It is the intent of the GCDWQ to provide guidelines focusing on the treatment and protection of domestic drinking water supplies. The highest priority is given to reducing the level of microbiological contaminants within a distribution system through proper treatment, maintenance, and disinfection practices (Table 8.).

Table 8. Detailed microbiological parameters tested by the RMOW.

Microbiological Parameters	
Parameter: *Escherichia coli (E. coli)* Guideline: MAC – none detectable per 100 mL Tested: Bi-weekly	The presence of E. coli indicates recent faecal contamination, and the potential for microorganisms capable of causing gastrointestinal illness.
Parameter: Heterotrophic Plate Count (HPC) Guideline: None Tested: Quarterly	HPC is naturally occurring and is not used as an indicator of drinking water safety, rather it is used to monitor the general bacteriological quality of the water.
Parameter: Total Coliforms Guideline: MAC – none detectable per 100 mL, at treatment plant exit; No consecutive positive samples or no more than 10% of samples should contain total coliforms < 10 CFU per 100 mL Tested: Bi-weekly	Coliform bacteria are generally non harmful, however, the total coliform test can be used as an indicator for the presence of other pathogenic bacteria.
Parameter: Turbidity Guideline: RMOW permit stipulates a Turbidity NTU requirement of < 1 in source water and < 5 within the distribution system Tested: Bi-weekly	Turbidity levels should be reduced to levels as low as reasonably achievable in an effort to have a treated water turbidity target of less than 0.1 NTU. Particles can harbour microorganisms protecting them from disinfection, it is therefore essential to keep turbidity levels low to ensure effectiveness of disinfection systems.

MAC – Maximum Acceptable Concentration, NTU – Nephelometric Turbidity Units

4. Drinking Water Protection Plan

4.1 Source Water Protection Plan

The RMOW is required to complete a Source Water Protection Plan for the 21 Mile Creek source under the Provincial Drinking Water Protection Act to meet the terms and conditions of the permit to operate a community water system.

21 Mile Creek is a high quality and bountiful source of water, however the ability to use 21 Mile Creek is occasionally limited by periods of high turbidity. Recent concerns have also been raised over the potential for increased periods of turbidity and/or the risk of contamination due to natural and/or anthropogenic activity in the watershed.

The purpose of the plan is to identify, evaluate, and mitigate potential risks to the 21 Mile Creek water supply, by identifying areas and activities that pose the greatest threat to the supply. The RMOW has improved budget and planning measures to better mitigate impacts on the system. The first step in undertaking a comprehensive action plan is to conduct a robust assessment. In 2014 such an assessment was commission for completion in mid-2015 with the intent to: (1) identify and evaluate potential hazards to the drinking water supply quality and quantity, (2) characterize the risks, (3) propose several next step risk management strategies.

The full scope of the plan includes: a long term sustainability plan beyond 2030, review of current water quality and future treatment recommendations, compliance with BC's Comprehensive Drinking Water Source-to-Tap Assessment Guide, working closely with the Vancouver Coastal Health Authority, public consultation, and ultimately the implementation of a fully comprehensive action plan.

4.2 Groundwater Resource Protection Plan

In addition to a Source Water Protection Plan the RMOW is required to have a Groundwater Resource Protection Plan. Launched in 2008 the plan is comprised of several measures (Table 9.) designed to promote enhanced protection of the quantity and quality of groundwater used within Whistler. The primary objectives are: (1) to ensure exposure to unhealthy concentrations of contaminants in the drinking water is minimized, (2) to implement procedures and policies that support long-term sustainability of the groundwater resource.

Table 9. 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.
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.

4.2.1 Groundwater Monitoring Program

The groundwater sources at Function Junction, Rainbow Park and Whistler Village are monitored annually by geotechnical & hydrogeological consultants (Piteau Associates) (Table 10.). The RMOWs 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 2014 report by Piteau Associates did not find any abnormalities in the health of the groundwater system in Whistler at this time, but recommended continued annual sampling and monitoring.

Table 10. Groundwater Monitoring Program areas of interest.

Groundwater Monitoring	
Function Junction	The operating permit for W217 requires implementation of a Long Term Monitoring Plan that includes: the monitoring of water quality at W217, MW09-1, and the monitoring of water levels throughout Function Junction in order to validate the expected well capture zone extent. In 2012 monitoring well MW06-2S was irreparably damaged and decommissioned, in July 2013 it was replaced by MW13-1. In 2014 sampling was conducted for benzene, toluene, ethylbenzene, xylenes, and VPH (BTEX/VPH) at monitoring well MW06-3D. Samples from the monitoring wells were analyzed in 2014 for dissolved metals, volatile organic compounds, volatile petroleum hydrocarbons, and polycyclic aromatic hydrocarbons. A Microscopic Particulate Analysis was also done on W217 (Appendix B).
Rainbow Park (21 Mile Aquifer Wells)	The 21 Mile Aquifer water level response to current levels of water extraction are monitored on a continuous basis. In addition to the water level, turbidity, temperature, and pumping rate, are recorded through RMOW's SCADA

	system. These data are supplemented by continuous monitoring of water level and temperature at a nearby test well (TW-1), a shallow monitoring well (MW-1) and a surface water station well (SW-1). During 2013, extra water level monitoring was carried out at MW-1, SW-1 and TW-1 after new production well W219 was installed to ensure adequate groundwater levels were being maintained. In 2014 water levels for the monitoring wells were measured manually, and the temperature and barometric pressure retrieved from the data loggers.
Whistler Village	W205-1, W205-2, W205-3, and W211 are located in the day skier parking lots off Blackcomb Way and are screened in channel-fill sediments deposited by Fitzsimmons Creek. The capacity of this aquifer is limited by a near constant rate of recharge from the creek. A data logger was installed at TW04-2, and has been continuously recording water levels since June 2004. In 2014 the data logger from monitoring well TW04-02 was retrieved.

5. Water System Emergency Response Plan

The 2014 Water System Emergency Response Plan details the plan of action for staff in the event of an emergency situation, disruption in service, or threat to the health of people drawing from the distribution system. The plan provides staff with an understanding of the resources available to them, instructions on when to operate the Emergency Operations Center (EOC) and identifies external resources that can be called upon if required. The Water System Emergency Response Plan was updated in 2014 and supplied to all utilities staff and personnel who are required to act in the case of a water emergency. A revised 2015 excerpt from the 2014 emergency response plan is included as Appendix A.

If it is known that a contaminant has entered the water supply or it is suspected that one has, and it poses a potentially significant threat to public health, then the manager must immediately notify the Drinking Water Officer and the public. If there is a suspicion of a potentially modest threat to the drinking water supply the Drinking Water Officer should also be notified and will advise on the appropriate public notification advisory.

5.1 Public Drinking Water Notifications Issued by the RMOW in 2014

1. Boil Water Advisory notices issued by the RMOW in 2014: **NONE**
2. Do Not Drink Water Advisory notices issued by the RMOW in 2014: **NONE**
3. Do Not Use Water Advisory notices issued by the RMOW in 2014: **NONE**
4. Maximum Water Use Restriction issued by the RMOW in 2014: **LEVEL 1**

5.2 Emergency Situations Occurring in the RMOW in 2014

1. Chemical or biological contamination events in 2014: **NONE**
2. Number of elevated turbidity level events in 2014: **15 Distribution & 19 Supply**
3. Number of water main breaks that occurred in 2014: **ONE**

4. Number of flood events in 2014: **ONE**
5. Number of forest fire events in 2014: **NONE**
6. Number of earthquakes in 2014: **NONE**

5.3 Technical Systems Outage

1. Number of extended power failures in 2014: **NONE**
2. Number of SCADA system failure in 2014: **SIX**

6. Operations

6.1 Capital Water System Improvements

The RMOW is continually striving to effectively maintain, make improvements to, and upgrade the water systems infrastructure. There are several short and long term water systems capital projects underway at the RMOW, table 11 details the progress for 2014.

Table 11. Description of RMOW capital projects in 2014.

Project	Description of Project Tasks
Annual Water Reconstruction	Two water main replacements, consolidation of SCADA system, drinking water corrosiveness plan, soil corrosiveness plan, Lost Lake pump operation improvement, implementation of water meter inspection and repair program, replace fire hall hydrant isolation valve, repair W210 turbidity problem, replace Lost Lake reservoir mixer, fix true and pending water main breaks as they occur. Annual water meter reading not conducted due to lack of summer student resources.
Water Loss Reduction Program	Ongoing project to reduce unaccounted for water use in Whistler through a zone monitoring program. Low flow analysis in sub-zones of the high-loss zones found in 2013 was conducted to determine smaller high-loss areas and specific leak points.
Reservoir Upgrades	Specified reservoirs and clear wells to be upgraded in an effort to improve water quality. Completed 2013 study suggested new level set points, 2014 included installation of mixers in selected reservoirs. Remote reservoir plan proposed for 2015-2018.
Water Infrastructure Update Zone 775	The RMOW water system was modeled, the Olympic reservoir identified as requiring replacement, and other hydraulic improvements suggested, such as the removal of Blackcomb Creek as an available high-elevation water source.
Major Water Infrastructure Renewal Program	Implementation began with a study in 2013 that provided a priority list, timeframe, and estimated cost of replacement for all of Whistler's water infrastructure. Baxters kiosk replacement for valve chambers to be in 2015. Alpine water main system construction design completed in 2014 construction to begin in 2015.
Fire Hydrant Maintenance	All 532 municipal fire hydrants were checked and serviced in 2014.
Reservoir Cleaning	RMOW reservoirs and clear wells are cleaned, inspected, and repaired if necessary in rotation each 5 years. In 2014 Lost lake Reservoir, Stonebridge Reservoir, Alpine A & B Reservoir, Lower Taluswood Reservoir.

Groundwater Monitoring Program	The Groundwater Monitoring Program was continued monitoring the municipal groundwater well system in Whistler to ensure that the quality and quantity of the source water was kept healthy. Annual sampling and analysis was conducted by geotechnical & hydrogeological consultants Piteau Associates who report on the water quality parameters and Potential Contaminants of Concern (PCOC's) through several monitoring wells throughout Function Junction, Rainbow Park, and Whistler Village.
Source Water Protection Plan 21 Mile Creek	The Vancouver Coastal Health Authority requires the RMOW to develop a source water protection plan for the 21 Mile Creek watershed upstream of the intake system. In 2014 a Source Water Assessment was conducted by Urban Systems Ltd. in order to identify and evaluate the present and future hazards to drinking water quality and quantity in the watershed; characterize the risks; and propose risk management strategies to move forward in developing a Source Water Protection Plan.
Emerald Well Water Quality	Drinking water officer requested study on pathogenic infection risk at two of the three Emerald wells. In 2014 Piteau Associate were contracted to sample the Emerald wells and conduct a microscopic particulate analysis (Appendix B).

6.2 Unidirectional Flushing Program

Mainline flushing is one of the most effective tools available to maintain and improve water quality. The RMOW has implemented a Unidirectional Flushing Program, a procedure that removes more sediment, mineral, and biological deposits in the distribution lines than traditional flushing methods. This annual flushing program begins in May each year generally completing the final subdivision by the end of September. In 2014 85.7km of the RMOW water distribution system water main was flushed. Several pipe lines are not flushed since they achieve the minimum flushing velocity required several times throughout the year and therefore considered self-cleaning. There are also a few small sections of pipe that do not have the necessary connections/equipment required to be flushed.

In past years, the Alpine area of Whistler had logged several water quality complaints regarding turbidity issues, for this reason the RMOW has implemented an extra round of flushing in Alpine each year to ensure good water quality.

6.3 Cross Connection Program

In 2014 the RMOW in conjunction with the Vancouver Coastal Heath authority implemented a cross connection control program. Maintenance Training Systems Inc. was contracted to complete a cross connection hazard assessment on all of the Institutional, Commercial, and Industrial (ICI) distribution system service connections. Once the service connections are assessed the ICI building owners/property managers are notified of the results and presented any required actions necessary to comply with existing backflow prevention standards.

6.4 Hydrant Servicing

In 2014, 532 RMOW hydrants were fully serviced and checked for operation. This is an annual program subcontracted in 2014 to Sea-to-Sky Fire Protection, and was completed on October 19, 2014. In addition to the check and service operation 36 hydrant work orders for maintenance and repair, many of which were identified through servicing, were completed by utilities staff.

6.5 Reservoir Inspection

The RMOW currently contracts out the annual reservoir/clearwell inspection, cleaning and repair to Phoenix Marine Services Inc. Divers use cameras and specialized tools to clean and inspect the reservoirs, contact tanks and water wells. The RMOW conducts the cleaning and sanitization in this way to maintain fire suppression water levels throughout the process. The reservoirs/clearwells cleaned in 2014 were Lost lake Reservoir, Stonebridge Reservoir, Alpine A & B Reservoir, and Lower Taluswood Reservoir. As part of the inspection cleaning process Pheonix Marine Servces installed a new access ladder at Alpine A , B, and Stonebridge Reservoirs.

During the 2012 inspection Olympic Reservoir was found to contain areas of spalling (flaking and pitting) on the internal walls. In 2013 OPUS DaytonKnight Consultants Ltd. produced a Condition Assessment Report on the Olympic Reservoir resulting in a recommendation to replace the Reservoir. In 2014 the RMOW researched several possible options in an effort to solve the issue of the decaying reservoir and have proposed two potential locations for a new reservoir location. In 2015 these potential locations will be vetted and timelines discussed.

6.6 Emerald Well Water Quality Study

The Emerald Well Water Quality Study was launched under the request of the drinking water officer to determine the level of risk for pathogenic infection present at the three Emerald well sites. In 2014 Piteau Associates conducted a Microscopic Particulate Analysis (MPA) for the Emerald Wells. The findings presented in their report indicate a high risk of well W201-1 being under the influence of surface water contaminants, with wells W201-2 and W201-3 appearing to have lower risk. The report recommends consideration be given to enhancing the disinfection of groundwater for all three wells, and that the usage of well W201-1 be curtailed to the maximum extent possible until such time as disinfection can be enhanced at this location.

6.7 Asset Management System

An Asset Management system was implemented in 2007, which is used to catalog and document all of the water system assets within the municipality of Whistler. The asset management system has improved RMOW’s efficiency in handling maintenance and operations on the water system. Significant

improvements to staff usage and training on the system were noted in 2014 and resulted in an increased accuracy of the overall water system infrastructure.

6.8 GPS Location Program

The utilities department initiated a GPS Location Program in the spring of 2007. The RMOW staff continue to geo-locate various features of the water distribution system infrastructure with the subsequent goal to improve our GIS. Having reliable cataloged location data for the water system feature would enable us to better locate assets in the field and improve the overall quality of our service delivery. New hardware equipment and staff training on data acquisition best practices was done in 2014.

7. Performance

7.1 Incidents

In 2014, the RMOW recorded one valve malfunction, one pump failure, two water main leaks, and two service connection leaks (Table 12.). The RMOW uses a target response time of one hour in the event of a break in the system, the utilities staff works quickly to ensure all necessary repairs are completed and water service restored in a timely manner.

Table 12. Water operational incidents 2014.

Work Order #	Date	Type of Operational Problem	Corrective Action Taken
	Feb	Frozen Hydrant	Two frozen fire hydrants discovered by the Fire Dept. in Emerald have been thawed and are back in service. Further checks of the 532 public hydrants revealed two other hydrants frozen; these have been thawed and returned to service as well. One other was found to be non-functional due to a broken coupling assembly, it too has been repaired.
	Feb	Broken Hydrant	The Roads Dept. hit and broke a hydrant in the village while plowing during one of the recent heavy snowfalls. This hydrant remains out of service until the Utilities Equipment Ops. Crew prepares to repair it. A coupling at the bottom of the hydrant is broken and an excavation may be required to correct the problem.
	Feb	Chlorine Injection Leaks	Another series of leaks on the surface water chlorine injection piping assembly was discovered at P280 – the 21 Mile pump station and has been repaired. Follow-up of the replacement piping for this application recommended by Opus-Dayton & Knight has revealed that while the hose product recommended does have an appropriate pressure rating the fittings recommended do not.

WSG14-000082	7/7/2014	PRV leak	PRV water break repaired and area cleaned up
WS14-000465	6/25/2014	Pump failure	Pump # 1 at P265 replaced
WS14-000409	6/12/2014	Water leak - main	Disconnect temp water back feed at 8072 Timber Lane, while water main is repaired
WS14-000169	3/17/2014	Water leak - main	Suspected leak followed up and resolved
WSG14-000987	11/24/2014	Water leak -service connection	Water service leak detected at 9215 Emerald Drive, followed up and resolved
WSG14-000932	11/12/2014	Water leak -service connection	Water leak investigated at 2281 Brandywine Way and resolved
	Dec	Flooding	Flooding in early December caused some overflowing of ditches/culverts on the Lost Lake/Blackcomb Reservoir access roads. A significant contributing factor was the materials left in the ditches by the Fire Smart Forest Thinning contractor. Also the chippings left upslope by this contractor washed down into the ditches compounding the problems. We have done some initial clearing of ditches and road repairs to prepare for winter and the spring melt. We will have to revisit the ditching and road conditions in the summer months. We are having a hazard assessment done and having options reviewed in order to allow the electrician to access the float wiring at the ground water lift station at Cheakamus Crossing as the site has no ladder or other access system.

7.2 Complaints

In 2014 the RMOW received 27 water quality complaints (Table 13.). Once the RMOW has responded to the initial complaint utilities staff follow up to complete any necessary maintenance work or initiate any required engineering reviews.

Table 13. Water Quality Complaints 2014

Work Order #	Date	Water Quality Complaint	Corrective Action Taken
WS14-000432	5/27/2014	Blocked Storm Outflow	Storm line was Vactored out and the debris cleaned up as the blockage was likely the result of Utilities UDF and weekly flushing programs
WS14-000001	2/11/2014	Copper Deposits	Cheakamus Crossing has a lower pH than other areas in Whistler, which may cause faucets to corrode more easily producing Cu deposits
WSG14-001136	12/22/2014	Dirty Water	Spoke with home owner and explained the situation and gave her Michael Days email to follow up
WSG14-001137	12/22/2014	Dirty Water	Water main realignment was re-charged, although the loop has not been completely re-established

WSG14-001138	12/20/2014	Dirty Water	Water main realignment was re-charged, although the loop has not been completely re-established
WSG14-000426	8/7/2014	Dirty Water	Older cast iron piping scheduled to be replaced over the next two years
WS14-000434	5/27/2014	Dirty Water	Unidirectional Flushing cause and resolution
WS14-000177	3/26/2014	Dirty Water	Turbidity at P277 is 2.64NTU and Cl 0.33mg/L
WS14-000173	3/21/2014	Dirty Water	Low flow flush sites at S101 - 8330 Rainbow Drive and at Hydrant 8106P in Nineteen Mile
WS14-000174	3/21/2014	Dirty Water	Low flow flush sites at S101 - 8330 Rainbow Drive and at Hydrant 8106P in Nineteen Mile
WS14-000172	3/21/2014	Foul Odour	Four storm drain catch basin grates where Vactored out
WS14-000171	3/20/2014	Foul Odour	Storm drain grates and sanitary manholes were checked
WS14-000176	3/20/2014	Foul Odour	Organic material on a field trapped under ice
WS14-000429	5/27/2014	Hot Water Tank Overflow	Resident called plumber to resolve issue
WS14-000416	6/17/2014	Low Water Pressure	Pumps checked to ensure adequate system pressure is being maintained
WS14-000435	6/17/2014	Low Water Pressure	Checked downstream system pressures at the PRV's for the zones and at a hydrant in the zone
WS14-000430	5/27/2014	Low Water Pressure	Low pressure most likely due to the Unidirectional Flushing program
WS14-000150	3/4/2014	Low Water Pressure	Likely a problem confined to residents condo
WS14-000427	5/27/2014	No Water Service	RMOW not doing any work in the area and would not have shut-off his water, recommended resident to call a plumber
WS14-000428	5/27/2014	Oily Water	Likely well a result of the higher iron and manganese content found in well water
WS14-000431	5/27/2014	Oily Water	Sample sites checked but no sheen on the water noticed, however minor colour in the samples, which required some investigation
WS14-000151	3/5/2014	Skin Irritation	Watertrax results checked typical of low pH, a slight increase in chlorine but well within the RMOW 0.20 - 0.60 mg/L guideline
WS14-000248	4/11/2014	Strong Chlorine Taste	Chlorine residual in the distribution system is being balanced at this time of year as we switch from surface water to well water. Chlorine residuals did exceed our target
WS14-000170	3/18/2014	Taste	Difference between surface and well water sources.
WS14-000149	3/4/2014	Taste	Recommended flushing the lines for a minute or two before filling a water glass in order to ensure not

			drinking water that has sat in the pipes for a while. If further issues, suggested contacting a plumber
WS14-000426	5/12/2014	Water Hammer	Most likely due to an issue with the household plumbing
WS14-000425	5/12/2014	Water Leak	Utilities crew sandbagged around pull box to force water out onto roadway gutter. Advised homeowner to contact BC Hydro to see if they can provide a solution.

8. Results

8.1 Chemical and Physical Parameters

8.1.1 pH

In 2014 there were 826 pH samples taken, 346 from source water sample sites and 480 from distribution system sample sites. The Canadian drinking water quality guidelines set an optimal target pH range of 6.5 to 8.5; the sampling process records all the pH values and flags any samples that fall outside this range. Of the 826 samples 187 individual samples were flagged, 110 from source water sample sites and 78 from the supply distribution sample sites. The average pH level over 2014 for the source water samples was 6.74 for the source samples and 6.85 for the distribution system samples, which both fall within the recommended guidelines. As a single sample does not provide an adequate summary of the overall water condition, the system averages provide the best representation of the pH levels of the RMOW water distribution system. The pH levels in 2014 did not pose any hazard to human health.

8.1.2 Temperature

Temperature is primarily an aesthetic objective with a target of less than or equal to 15°C, according to the GCDWQ. Warmer water temperature within the distribution system has the potential to indirectly affect health through impacts on disinfection, corrosion control and formation of biofilms. Whistler overwhelmingly achieved this objective in 2014; of 794 temperature samples 12 were recorded outside this range (11 out of the 470 in the distribution system and 1 from the 324 source water sites).

8.1.3 Turbidity

The current GCDWQ states that the turbidity of water entering a distribution system should be < 1.0 NTU at all times, however the guideline is specifically for water supply systems that use filtration systems, which the RMOW distribution systems does not. As such the RMOW water supply permit allows for a turbidity of < 1 NTU in the source water and < 5 NTU throughout the distribution system.

Of the 821 turbidity samples taken 345 were from source water sampling stations and 476 from distribution sample sites. The distribution system samples tested below this threshold 99.8% of the time and the source water samples testing below the threshold 94.5% of the time. When the RMOW surface

water intake (21-Mile Creek) exceeds the < 1 NTU threshold the intake automatically shuts down. Alpine groundwater wells W210 and W213 often display high turbidity upon start-up; turbidity at these sites generally drops below 1 NTU after approximately 20 minutes of runtime. This start-up turbidity has had no effect on disinfection parameters.

8.1.4 Total Organic Content

Quarterly testing of Total Organic Content (TOC) at source water sample sites resulted in 4 samples greater than the RMOW internal guideline of < 2.5mg\L. The GCDWQ standards do not discuss TOC, and subsequently do not establish concentration guidelines for TOC levels in drinking water supply. The amount of total organic carbon in the water does not directly represent a hazard to human health, however large quantities can contribute to an increase in disinfection by-products of epidemiological interest, such as trihalomethane (THM).

8.1.5 Free Chlorine

The GCDWQ has no threshold set for chlorine concentrations in drinking water due to its low toxicity in amounts commonly used in the water supply disinfection process. However the RMOW has set a desired residual chlorine target of between 0.2 mg\L and 0.6 mg\L throughout the water distribution system. Sampling is conducted primarily post disinfection to monitor the residual chlorine in the distribution system, 482 samples were collected in 2014 meeting the RMOW target range 78% of the time. These samples provide the RMOW with the necessary information to regularly calibrate the amount of chlorine used to ensure effective disinfection.

8.1.6 Polycyclic Aromatic Hydrocarbons (PAHs)

Quarterly testing showed no PAH results outside acceptable levels.

8.1.7 Disinfection Bi-Products

Quarterly testing showed that both trihalomethane (THM) and Haloacetic Acid (HAA) were within acceptable maximum concentrations as defined by the GCDWQ (MAC 100 µg\L).

8.1.8 Total Iron

Quarterly testing for Total Iron shows 3 sample results greater than the aesthetic objective of 0.3 mg/L, located at Alpine Meadows and W212 at Function Junction. As this is an aesthetic objective, the elevated results are not a public health concern.

8.1.9 Total Manganese

Quarterly testing for Total Manganese shows 11 sample results falling outside the aesthetic objective of 0.05 mg\L. High manganese levels are not considered a risk to public health, as they tend only to affect taste and staining of plumbing fixtures.

8.2 Microbiological Parameters

Of the 830 weekly E. coli samples, 330 source water samples and 500 distribution system samples, none tested positive in the distribution system for the bacteria. Out of the 830 Total Coliform Count samples taken, of the 500 water distribution system samples only 1 tested positive with a Total Coliform Count of 10, just above the maximum allowable count (MAC < 10 counts/100mL). The results above indicate that the RMOW disinfection system is operating as designed, effectively maintaining the required level of water quality. Quarterly testing detected zero Heterotrophic Plate Counts (HPC) in excess of the RMOW objective of < 200 colonies per millilitre, a significantly lower limit than the GCDWQ standard of < 500 colonies per millilitre.

9. Appendix A

9.1 Public Notifications

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 possible a Do Not Use Advisory. 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.*

9.1.1 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.

9.1.2 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.

9.1.3 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.

9.1.4 Water Use Restriction

At any time of the year it may be necessary to implement a general Water Use Restriction on the drinking water supply as circumstances may dictate that water use be restricted until the system returns to normal operating capacity. However, for at least June 1st through September 30th each year water use restrictions are in affect (Bylaw No. 1538, 2001 as amended). It is at the discretion of the General Manager to issue a Water Use Restriction Order. Water use restriction orders may be necessary under circumstances where a water source or reservoir needs to be isolated for cleaning or maintenance, a pump or water source has failed, or demands are being placed on the system that exceed capacity (e.g. drought circumstances where consumption is greater than available supply).

9.1.5 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.

9.2 Emergency Situations

9.2.1 Chemical and/or Biological Contamination

If Utility staff identify a contamination event that may threaten the drinking water supply:

- Utility personnel must immediately inform all supervisory personnel up to, and including the general manager
- Contact the Drinking Water Officer and Environmental Health Officer
- Contact Spill Reporting Centre if necessary
- Isolate the contaminated zone area
- Activate the Emergency Operations Centre (EOC) if required
- Issue a Do Not Drink Water Advisory for the affected part of the system and arrange for trucked/bottled water if necessary
- If the spill enters or is near a fish-bearing stream, contact the Department of Fisheries and Oceans
- Identify the contaminant and determine the level of contamination through water testing and sampling
- If spill is near well, have monitoring wells installed to monitor contaminant plume and take action to mitigate impacts of spill on aquifer. Contact a hydro-geologist for assistance. Review well head protection plan
- 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 tests positive for E. coli:

- Utilities personnel and Drinking Water Officer will be notified via an alert from the laboratory
- All outstanding samples will be examined immediately
- Repeat samples will be collected immediately
- The chlorine residual for the sample will be reviewed to determine if a localized loss of disinfectant residual has occurred
- Utilities staff will determine if an interruption of source water disinfection occurred
- Utilities staff will determine if localized flushing and/or temporary increase in disinfectant residual dosage is warranted
- Turbidity, pH, and temperature values for the affected sample will be reviewed to determine other possible factors which may have contributed to the event
- 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
- The municipality will coordinate with the Drinking Water Officer on the extent of the Boil Water Advisory

9.2.2 Elevated Turbidity Levels

Turbidity is not a persistent problem in the RMOW's water supply although, on occasion elevated levels can be experienced. The Drinking Water Officer has set a Turbidity NTU guideline of < 1 NTU in source water and < 5 NTU within the distribution system. The following actions are taken when increased turbidity occurs in source waters and/or the distribution system:

- During turbidity events of ≥ 1 NTU at surface water supply sites, the intakes automatically shut down and alternative source waters are drawn upon

- During turbidity events of > 1 NTU at groundwater supply sites, the chlorine residual for the high turbidity sample will be reviewed to determine if elevated turbidity has caused a localized loss of disinfectant residual; as well historical raw water microbiology and turbidity data for the groundwater source in question will be reviewed to determine if further action is warranted
- The RMOW will take into consideration the effectiveness of increased chlorine dosage, chlorine contact time and the source of the turbidity in its response to minimizing the amount of turbidity entering the distribution system
- During turbidity levels of > 5 NTU within the distribution system, the utilities staff will carry out an examination of other events that may have taken place to cause the increased turbidity, for example water main or service repairs, construction activity, unidirectional flushing program, etc. Further sampling for chlorine residual and/or microbiological activity will be conducted to assist in determining the extent of the response required
- During turbidity levels of > 5 NTU within the distribution system a public notification may be issued in consultation with the Drinking Water Officer
- Two consecutive days of turbidity of < 1 NTU shall pass before lowering chlorine dosage to pre-event levels

9.2.3 Water Main Break

In the event of a reported water main break:

- Staff inspect the area to determine the extent and scope of the break, response time for leaks is one hour
- The leak/break will be isolated to prevent any safety hazards and mitigate further property or infrastructure damage
- If possible a small flow will be maintained to ensure positive pressure is sustained in the water line, this prevents backflow or back siphoning which could allow contaminated water back into the main
- The area affected by the leak/break will be assessed, repair requirements are determined and critical customers are notified (e.g. Health Clinic, businesses, residents etc.)
- The need for an alternate water supply to critical customers or residents will be determined
- Repairs are planned taking the following into consideration:
    - The excavation safety requirements and traffic safety plan
    - Equipment requirements
    - Operator labour requirements
    - Parts availability
- Repairs are performed ensuring that the water contact surface of all replacement parts and adjacent existing piping are disinfected by spraying or swabbing with a strong chlorine solution
- If any contamination is suspected, flushing and sampling is carried out and, if necessary, a water main disinfection procedure would be initiated

9.2.4 Building Fire

Do not try to put out the fire in the following circumstances:

- If the fire is spreading beyond the spot where it started
- If there is a potential for explosion
- If the fire could block your escape
- If the fire extinguisher prove to be in effective

In the event of an internal or external fire in any RMOW building or outbuilding:

- Initiate emergency meeting with the critical management team
- Contact the fire department
- Advise of any chlorine or other chemicals that may be stored at the location
- Ensure all personnel are clear of the building
- Complete a post incident report

9.2.5 Vandalism and/or Security Concerns

There is potential for vandalism and/or security concerns for any RMOW facility. When there is a report of vandalism to a utilities structure, facilities, and/or if deliberate contamination is suspected:

- Contact the RMOW and the RCMP
- Contact the utilities manager and the Drinking Water Officer/Environmental Health Officer
- When there is a threat to drinking water quality, issue Boil Water Advisory for suspected microbiological contamination or Do Not Drink the Water Advisory for suspected chemical or unknown contamination
- Ensure that staff is implementing appropriate measures for cleaning/decontaminating facilities
- Do not remove the public advisories until instructed by the Drinking Water Officer

NOTE: Notify the Drinking Water Officer or Environmental Health Officer of any vandalism or deliberate acts of contamination to any part of the water system. The new Drinking Water Protection Act prohibits any person from introducing anything into a domestic water source, a well recharge zone, or an area adjacent to a drinking water source that could in any way result in a health hazard related to the drinking water supply. The Act also prohibits any person from destroying, damaging, or tampering with any part of a domestic water system that would limit the use of the water system on the basis that there may be a public health risk.

9.2.6 Flood Event

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:

- Confirm which facilities are functional and accessible
- If a well is reported flooded, 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
- If a facility(s) becomes damaged and there is a concern of a lack of water, issue a Water Restriction Notice
- Once flood waters have receded, have affected facilities checked for structural integrity and contact a structural engineer for assistance
- Have the water quality in affected wells tested and do not remove public notices until instructed by the Drinking Water Officer
- Consider flood proofing affected facilities and ensure all wells are sealed and flood proofed
- Contact Provincial Emergency Program to apply for funding

9.2.7 Forest Fire

Local forest fires can cause serious damage to water infrastructure, such as reservoirs, pump stations, and building facilities. In the event of a serious forest fire there will likely be an increased demand on the system, disrupting normal operations. There is also the concern of fire suppression chemicals entering the water courses and distribution system. The hydrology of a watershed is altered after a forest fire, leading to increased turbidity, colour, and modified stream flow. In the event of a local forest fire:

- Contact the Fire Department and BC Forest Service
- Contact staff and determine if any facilities are potential danger
- If possible, isolate threatened facilities and switch to backup sources to maintain system pressure and supply
- If fire suppression activities occur, contact BC Forest Service and Fire Department to determine nature of suppressants used
- If surface waters are affected by fire suppressants, issue a Do Not Drink Water Advisory, or apply appropriate treatment approved by the Drinking Water Officer to render the water safe to drink
- Once danger of fire has passed, have facilities checked and ensure that necessary repairs are completed
- Do not remove any public notices until instructed by the Drinking Water Officer
- Contact Provincial Emergency Program to apply for funding
- If long-term impacts to surface waters occur, consider alternate sources or installation of treatment system

9.2.8 Earthquake

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, soils with high water content can liquefy and damage buildings and underground pipes, other soil types can compact causing similar damage. Unstable slopes may slide, sending debris into source waters and blocking access roads. Fires will likely occur from ruptured gas mains and downed power lines, increasing demand on the water system to provide adequate fire suppression. In the event of an earthquake:

- Consult with utilities team to determine which facilities are accessible, and which may be damaged as it relates specifically to maintaining safe drinking water
- If necessary, issue public alerts and supple bottled/trucked water
- Contact a structural engineer for assistance in assessing the damage to the water facilities
- If surface sources are degraded by landslides, switch to alternate sources (wells)
- If wells are destroyed, switch to backup sources and investigate locations for new wells
- Have damaged equipment and facilities replaced or repaired
- Contact the Provincial Emergency Program for funding

9.3 Technical Systems Outage

9.3.1 Extended Loss of BC Hydro Supply

In the event there is an extended loss of BC hydro supply to the municipal drinking water supply infrastructure system standby power/generators will activate to provide enough power for the water system to function. In an extended loss of power situation:

- Utilities supervisor will notify the utilities group manager and the critical management team as required
- Contact BC Hydro and notify them of the situation
- Ensure that the generators are running properly and can maintain minimum functionality to the water system infrastructure
- Maintain the working order of the generators for the duration of the power loss
- Once BC Hydro is back and running shut down generators and restore them to a ready state

9.3.2 Failure of SCADA System

The RMOW's SCADA system continuously monitors chlorination and UV disinfection within the distribution system and automatically alerts personnel of any failures. The surface water UV disinfection control system operates independently of the RMOW SCADA system. Any failure of the surface water UV system triggers an automatic shutdown of the surface water supply at the intake. The following actions are to be taken in the event of an interruption to the disinfection system within the drinking water distribution system:

- Utility personnel immediately carry out any repairs to equipment and if necessary manual disinfection is established
- Chlorine residual samples are taken at various points in the distribution system to ensure adequate free chlorine residual is present
- In cases where chlorine residual levels are < 0.2 mg/mL utility crews will flush the affected area until an acceptable level is achieved
- Monitoring will continue until disinfection is resumed and adequate levels have been reached in the distribution system

10. Appendix B

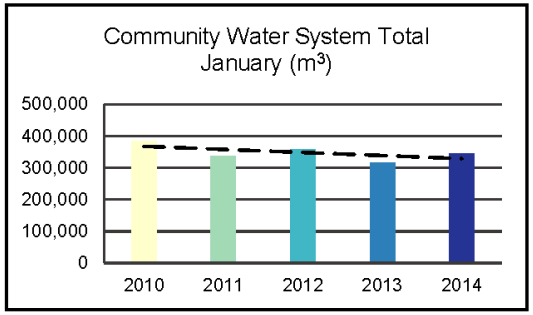
1. Monthly Water Consumption Reports January to December 2014
2. Monthly Water Consumption Summary 2014
3. Source Water Summary 2014
4. Weekly Water Sampling Results 2014
5. Quarterly Water Sampling Results 2014
6. Annual Water Sampling Results 2014
7. Microscopic Particulate Analysis (MPA) Results 2014

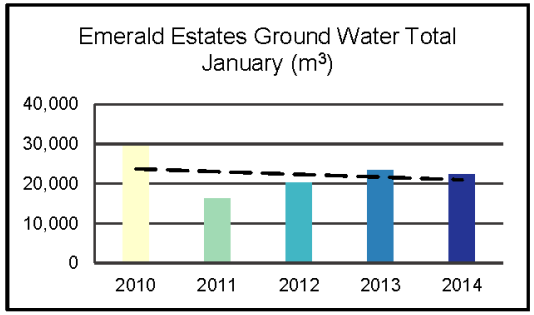
10.1 Monthly Water Consumption Reports January to December 2014

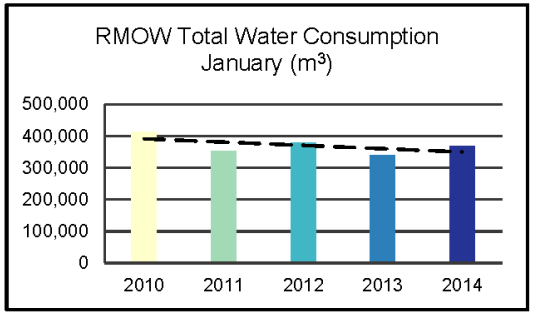
Resort Municipality of Whistler

January 2014 Water Consumption Report

	January-2014	Year-to-Date	% Change	January-2013	Year-to-Date	% Change	January-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	254,791	254,791	17%	218,471	218,471	3%	211,858	211,858	32%
R232 Blackcomb Creek	0	0	-	0	0	-100%	24,104	24,104	95%
Surface Water Total (m^3)	**254,791**	**254,791**	**17%**	**218,471**	**218,471**	**-7%**	**235,962**	**235,962**	**36%**
Ground Water Sources									
W202 Alpine	52	52	-99%	8,388	8,388	-53%	17,800	17,800	-42%
W210 Alpine	20,315	20,315	19%	17,021	17,021	69%	10,042	10,042	0%
W213 Meadow Park	15,674	15,674	9%	14,446	14,446	64%	8,812	8,812	5%
W205 & W211 Community Wells (P247 Pump Station)	4,951	4,951	-22%	6,377	6,377	-69%	20,589	20,589	50%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	3,804	3,804	31%	2,895	2,895	-50%	5,807	5,807	-70%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	18,900	18,900	7%	17,683	17,683	17%	15,122	15,122	16%
W218 Rainbow Well	27,483	27,483	-7%	29,630	29,630	-34%	44,924	44,924	-35%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**91,179**	**91,179**	**-5%**	**96,440**	**96,440**	**-22%**	**123,096**	**123,096**	**-25%**
Community Water System Total (m^3)	**345,970**	**345,970**	**10%**	**314,911**	**314,911**	**-12%**	**359,058**	**359,058**	**6%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	22,399	22,399	14%	19,605	19,605	268%	5,334	5,334	41%
W201-2 Emerald *CAN RUN TO WASTE	18	18	-100%	3,737	3,737	-33%	5,575	5,575	41%
W201-3 Emerald *CAN RUN TO WASTE	27	27	-62%	71	71	-99%	9,386	9,386	11%
Emerald Estates Ground Water Total (m^3)	**22,399**	**22,399**	**-4%**	**23,342**	**23,342**	**15%**	**20,295**	**20,295**	**25%**
Ground Water Total (m^3)	**113,578**	**113,578**	**-5%**	**119,782**	**119,782**	**-16%**	**143,391**	**143,391**	**-21%**
RMOW Total Water Consumption (m^3)	**368,369**	**368,369**	**9%**	**338,253**	**338,253**	**-11%**	**379,353**	**379,353**	**7%**

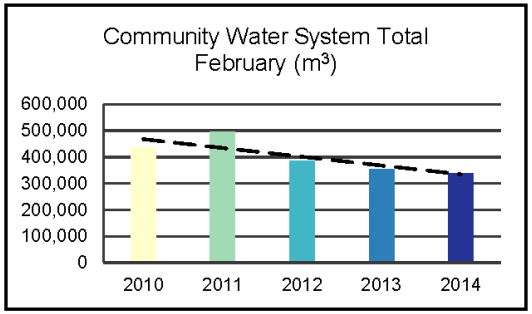


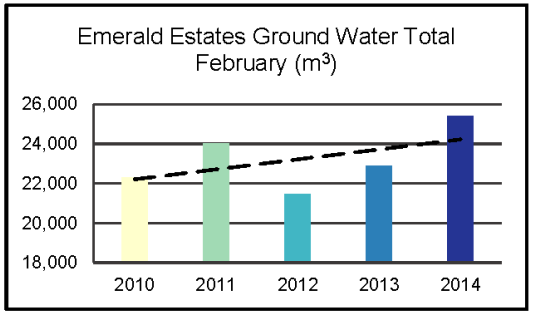


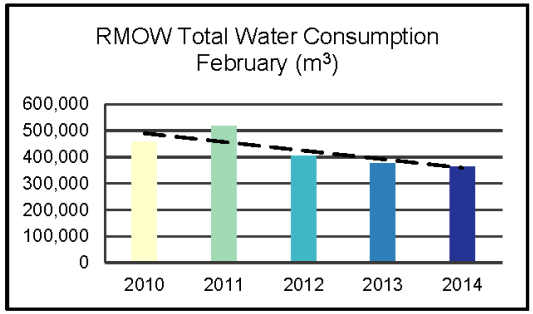


Resort Municipality of Whistler — February 2014 Water Consumption Report

	February-2014	Year-to-Date	% Change	February-2013	Year-to-Date	% Change	February-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	257,377	512,168	2%	251,446	469,917	-10%	280,610	492,468	48%
R232 Blackcomb Creek	0	0	-	0	0	-100%	30,998	55,102	42%
Surface Water Total (m^3)	**257,377**	**512,168**	**2%**	**251,446**	**469,917**	**-19%**	**311,608**	**547,570**	**47%**
Ground Water Sources									
W202 Alpine	9,035	9,087	-50%	18,203	26,591	-1%	18,344	36,144	-53%
W210 Alpine	18,275	38,590	28%	14,300	31,321	68%	8,507	18,549	-60%
W213 Meadow Park	14,638	30,312	47%	9,930	24,376	48%	6,709	15,521	-61%
W205 & W211 Community Wells (P247 Pump Station)	2,651	7,602	-25%	3,516	9,893	-30%	5,057	25,646	-90%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	1,661	5,465	21%	1,378	4,273	-70%	4,566	10,373	-76%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	19,710	38,610	11%	17,765	35,448	18%	14,995	30,117	-29%
W218 Rainbow Well	15,767	43,250	-57%	36,482	66,112	156%	14,257	59,181	-87%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**81,737**	**172,916**	**-20%**	**101,574**	**198,014**	**40%**	**72,435**	**195,531**	**-74%**
Community Water System Total (m^3)	**339,114**	**685,084**	**-4%**	**353,020**	**667,931**	**-8%**	**384,043**	**743,101**	**-22%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	25,383	47,782	11%	22,823	42,428	337%	5,227	10,561	-12%
W201-2 Emerald *CAN RUN TO WASTE	50	68	-37%	79	3,816	-99%	5,428	11,003	-13%
W201-3 Emerald *CAN RUN TO WASTE	175	202	32%	133	204	-99%	10,808	20,194	-9%
Emerald Estates Ground Water Total (m^3)	**25,383**	**47,782**	**11%**	**22,902**	**46,244**	**7%**	**21,463**	**41,758**	**-11%**
Ground Water Total (m^3)	**107,120**	**220,698**	**-14%**	**124,476**	**244,258**	**33%**	**93,898**	**237,289**	**-69%**
RMOW Total Water Consumption (m^3)	**364,497**	**732,866**	**-3%**	**375,922**	**714,175**	**-7%**	**405,506**	**784,859**	**-22%**

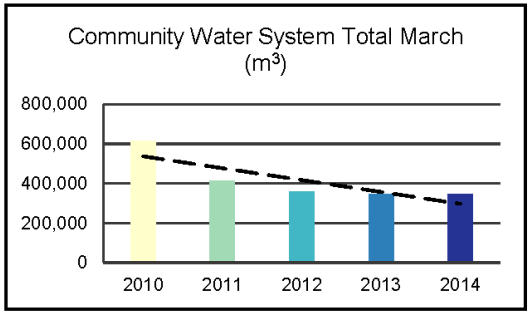


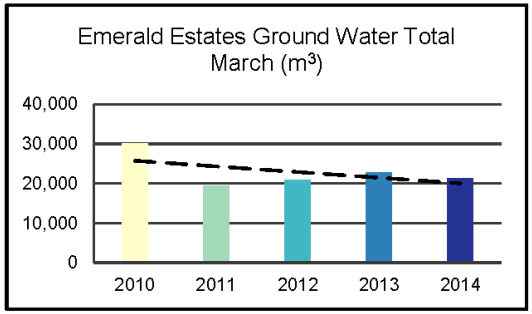


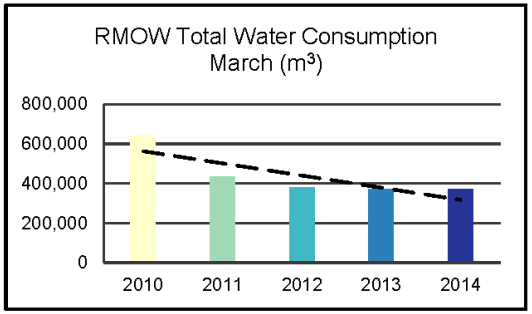


Resort Municipality of Whistler — **March 2014 Water Consumption Report**

	March-2014	Year-to-Date	% Change	March-2013	Year-to-Date	% Change	March-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	246,784	758,952	19%	208,007	677,924	-2%	213,156	705,624	4%
R232 Blackcomb Creek	0	0	-	0	0	-100%	42,621	97,723	117%
Surface Water Total (m^3)	**246,784**	**758,952**	**19%**	**208,007**	**677,924**	**-19%**	**255,777**	**803,347**	**14%**
Ground Water Sources									
W202 Alpine	24,890	33,977	-38%	40,062	66,653	136%	16,950	53,094	-59%
W210 Alpine	9,359	47,949	1952%	456	31,777	-94%	7,862	26,411	-55%
W213 Meadow Park	6,818	37,130	-	0	24,376	-100%	6,670	22,191	-54%
W205 & W211 Community Wells (P247 Pump Station)	9,244	16,846	-43%	16,201	26,094	8%	15,004	40,650	14%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	4,728	10,193	-65%	13,508	17,781	20%	11,220	21,593	98%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	17,771	56,381	8%	16,509	51,957	7%	15,398	45,515	-2%
W218 Rainbow Well	28,277	71,527	-46%	52,593	118,705	68%	31,391	90,572	-61%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**101,087**	**274,003**	**-27%**	**139,329**	**337,343**	**33%**	**104,495**	**300,026**	**-45%**
Community Water System Total (m^3)	**347,871**	**1,032,955**	**0%**	**347,336**	**1,015,267**	**-4%**	**360,272**	**1,103,373**	**-13%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	21,334	69,116	-6%	22,611	65,039	286%	5,863	16,424	19%
W201-2 Emerald *CAN RUN TO WASTE	17	85	-78%	78	3,894	-99%	6,215	17,218	22%
W201-3 Emerald *CAN RUN TO WASTE	25	227	-86%	175	379	-98%	8,715	28,909	-8%
Emerald Estates Ground Water Total (m^3)	**21,334**	**69,116**	**-6%**	**22,689**	**68,933**	**9%**	**20,793**	**62,551**	**7%**
Ground Water Total (m^3)	**122,421**	**343,119**	**-24%**	**162,018**	**406,276**	**29%**	**125,288**	**362,577**	**-40%**
RMOW Total Water Consumption (m^3)	**369,205**	**1,102,071**	**0%**	**370,025**	**1,084,200**	**-3%**	**381,065**	**1,165,924**	**-12%**

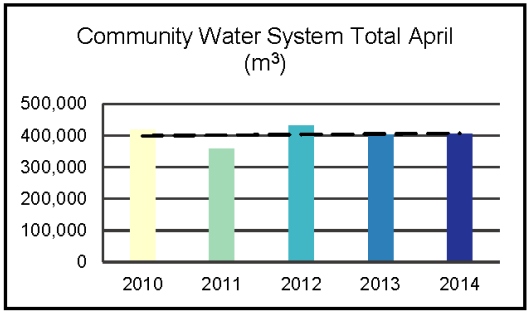


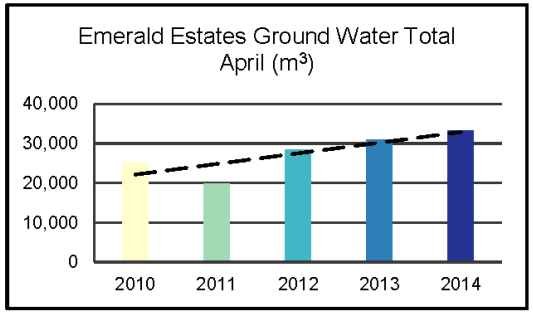


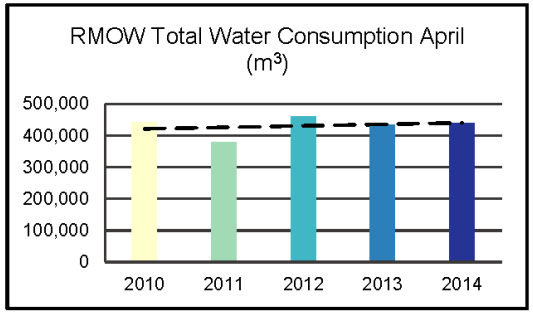


Resort Municipality of Whistler — **April 2014 Water Consumption Report**

	April-2014	Year-to-Date	% Change	April-2013	Year-to-Date	% Change	April-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	101,575	860,527	-52%	211,072	888,996	24%	170,725	876,349	134%
R232 Blackcomb Creek	0	0	-	0	0	-100%	20,824	118,547	4%
Surface Water Total (m^3)	**101,575**	**860,527**	**-52%**	**211,072**	**888,996**	**10%**	**191,549**	**994,896**	**106%**
Ground Water Sources									
W202 Alpine	26,467	60,444	-46%	48,927	115,580	98%	24,753	77,847	-10%
W210 Alpine	10,137	58,086	342%	2,292	34,069	-71%	7,876	34,287	7%
W213 Meadow Park	7,879	45,009	-	0	24,376	-100%	8,502	30,693	10%
W205 & W211 Community Wells (P247 Pump Station)	42,686	59,532	53%	27,904	53,998	-29%	39,499	80,149	41%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	54,627	64,820	147%	22,122	39,903	-36%	34,635	56,228	-14%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	22,063	78,444	18%	18,758	70,715	-17%	22,514	68,029	41%
W218 Rainbow Well	139,991	211,518	95%	71,715	190,420	-29%	101,695	192,267	-27%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**303,850**	**577,853**	**58%**	**191,718**	**529,061**	**-20%**	**239,474**	**539,500**	**-10%**
Community Water System Total (m^3)	**405,425**	**1,438,380**	**1%**	**402,790**	**1,418,057**	**-7%**	**431,023**	**1,534,396**	**20%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	33,146	102,262	10%	30,153	95,192	122%	13,607	30,031	186%
W201-2 Emerald *CAN RUN TO WASTE	43	128	-94%	776	4,670	-95%	14,499	31,717	193%
W201-3 Emerald *CAN RUN TO WASTE	116	343	-48%	225	604	6%	212	29,121	-98%
Emerald Estates Ground Water Total (m^3)	**33,146**	**102,262**	**7%**	**30,929**	**99,862**	**9%**	**28,318**	**90,869**	**43%**
Ground Water Total (m^3)	**336,996**	**680,115**	**51%**	**222,647**	**628,923**	**-17%**	**267,792**	**630,369**	**-6%**
RMOW Total Water Consumption (m^3)	**438,571**	**1,540,642**	**1%**	**433,719**	**1,517,919**	**-6%**	**459,341**	**1,625,265**	**21%**



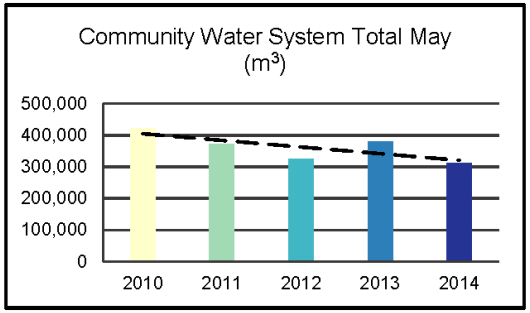


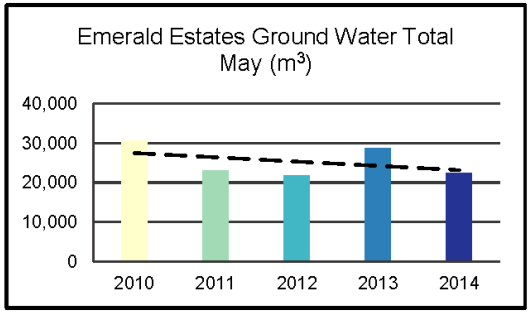


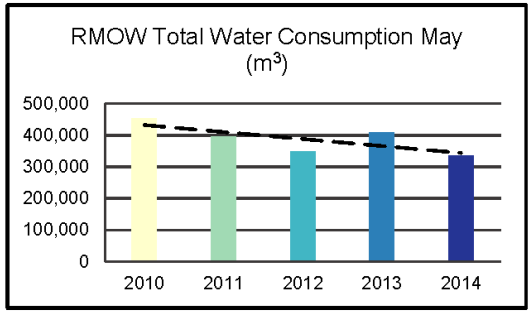
Resort Municipality of Whistler

May 2014 Water Consumption Report

	May-2014	Year-to-Date	% Change	May-2013	Year-to-Date	% Change	May-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	66,011	926,538	-53%	141,534	1,030,530	400%	28,305	904,654	1866%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-100%
Surface Water Total (m^3)	**66,011**	**926,538**	**-53%**	**141,534**	**1,030,530**	**400%**	**28,305**	**1,023,201**	**297%**
Ground Water Sources									
W202 Alpine	34,493	94,937	-28%	47,788	163,368	88%	25,363	103,210	7%
W210 Alpine	2,215	60,301	-43%	3,889	37,958	-59%	9,470	43,757	2%
W213 Meadow Park	1,533	46,542	-	0	24,376	-100%	7,899	38,592	-1%
W205 & W211 Community Wells (P247 Pump Station)	27,484	87,016	-26%	36,925	90,923	-36%	57,441	137,590	7%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	39,702	104,522	9%	36,511	76,414	-32%	53,902	110,130	-8%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	16,707	95,151	-11%	18,832	89,547	15%	16,446	84,475	38%
W218 Rainbow Well	125,020	336,538	31%	95,682	286,102	-25%	126,930	319,197	-37%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**247,154**	**825,007**	**3%**	**239,627**	**768,688**	**-19%**	**297,451**	**836,951**	**-19%**
Community Water System Total (m^3)	**313,165**	**1,751,545**	**-18%**	**381,161**	**1,799,218**	**17%**	**325,756**	**1,860,152**	**-13%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	22,412	124,674	-22%	28,659	123,851	168%	10,713	40,744	100%
W201-2 Emerald *CAN RUN TO WASTE	30	158	-72%	106	4,776	-99%	11,158	42,875	100%
W201-3 Emerald *CAN RUN TO WASTE	114	457	-51%	231	835	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**22,412**	**124,674**	**-22%**	**28,765**	**128,627**	**32%**	**21,871**	**112,740**	**-5%**
Ground Water Total (m^3)	**269,566**	**949,681**	**0%**	**268,392**	**897,315**	**-16%**	**319,322**	**949,691**	**-18%**
RMOW Total Water Consumption (m^3)	**335,577**	**1,876,219**	**-18%**	**409,926**	**1,927,845**	**18%**	**347,627**	**1,972,892**	**-12%**

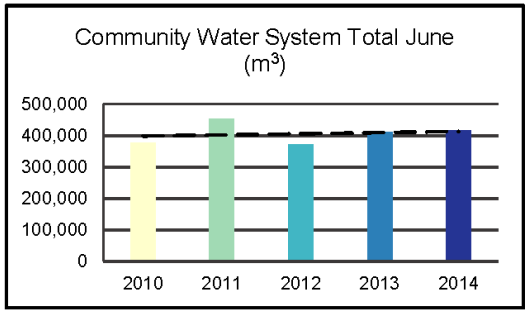


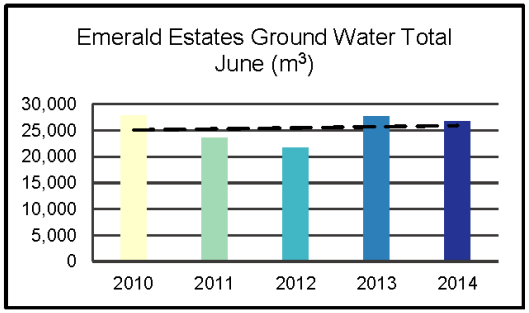


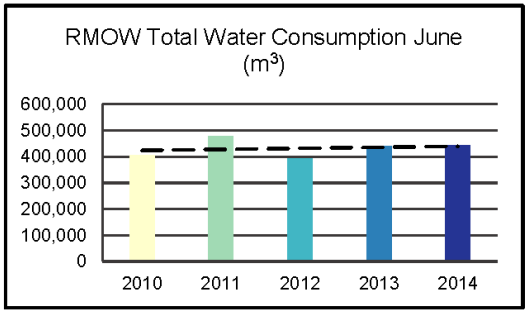


Resort Municipality of Whistler — **June 2014 Water Consumption Report**

	June-2014	Year-to-Date	% Change	June-2013	Year-to-Date	% Change	June-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	218,112	1,144,650	-16%	259,134	1,289,664	69%	153,307	1,057,961	15%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-
Surface Water Total (m^3)	**218,112**	**1,144,650**	**-16%**	**259,134**	**1,289,664**	**69%**	**153,307**	**1,176,508**	**15%**
Ground Water Sources									
W202 Alpine	40,777	135,714	-17%	48,923	212,291	76%	27,826	131,036	-23%
W210 Alpine	1,941	62,242	-40%	3,233	41,191	-52%	6,715	50,472	-31%
W213 Meadow Park	8,440	54,982	2163%	373	24,749	-93%	5,224	43,816	-2%
W205 & W211 Community Wells (P247 Pump Station)	26,381	113,397	97%	13,369	104,292	-76%	56,727	194,317	-1%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	9,924	114,446	13%	8,815	85,229	-65%	25,398	135,528	-47%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	23,353	118,504	5%	22,201	111,748	28%	17,310	101,785	-66%
W218 Rainbow Well	86,889	423,427	53%	56,758	342,860	-29%	80,053	399,250	-30%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**197,705**	**1,022,712**	**29%**	**153,672**	**922,360**	**-30%**	**219,253**	**1,056,204**	**-32%**
Community Water System Total (m^3)	**415,817**	**2,167,362**	**1%**	**412,806**	**2,212,024**	**11%**	**372,560**	**2,232,712**	**-18%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	26,810	151,484	-3%	27,707	151,558	164%	10,479	51,223	70%
W201-2 Emerald *CAN RUN TO WASTE	137	295	-	0	4,776	-100%	11,172	54,047	74%
W201-3 Emerald *CAN RUN TO WASTE	72	529	-	0	835	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**26,810**	**151,484**	**-3%**	**27,707**	**156,334**	**28%**	**21,651**	**134,391**	**-8%**
Ground Water Total (m^3)	**224,515**	**1,174,196**	**24%**	**181,379**	**1,078,694**	**-25%**	**240,904**	**1,190,595**	**-30%**
RMOW Total Water Consumption (m^3)	**442,627**	**2,318,846**	**0%**	**440,513**	**2,368,358**	**12%**	**394,211**	**2,367,103**	**-17%**

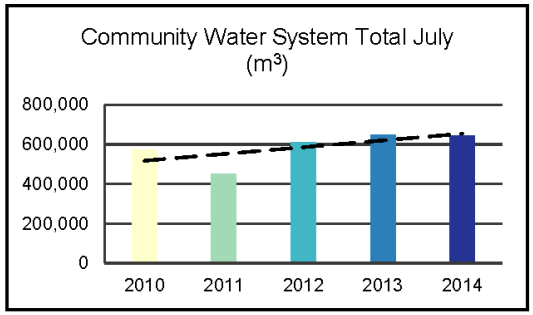


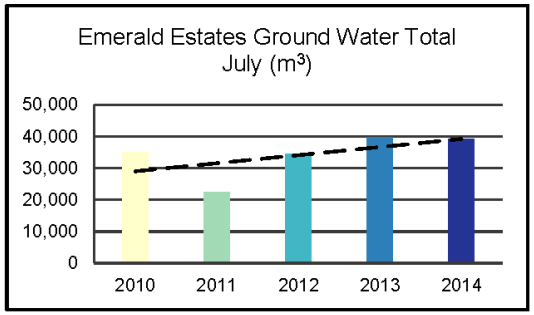


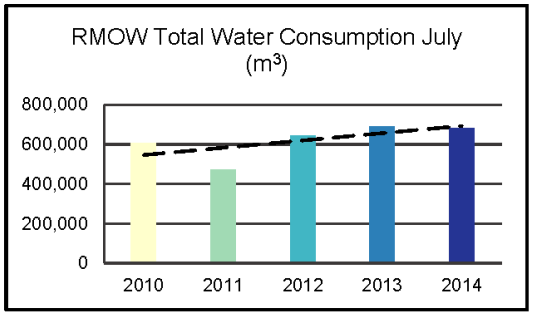


Resort Municipality of Whistler — **July 2014 Water Consumption Report**

	July-2014	Year-to-Date	% Change	July-2013	Year-to-Date	% Change	July-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	320,771	1,465,421	-8%	348,414	1,638,078	12%	310,894	1,368,855	43%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-
Surface Water Total (m^3)	**320,771**	**1,465,421**	**-8%**	**348,414**	**1,638,078**	**12%**	**310,894**	**1,487,402**	**43%**
Ground Water Sources									
W202 Alpine	49,421	185,135	1%	48,904	261,195	44%	33,862	164,898	45%
W210 Alpine	266	62,508	-99%	21,479	62,670	28%	16,801	67,273	113%
W213 Meadow Park	32,036	87,018	91%	16,811	41,560	18%	14,279	58,095	149%
W205 & W211 Community Wells (P247 Pump Station)	41,870	155,267	-6%	44,741	149,033	-43%	78,857	273,174	97%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	21,477	135,923	102%	10,631	95,860	-55%	23,418	158,946	97%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	30,195	148,699	-19%	37,494	149,242	31%	28,728	130,513	-29%
W218 Rainbow Well	147,944	571,371	22%	121,066	463,926	16%	104,460	503,710	1%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**323,209**	**1,345,921**	**7%**	**301,126**	**1,223,486**	**0%**	**300,405**	**1,356,609**	**29%**
Community Water System Total (m^3)	**643,980**	**2,811,342**	**-1%**	**649,540**	**2,861,564**	**6%**	**611,299**	**2,844,011**	**36%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	28,779	180,263	-20%	36,176	187,734	117%	16,654	67,877	241%
W201-2 Emerald *CAN RUN TO WASTE	10,289	10,584	201%	3,421	8,197	-81%	17,824	71,871	249%
W201-3 Emerald *CAN RUN TO WASTE	92	621	-3%	95	930	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**39,068**	**190,552**	**-1%**	**39,597**	**195,931**	**15%**	**34,478**	**168,869**	**54%**
Ground Water Total (m^3)	**362,277**	**1,536,473**	**6%**	**340,723**	**1,419,417**	**2%**	**334,883**	**1,525,478**	**31%**
RMOW Total Water Consumption (m^3)	**683,048**	**3,001,894**	**-1%**	**689,137**	**3,057,495**	**7%**	**645,777**	**3,012,880**	**37%**

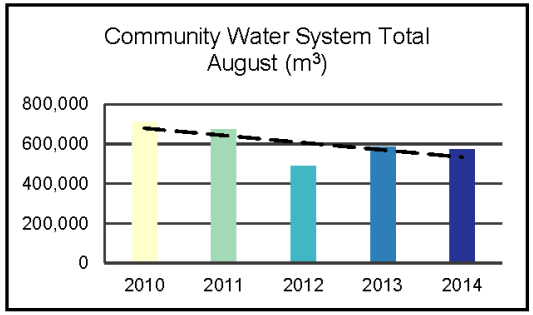


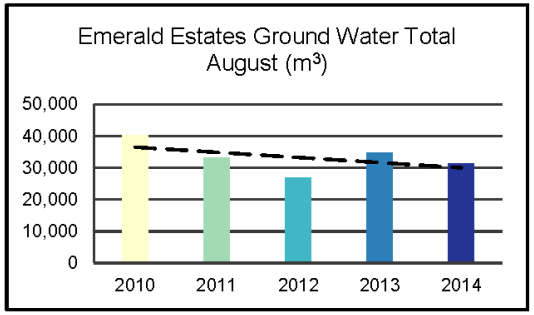


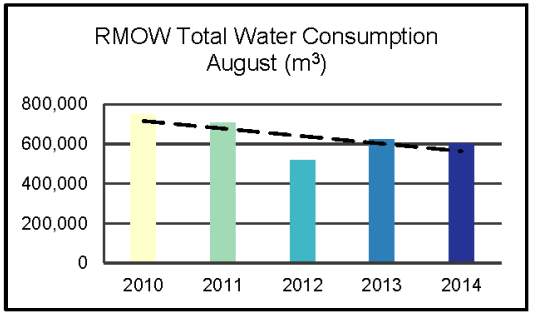


Resort Municipality of Whistler — **August 2014 Water Consumption Report**

	August-2014	Year-to-Date	% Change	August-2013	Year-to-Date	% Change	August-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	315,323	1,780,744	5%	300,190	1,938,268	24%	241,946	1,610,801	-36%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-
Surface Water Total (m^3)	**315,323**	**1,780,744**	**5%**	**300,190**	**1,938,268**	**24%**	**241,946**	**1,729,348**	**-36%**
Ground Water Sources									
W202 Alpine	36,679	221,814	-11%	41,270	302,465	72%	23,943	188,841	-43%
W210 Alpine	0	62,508	-100%	12,508	75,178	1%	12,324	79,597	-25%
W213 Meadow Park	21,280	108,298	99%	10,670	52,230	18%	9,057	67,152	-33%
W205 & W211 Community Wells (P247 Pump Station)	56,010	211,277	-8%	61,188	210,221	56%	39,139	312,313	43%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	22,407	158,330	609%	3,161	99,021	-77%	13,752	172,698	352%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	27,069	175,768	-4%	28,095	177,337	16%	24,317	154,830	-29%
W218 Rainbow Well	92,192	663,563	-29%	129,082	593,008	3%	125,617	629,327	-20%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**255,637**	**1,601,558**	**-11%**	**285,974**	**1,509,460**	**15%**	**248,149**	**1,604,758**	**-16%**
Community Water System Total (m^3)	**570,960**	**3,382,302**	**-3%**	**586,164**	**3,447,728**	**20%**	**490,095**	**3,334,106**	**-27%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	29,102	209,365	51%	19,309	207,043	49%	12,977	80,854	42%
W201-2 Emerald *CAN RUN TO WASTE	2,249	12,833	-85%	15,324	23,521	11%	13,845	85,716	45%
W201-3 Emerald *CAN RUN TO WASTE	184	805	-5%	193	1,123	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**31,351**	**221,903**	**-9%**	**34,633**	**230,564**	**29%**	**26,822**	**195,691**	**-19%**
Ground Water Total (m^3)	**286,988**	**1,823,461**	**-10%**	**320,607**	**1,740,024**	**17%**	**274,971**	**1,800,449**	**-16%**
RMOW Total Water Consumption (m^3)	**602,311**	**3,604,205**	**-3%**	**620,797**	**3,678,292**	**20%**	**516,917**	**3,529,797**	**-27%**

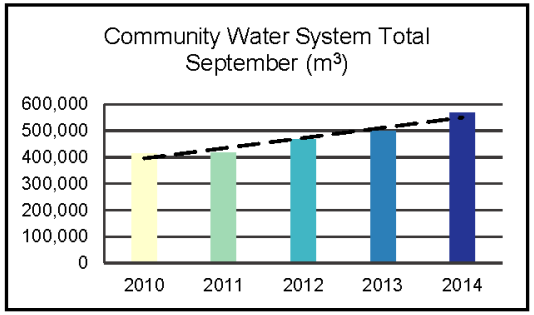


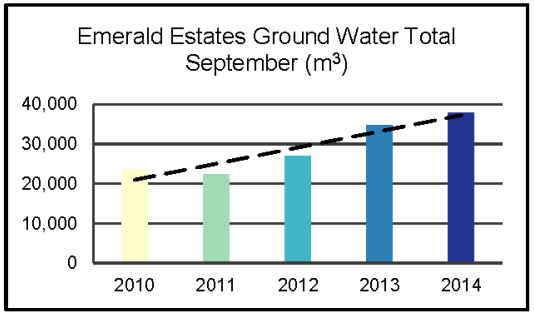


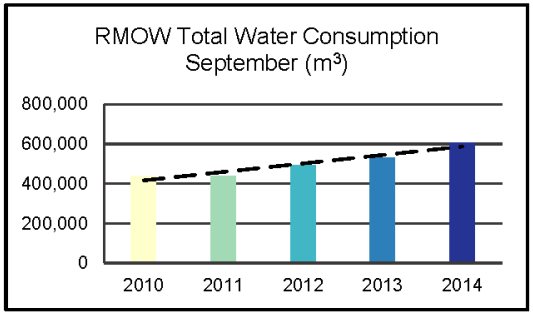


Resort Municipality of Whistler — **September 2014 Water Consumption Report**

	September-2014	Year-to-Date	% Change	September-2013	Year-to-Date	% Change	September-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	357,508	2,138,252	45%	246,974	2,185,242	-17%	297,910	1,908,711	31%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-
Surface Water Total (m^3)	**357,508**	**2,138,252**	**45%**	**246,974**	**2,185,242**	**-17%**	**297,910**	**2,027,258**	**31%**
Ground Water Sources									
W202 Alpine	36,418	258,232	4%	35,021	337,486	4%	33,608	222,449	-18%
W210 Alpine	9,869	72,377	-28%	13,793	88,971	21%	11,366	90,963	77%
W213 Meadow Park	18,770	127,068	69%	11,131	63,361	17%	9,550	76,702	27%
W205 & W211 Community Wells (P247 Pump Station)	28,310	239,587	-35%	43,342	253,563	71%	25,350	337,663	39%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	37,533	195,863	196%	12,679	111,700	262%	3,504	176,202	-61%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	22,351	198,119	-19%	27,731	205,068	24%	22,401	177,231	25%
W218 Rainbow Well	56,603	720,166	-47%	106,772	699,780	68%	63,433	692,760	-28%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**209,854**	**1,811,412**	**-16%**	**250,469**	**1,759,929**	**48%**	**169,212**	**1,773,970**	**-10%**
Community Water System Total (m^3)	**567,362**	**3,949,664**	**14%**	**497,443**	**3,945,171**	**6%**	**467,122**	**3,801,228**	**12%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	37,761	247,126	56%	24,196	231,239	86%	13,020	93,874	115%
W201-2 Emerald *CAN RUN TO WASTE	0	12,833	-100%	10,607	34,128	-24%	13,899	99,615	120%
W201-3 Emerald *CAN RUN TO WASTE	196	1,001	32%	148	1,271	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**37,761**	**259,664**	**8%**	**34,803**	**265,367**	**29%**	**26,919**	**222,610**	**20%**
Ground Water Total (m^3)	**247,615**	**2,071,076**	**-13%**	**285,272**	**2,025,296**	**45%**	**196,131**	**1,996,580**	**-7%**
RMOW Total Water Consumption (m^3)	**605,123**	**4,209,328**	**14%**	**532,246**	**4,210,538**	**8%**	**494,041**	**4,023,838**	**13%**

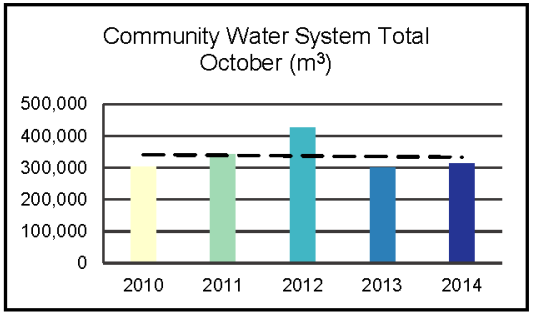


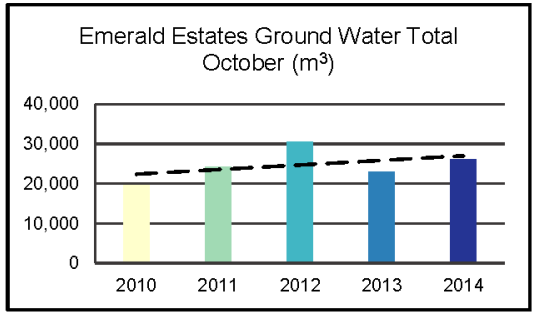


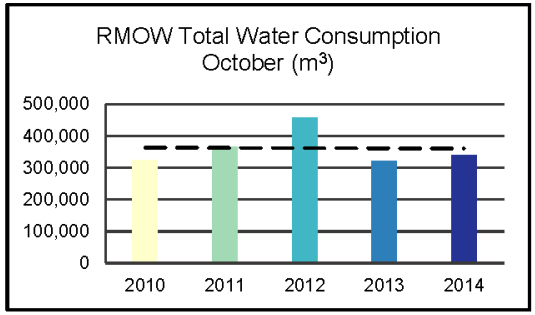


Resort Municipality of Whistler — **October 2014 Water Consumption Report**

	October-2014	Year-to-Date	% Change	October-2013	Year-to-Date	% Change	October-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	140,558	2,278,810	3%	135,819	2,321,061	-53%	288,521	2,197,232	127%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-
Surface Water Total (m^3)	**140,558**	**2,278,810**	**3%**	**135,819**	**2,321,061**	**-53%**	**288,521**	**2,315,779**	**127%**
Ground Water Sources									
W202 Alpine	22,326	280,558	9%	20,500	357,986	-51%	41,744	264,193	-6%
W210 Alpine	8,374	80,751	-8%	9,077	98,048	2%	8,914	99,877	59%
W213 Meadow Park	6,825	133,893	4%	6,543	69,904	-13%	7,478	84,180	583%
W205 & W211 Community Wells (P247 Pump Station)	30,170	269,757	90%	15,914	269,477	52%	10,448	348,111	-16%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	1,706	197,569	-93%	22,829	134,529	225%	7,016	183,218	-80%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	13,994	212,113	-25%	18,540	223,608	78%	10,427	187,658	-31%
W218 Rainbow Well	90,554	810,720	30%	69,607	769,387	33%	52,452	745,212	-48%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**173,949**	**1,985,361**	**7%**	**163,010**	**1,922,939**	**18%**	**138,479**	**1,912,449**	**-35%**
Community Water System Total (m^3)	**314,507**	**4,264,171**	**5%**	**298,829**	**4,244,000**	**-30%**	**427,000**	**4,228,228**	**25%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	26,049	273,175	18%	22,162	253,401	50%	14,762	108,636	141%
W201-2 Emerald *CAN RUN TO WASTE	10	12,843	-99%	804	34,932	-95%	15,817	115,432	148%
W201-3 Emerald *CAN RUN TO WASTE	111	1,112	102%	55	1,326	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**26,059**	**285,723**	**13%**	**22,966**	**288,333**	**-25%**	**30,579**	**253,189**	**27%**
Ground Water Total (m^3)	**200,008**	**2,271,084**	**8%**	**185,976**	**2,211,272**	**10%**	**169,058**	**2,165,638**	**-29%**
RMOW Total Water Consumption (m^3)	**340,566**	**4,549,894**	**6%**	**321,795**	**4,532,333**	**-30%**	**457,579**	**4,481,417**	**25%**

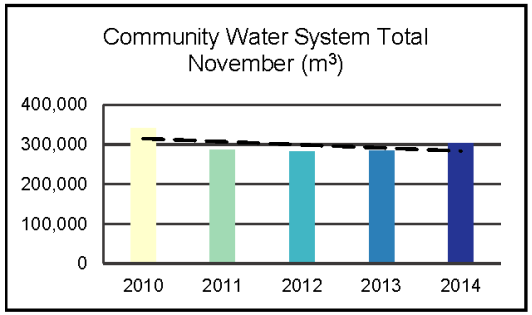


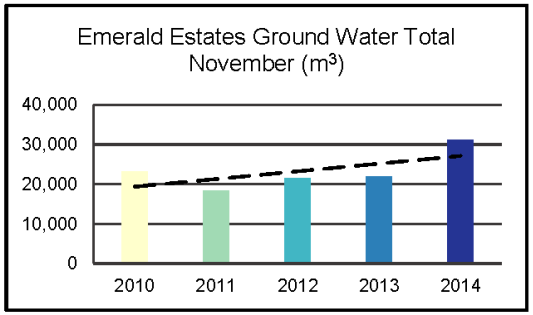


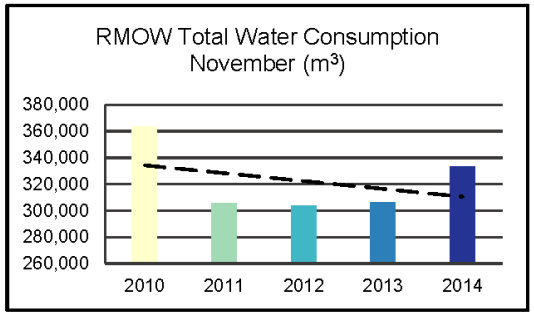


Resort Municipality of Whistler — November 2014 Water Consumption Report

	November-2014	Year-to-Date	% Change	November-2013	Year-to-Date	% Change	November-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	54,013	2,332,823	-70%	178,276	2,499,337	235%	53,144	2,250,376	-61%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-100%
Surface Water Total (m^3)	**54,013**	**2,332,823**	**-70%**	**178,276**	**2,499,337**	**235%**	**53,144**	**2,368,923**	**-63%**
Ground Water Sources									
W202 Alpine	33,296	313,854	56%	21,357	379,343	0%	21,316	285,509	31%
W210 Alpine	6,335	87,086	-24%	8,364	106,412	15%	7,286	107,163	47%
W213 Meadow Park	5,000	138,893	21%	4,143	74,047	-38%	6,724	90,904	56%
W205 & W211 Community Wells (P247 Pump Station)	48,500	318,257	313%	11,751	281,228	-13%	13,547	361,658	-32%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	7,702	205,271	124%	3,446	137,975	-92%	44,767	227,985	8%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	15,191	227,304	-20%	18,890	242,498	41%	13,392	201,050	-10%
W218 Rainbow Well	132,316	943,036	251%	37,728	807,115	-69%	121,898	867,110	194%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**248,340**	**2,233,701**	**135%**	**105,679**	**2,028,618**	**-54%**	**228,930**	**2,141,379**	**60%**
Community Water System Total (m^3)	**302,353**	**4,566,524**	**6%**	**283,955**	**4,527,955**	**1%**	**282,074**	**4,510,302**	**-2%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	21,183	294,358	-3%	21,943	275,344	111%	10,381	119,017	119%
W201-2 Emerald *CAN RUN TO WASTE	9,905	22,748	13851%	71	35,003	-99%	11,122	126,554	126%
W201-3 Emerald *CAN RUN TO WASTE	219	1,331	45%	151	1,477	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**31,088**	**316,811**	**41%**	**22,014**	**310,347**	**2%**	**21,503**	**274,692**	**18%**
Ground Water Total (m^3)	**279,428**	**2,550,512**	**119%**	**127,693**	**2,338,965**	**-49%**	**250,433**	**2,416,071**	**55%**
RMOW Total Water Consumption (m^3)	**333,441**	**4,883,335**	**9%**	**305,969**	**4,838,302**	**1%**	**303,577**	**4,784,994**	**-1%**

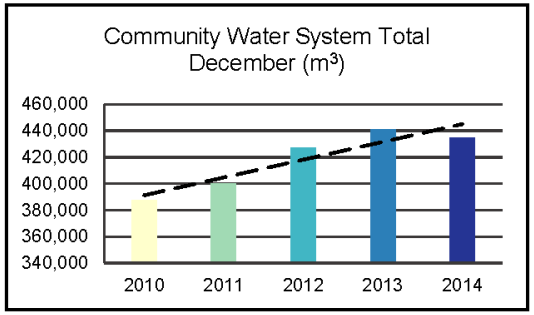


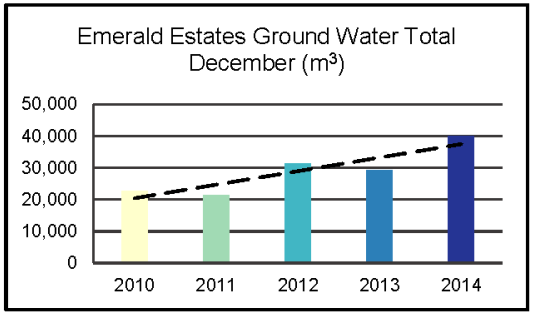


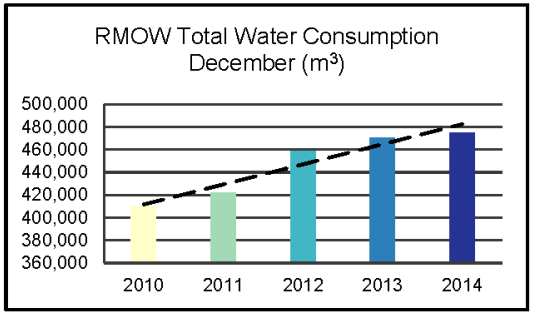


Resort Municipality of Whistler — December 2014 Water Consumption Report

	December-2014	Year-to-Date	% Change	December-2013	Year-to-Date	% Change	December-2012	Year-to-Date	% Change
RMOW Community Water System									
Ministry of Health Facility #1110299									
Surface Water Sources									
R231 21 Mile Creek	189,591	2,522,414	-36%	294,947	2,794,284	-5%	311,828	2,562,204	21%
R232 Blackcomb Creek	0	0	-	0	0	-	0	118,547	-100%
Surface Water Total (m^3)	**189,591**	**2,522,414**	**-36%**	**294,947**	**2,794,284**	**-5%**	**311,828**	**2,680,751**	**15%**
Ground Water Sources									
W202 Alpine	21,223	335,077	155%	8,338	387,681	-75%	33,657	319,166	30%
W210 Alpine	12,621	99,707	-39%	20,780	127,192	112%	9,788	116,951	-14%
W213 Meadow Park	10,650	149,543	-36%	16,610	90,657	110%	7,906	98,810	-18%
W205 & W211 Community Wells (P247 Pump Station)	31,000	349,257	62%	19,181	300,409	164%	7,265	368,923	-63%
W211 Village Well (Only If Pumping into Zone 775)	0	0	-	0	0	-	0	0	-
W212-1 Function Junction	20,402	225,673	258%	5,703	143,678	-35%	8,808	236,793	-20%
W212-2 Function Junction	0	0	-	0	0	-	0	0	-
W217 Cheakamus Crossing	20,162	247,466	-22%	25,797	268,295	26%	20,439	221,489	11%
W218 Rainbow Well	128,879	1,071,915	160%	49,572	856,687	80%	27,488	894,598	-17%
W219 21 Mile Well #2	0	0	-	0	0	-	0	0	-
Community Ground Water Total (m^3)	**244,937**	**2,478,638**	**68%**	**145,981**	**2,174,599**	**27%**	**115,351**	**2,256,730**	**-11%**
Community Water System Total (m^3)	**434,528**	**5,001,052**	**-1%**	**440,928**	**4,968,883**	**3%**	**427,179**	**4,937,481**	**7%**
RMOW Emerald Estates Water System									
Ministry of Health Facility #11076									
Ground Water Sources									
W201-1 Emerald	17,111	311,469	-40%	28,670	304,014	90%	15,075	134,092	158%
W201-2 Emerald *CAN RUN TO WASTE	22,976	45,724	4010%	559	35,562	-97%	16,175	142,729	164%
W201-3 Emerald *CAN RUN TO WASTE	2,221	3,552	1595%	131	1,608	-	0	29,121	-100%
Emerald Estates Ground Water Total (m^3)	**40,087**	**356,898**	**37%**	**29,229**	**339,576**	**-6%**	**31,250**	**305,942**	**46%**
Ground Water Total (m^3)	**285,024**	**2,835,536**	**63%**	**175,210**	**2,514,175**	**20%**	**146,601**	**2,562,672**	**-3%**
RMOW Total Water Consumption (m^3)	**474,615**	**5,357,950**	**1%**	**470,157**	**5,308,459**	**3%**	**458,429**	**5,243,423**	**9%**

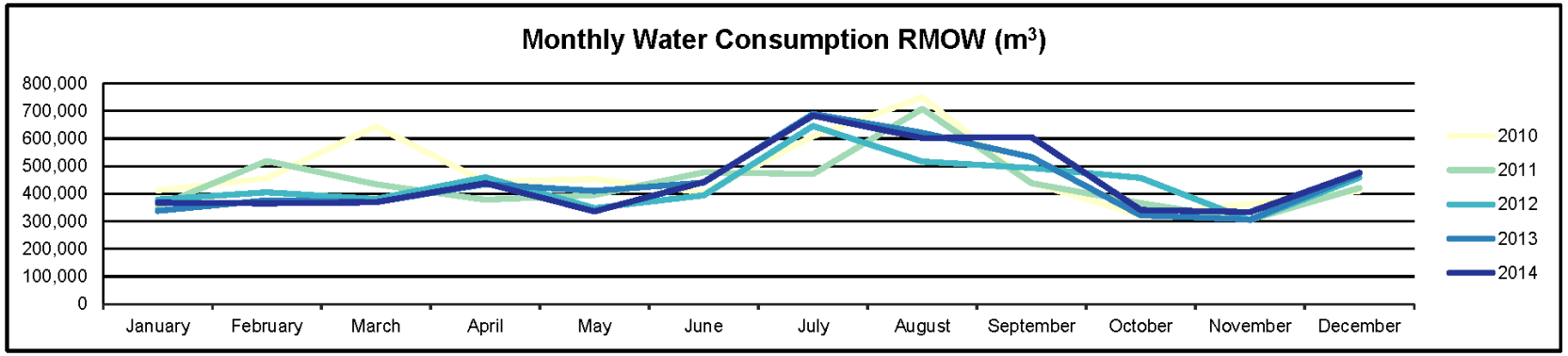


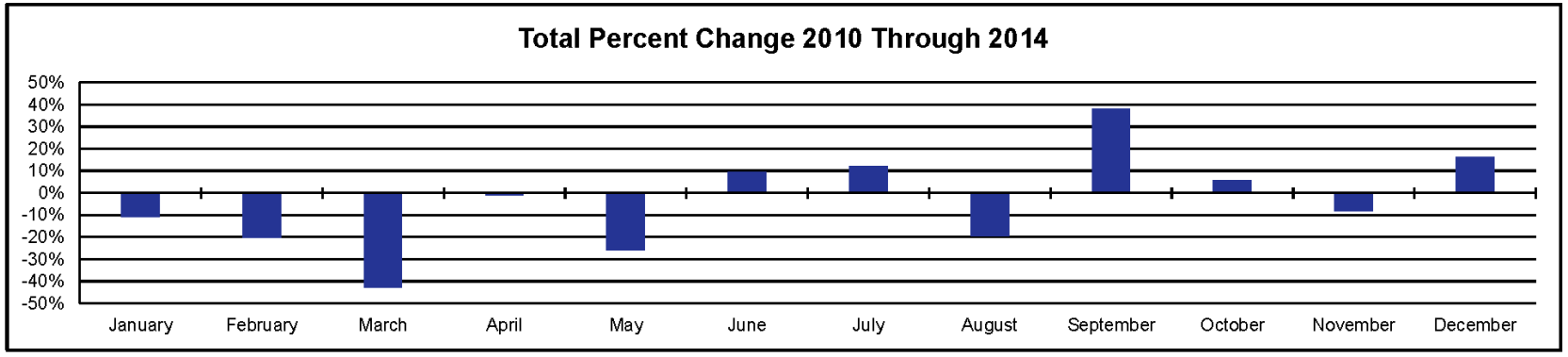




10.2 Monthly Water Consumption Summary 2014

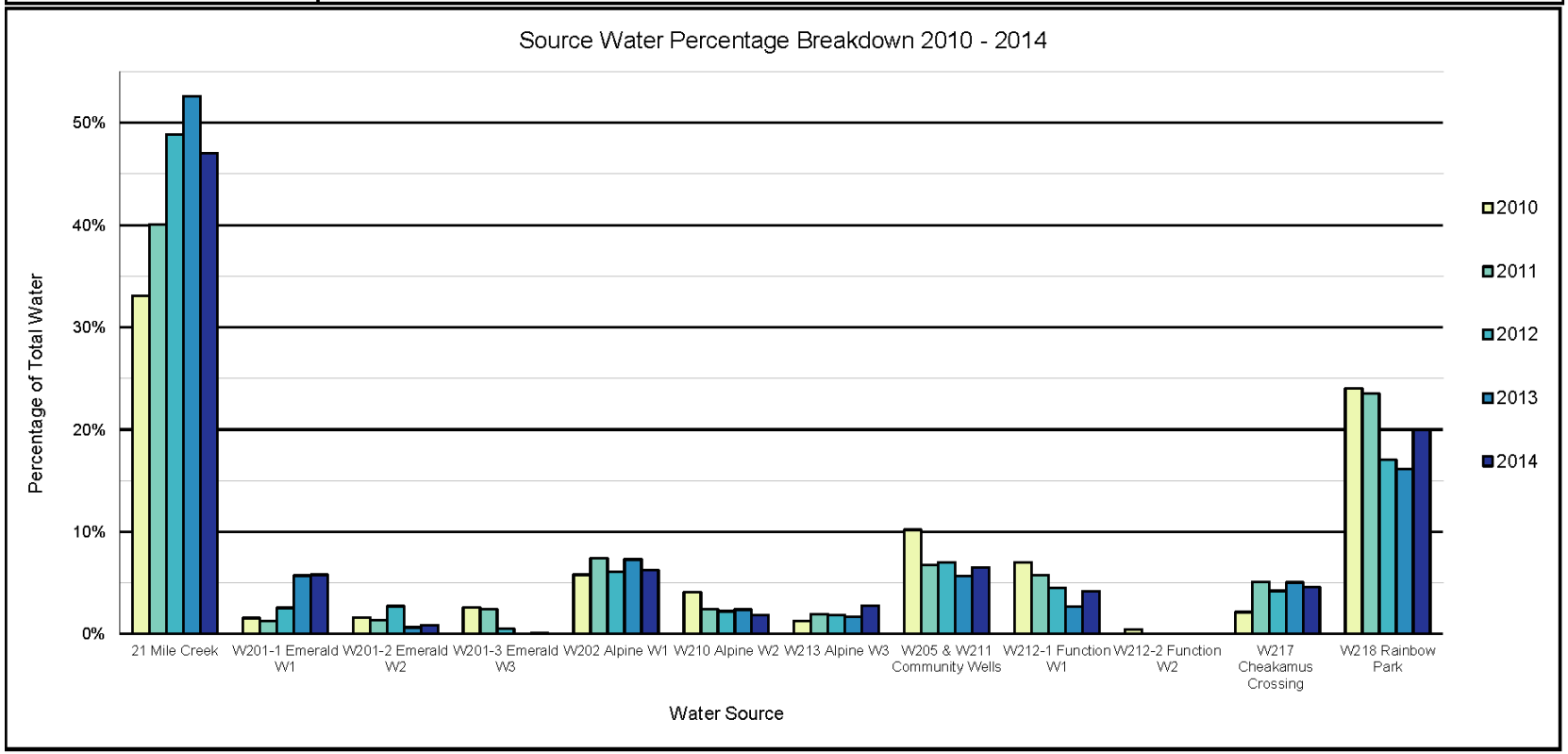
	2014	% Change	2013	% Change	2012	% Change	2011	% Change	2010	Total Percent Change
January	368,414	9%	338,324	-11%	379,353	7%	353,656	-14%	412,616	**-11%**
February	364,722	-3%	376,055	-7%	405,506	-22%	518,862	14%	456,665	**-20%**
March	369,247	0%	370,200	-3%	381,065	-12%	434,141	-33%	644,432	**-43%**
April	438,730	1%	433,944	-6%	459,341	21%	378,461	-14%	442,401	**-1%**
May	335,721	-18%	410,157	18%	347,627	-12%	395,377	-13%	453,649	**-26%**
June	442,836	1%	440,513	12%	394,211	-17%	477,786	18%	404,370	**10%**
July	683,140	-1%	689,232	7%	645,777	37%	471,883	-22%	607,986	**12%**
August	602,495	-3%	620,990	20%	516,917	-27%	707,794	-6%	749,232	**-20%**
September	605,319	14%	532,394	8%	494,041	13%	438,319	0%	438,521	**38%**
October	340,677	6%	321,850	-30%	457,579	25%	365,972	13%	322,522	**6%**
November	333,660	9%	306,120	1%	303,577	-1%	305,501	-16%	363,348	**-8%**
December	476,836	1%	470,288	3%	458,429	9%	421,737	3%	410,214	**16%**
Total Water Consumption (m^3)	**5,361,797**	**1%**	**5,310,067**	**1%**	**5,243,423**	**0%**	**5,269,489**	**-8%**	**5,705,956**	**-6%**





10.3 Source Water Summary 2014

Source Water Summary	2014	2013	2012	2011	2010
Total Volume (m^3)	5,361,797	5,310,067	5,243,423	5,269,489	5,705,956
Total Surface (m^3)	2,522,414	2,794,284	2,680,751	2,210,879	2,235,603
Total Ground (m^3)	2,839,383	2,515,783	2,562,672	3,058,610	3,470,353
Source Water Percentage Breakdown	**2014**	**2013**	**2012**	**2011**	**2010**
21 Mile Creek	47%	53%	49%	40%	33%
W201-1 Emerald W1	6%	6%	3%	1%	2%
W201-2 Emerald W2	1%	1%	3%	1%	2%
W201-3 Emerald W3	0%	0%	1%	2%	3%
W202 Alpine W1	6%	7%	6%	7%	6%
W210 Alpine W2	2%	2%	2%	2%	4%
W213 Alpine W3	3%	2%	2%	2%	1%
W205 & W211 Community Wells	7%	6%	7%	7%	10%
W212-1 Function W1	4%	3%	5%	6%	7%
W212-2 Function W2	0%	0%	0%	0%	0%
W217 Cheakamus Crossing	5%	5%	4%	5%	2%
W218 Rainbow Park	20%	16%	17%	24%	24%



10.4 Weekly Water Sampling Results 2014

2014 Source Water Sampling Schedule Week One			pH Guidline pH 6.5 - 8.5						E. Coli (MPN/100mL) MAC 0 Counts/100mL						Free Cl_2 (mg/mL) Guideline 0.2 - 0.6 mg/mL						Turbidity (NTU) Guideline < 1 NTU (Source); < 5 NTU							Temperature (°C) AO ≤ 15°C						Total Coliforms (MPN/100mL) MAC < 10 Counts/100mL					
			S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F<5	F<1	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%
SS-409	W201-1	Emerald W1	24	7.30	6.48	6.69	1	4%	24	0.00	0.00	0.00	0	0%	1	0.54	0.54	0.54	0	0%	24	0.86	0.00	0.24	-	0	0%	23	12.70	5.10	8.98	0	0%	24	3.00	0.00	0.13	0	0%
SS-410	W201-2	Emerald W2	24	7.10	6.74	6.94	0	0%	24	0.00	0.00	0.00	0	0%	1	0.54	0.54	0.54	0	0%	24	0.98	0.00	0.46	-	0	0%	23	11.50	5.50	8.31	0	0%	24	5.00	0.00	0.21	0	0%
SS-411	W201-3	Emerald W3	23	7.09	6.63	6.92	0	0%	22	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	23	0.86	0.07	0.34	-	0	0%	23	10.30	4.60	7.75	0	0%	22	7.00	0.00	0.55	0	0%
SS-436	R231	21 Mile Creek	21	7.93	6.52	7.24	0	0%	22	21.10	0.00	1.63	7	32%	-	-	-	-	-	-	21	4.40	0.07	0.75	-	2	10%	21	16.00	0.80	7.42	1	5%	22	2419.20	1.00	259.17	17	77%
SS-439	R232	Blackcomb Creek	22	8.00	4.60	7.27	2	9%	17	28.20	0.00	2.55	5	29%	-	-	-	-	-	-	22	208.00	0.20	13.00	-	13	59%	18	12.00	0.40	5.30	0	0%	17	2419.20	4.10	319.13	15	88%
SS-483	W212-1	Function W1	23	6.94	5.92	6.29	19	83%	23	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	23	0.99	0.06	0.42	-	0	0%	21	11.40	7.90	9.58	0	0%	23	0.00	0.00	0.00	0	0%
SS-489	W217	Cheakamus	24	7.00	6.06	6.40	20	83%	23	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	24	0.25	0.00	0.11	-	0	0%	20	10.40	7.40	8.57	0	0%	23	0.00	0.00	0.00	0	0%

2014 Source Water Sampling Schedule Week Two			pH Guidline pH 6.5 - 8.5						E. Coli (MPN/100mL) MAC 0 Counts/100mL						Free Cl_2 (mg/mL) Guideline 0.2 - 0.6 mg/mL						Turbidity (NTU) Guideline < 1 NTU (Source); < 5 NTU							Temperature (°C) AO ≤ 15°C						Total Coliforms (MPN/100mL) MAC < 10 Counts/100mL					
			S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F<5	F<1	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%
SS-418	W202	Alpine W1	23	7.39	6.51	6.87	0	0%	22	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	23	0.92	0.00	0.35	-	0	0%	21	12.10	2.30	7.65	0	0%	22	0.00	0.00	0.00	0	0%
SS-419	W210	Alpine W2	16	7.44	6.84	7.10	0	0%	15	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	16	8.55	0.18	1.08	-	2	13%	15	9.40	3.90	6.42	0	0%	15	0.00	0.00	0.00	0	0%
SS-420	W213	Alpine W3	25	7.32	6.58	6.83	0	0%	24	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	25	4.80	0.00	0.43	-	1	4%	24	9.80	5.50	7.64	0	0%	24	0.00	0.00	0.00	0	0%
SS-444	W205-1	Community W1	25	6.81	5.56	6.38	19	76%	24	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	25	0.36	0.00	0.15	-	0	0%	24	10.90	5.60	8.04	0	0%	24	0.00	0.00	0.00	0	0%
SS-445	W205-2	Community W2	23	6.95	6.41	6.54	9	39%	22	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	23	0.32	0.00	0.16	-	0	0%	22	10.50	5.60	7.93	0	0%	22	0.00	0.00	0.00	0	0%
SS-446	W205-3	Community W3	25	6.95	6.37	6.53	14	56%	24	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	25	0.71	0.00	0.19	-	0	0%	24	11.30	5.90	8.19	0	0%	24	0.00	0.00	0.00	0	0%
SS-447	W211	Whistler Village	24	6.78	6.30	6.45	18	75%	23	0.00	0.00	0.00	0	0%	-	-	-	-	-	-	24	0.58	0.00	0.20	-	0	0%	23	11.00	6.70	8.19	0	0%	23	0.00	0.00	0.00	0	0%
SS-493	W218	Rainbow Park	24	7.20	6.31	6.63	8	33%	21	0.00	0.00	0.00	0	0%	2	0.74	0.63	0.69	2	100%	23	3.29	0.00	0.33	-	1	4%	22	12.70	4.00	7.95	0	0%	21	0.00	0.00	0.00	0	0%

2014 Distribution Water Sampling Schedule Week One			pH Guidline pH 6.5 - 8.5						E. Coli (MPN/100mL) MAC 0 Counts/100mL						Free Cl_2 (mg/mL) Guideline 0.2 - 0.6 mg/mL						Turbidity (NTU) Guideline < 1 NTU (Source); < 5 NTU							Temperature (°C) AO ≤ 15°C						Total Coliforms (MPN/100mL) MAC < 10 Counts/100mL					
			S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F<5	F<1	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%
SS-412	P245	Alpine Meadows	23	7.77	6.72	7.17	0	0%	25	0.00	0.00	0.00	0	0%	23	0.31	0.02	0.15	17	74%	23	3.55	0.30	0.69	0	-	0%	22	15.10	3.90	9.51	1	5%	25	0.00	0.00	0.00	0	0%
SS-424	P266	Nicklaus North	23	7.84	6.50	7.08	0	0%	25	0.00	0.00	0.00	0	0%	23	0.59	0.06	0.38	2	9%	23	0.78	0.07	0.41	0	-	0%	22	15.40	4.70	9.87	1	5%	25	0.00	0.00	0.00	0	0%
SS-430	S. Park	Whistler Cay	23	8.06	6.37	6.97	3	13%	25	0.00	0.00	0.00	0	0%	23	0.52	0.02	0.33	7	30%	23	0.72	0.17	0.32	0	-	0%	22	14.90	3.60	9.34	0	0%	25	0.00	0.00	0.00	0	0%
SS-441	P256	Blackcomb Benchlands	23	7.80	6.47	6.83	2	9%	25	0.00	0.00	0.00	0	0%	23	0.55	0.06	0.36	3	13%	23	0.89	0.18	0.37	0	-	0%	22	14.70	4.10	9.24	0	0%	25	0.00	0.00	0.00	0	0%
SS-453	Mtn Sq.	Whistler Village	22	7.94	6.43	6.95	2	9%	24	0.00	0.00	0.00	0	0%	22	1.60	0.16	0.40	4	18%	22	0.57	0.13	0.26	0	-	0%	21	16.50	3.90	10.10	2	10%	24	0.00	0.00	0.00	0	0%
SS-459	S104	Alta Vista	23	7.77	6.26	6.92	6	26%	25	0.00	0.00	0.00	0	0%	23	0.57	0.26	0.42	0	0%	23	1.24	0.07	0.29	0	-	0%	22	15.00	3.20	9.45	0	0%	25	0.00	0.00	0.00	0	0%
SS-465	P270	Taluswood	23	7.49	6.49	6.85	1	4%	25	0.00	0.00	0.00	0	0%	23	0.62	0.04	0.38	5	22%	23	1.86	0.09	0.34	0	-	0%	22	15.40	4.70	10.17	1	5%	25	0.00	0.00	0.00	0	0%
SS-480	P273	Spring Creek	24	7.54	6.06	6.68	10	42%	25	0.00	0.00	0.00	0	0%	23	0.64	0.18	0.38	4	17%	23	0.64	0.12	0.29	0	-	0%	23	12.70	3.00	8.65	0	0%	25	0.00	0.00	0.00	0	0%
SS-482	Alta Lk.	Twin Lakes	23	7.53	6.24	6.67	8	35%	23	0.00	0.00	0.00	0	0%	23	0.54	0.14	0.32	4	17%	23	0.46	0.09	0.23	0	-	0%	22	13.60	1.70	8.78	0	0%	23	0.00	0.00	0.00	0	0%
SS-491	Mount Fee	Cheakamus Crossing	23	6.80	6.24	6.46	14	61%	25	0.00	0.00	0.00	0	0%	23	0.47	0.21	0.36	0	0%	23	0.45	0.06	0.19	0	-	0%	22	15.20	3.60	9.83	1	5%	25	0.00	0.00	0.00	0	0%

2014 Distribution Water Sampling Schedule Week Two			pH Guidline pH 6.5 - 8.5						E. Coli (MPN/100mL) MAC 0 Counts/100mL						Free Cl_2 (mg/mL) Guideline 0.2 - 0.6 mg/mL						Turbidity (NTU) Guideline < 1 NTU (Source); < 5 NTU							Temperature (°C) AO ≤ 15°C						Total Coliforms (MPN/100mL) MAC < 10 Counts/100mL					
			S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F<5	F<1	F%	S	Max	Min	Avg	F	F%	S	Max	Min	Avg	F	F%
SS-403	S131	Emerald Estates	23	6.96	6.10	6.78	1	4%	23	0.00	0.00	0.00	0	0%	23	0.61	0.26	0.38	1	4%	22	1.20	0.09	0.41	0	-	0%	23	14.40	4.60	9.91	0	0%	23	0.00	0.00	0.00	0	0%
SS-406	R238	Emerald Estates	24	6.84	6.40	6.73	1	4%	25	0.00	0.00	0.00	0	0%	24	0.61	0.35	0.44	1	4%	23	0.41	0.04	0.16	0	-	0%	24	12.30	4.40	8.71	0	0%	25	0.00	0.00	0.00	0	0%
SS-421	S101	Alpine	26	6.97	6.50	6.73	0	0%	27	0.00	0.00	0.00	0	0%	26	0.65	0.02	0.33	11	42%	26	4.98	0.17	1.03	0	-	0%	26	13.50	4.00	8.55	0	0%	27	10.00	0.00	0.37	1	4%
SS-427	P267	Spruce Grove	25	7.60	6.38	6.98	4	16%	25	0.00	0.00	0.00	0	0%	25	0.65	0.09	0.47	2	8%	25	0.82	0.09	0.28	0	-	0%	25	16.00	2.40	7.79	1	4%	25	0.00	0.00	0.00	0	0%
SS-450	Main St.	Whistler Village	26	7.95	6.42	6.98	5	19%	26	0.00	0.00	0.00	0	0%	26	0.62	0.20	0.44	2	8%	26	1.12	0.11	0.49	0	-	0%	26	15.30	2.70	8.50	1	4%	26	0.00	0.00	0.00	0	0%
SS-456	P265	Brio	25	7.68	6.40	7.07	1	4%	26	0.00	0.00	0.00	0	0%	25	0.54	0.01	0.23	13	52%	25	0.84	0.15	0.44	0	-	0%	25	15.30	3.70	8.86	2	8%	26	0.00	0.00	0.00	0	0%
SS-471	S106	Whistler Creek	25	7.52	6.13	6.79	8	32%	26	0.00	0.00	0.00	0	0%	25	0.59	0.04	0.42	1	4%	25	1.55	0.11	0.47	0	-	0%	25	14.30	2.90	7.96	0	0%	26	0.00	0.00	0.00	0	0%
SS-477	S121	Millars Pond	25	7.36	6.28	6.69	7	28%	25	0.00	0.00	0.00	0	0%	25	0.58	0.07	0.30	6	24%	25	6.78	0.11	0.62	1	-	4%	25	13.10	3.30	8.63	0	0%	25	1.00	0.00	0.04	0	0%
SS-488	P275	21 Mile Creek	26	7.74	6.31	6.83	4	15%	25	0.00	0.00	0.00	0	0%	25	0.56	0.04	0.24	12	48%	25	0.71	0.06	0.32	0	-	0%	26	14.90	3.30	9.43	0	0%	25	0.00	0.00	0.00	0	0%
SS-494	S137	Rainbow	25	7.14	6.14	6.85	1	4%	25	0.00	0.00	0.00	0	0%	25	0.43	0.07	0.23	10	40%	25	3.56	0.08	0.84	0	-	0%	25	15.50	4.30	8.71	1	4%	25	3.00	0.00	0.12	0	0%

Total Number of Samples

Sample Source	pH	E. Coli	Cl2	Turb.	Temp.	T. Coli.
Source Water	346	330	4	345	324	330
Distribution	480	500	478	476	470	500
Total	826	830	482	821	794	830

Notes:

1. Results are based on limited manual samples and are not indicative of the true duration of failure.
2. The sample stations SS-483: R231 and SS-439: R232 are surface water intakes where the water sample being tested is taken from the raw water, prior to passing through the disinfection system.
3. Blue highlighted samples are distribution (potable water) samples, non-highlighted samples are taken from source wells and intakes prior to disinfection treatment.

10.5 Quarterly Water Sampling Results 2014

2014 Quarterly Source Water Site Quality Sampling				Dibromoacetic Acid	Dichloroacetic Acid	Haloacetic Acids 5 (HAA5)	Heterotrophic Plate Count (HPC)	Iron (Total)	Manganese (Total)	Monochloroacetic Acid	Total Organic Carbon (TOC)	Total PAH	Total Trihalomethanes (TTHM)	Trichloroacetic Acid
Sample Site			Collection Date	µg/L	µg/L	µg/L	CFU/mL	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
SS-433	S103	Whistler Cay	01/28/2014				< 1							
SS-433	S103	Whistler Cay	06/13/2014				< 1							
SS-433	S103	Whistler Cay	07/31/2014				< 1							
SS-433	S103	Whistler Cay	10/15/2014				< 1							
8300 Valley Drive		Alpine Meadows	08/01/2014					0.17	0.003					
8300 Valley Drive		Alpine Meadows	08/28/2014					0.12	< 0.002					
Hyd # 8110	Buckhorn Place	Alpine Meadows	01/30/2014					0.26						
Hyd # 8110	Buckhorn Place	Alpine Meadows	06/27/2014					0.26						
Hyd # 8110	Buckhorn Place	Alpine Meadows	09/19/2014					**0.31**						
Hyd # 8110	Buckhorn Place	Alpine Meadows	10/17/2014					0.25						
SS-409	W201-1	Emerald W1	01/29/2014				< 1	< 0.10	< 0.002		1			
SS-409	W201-1	Emerald W1	07/04/2014				< 1				1.1			
SS-409	W201-1	Emerald W1	09/24/2014				< 1				< 0.5			
SS-409	W201-1	Emerald W1	10/08/2014				< 1				1.8			
SS-409	W201-1	Emerald W1	11/19/2014					< 0.10	< 0.002					
SS-410	W201-2	Emerald W2	01/29/2014				1	< 0.10	< 0.002		0.8			
SS-410	W201-2	Emerald W2	07/04/2014				< 1				1.1			
SS-410	W201-2	Emerald W2	09/24/2014				< 1				< 0.5			
SS-410	W201-2	Emerald W2	10/08/2014				< 1				1.7			
SS-410	W201-2	Emerald W2	11/19/2014					< 0.10	< 0.002					
SS-411	W201-3	Emerald W3	01/29/2014				< 1	< 0.10	< 0.002		0.9			
SS-411	W201-3	Emerald W3	09/24/2014				< 1				< 0.5			
SS-411	W201-3	Emerald W3	10/08/2014				< 1				2.4			
SS-411	W201-3	Emerald W3	11/19/2014					< 0.10	< 0.002					
SS-418	W202	Alpine W1	01/30/2014				< 1	< 0.10			< 0.5			
SS-418	W202	Alpine W1	06/27/2014					< 0.10						
SS-418	W202	Alpine W1	7/3/2014				< 1				< 0.5			
SS-418	W202	Alpine W1	08/06/2014				< 1				< 0.5			
SS-418	W202	Alpine W1	09/19/2014					0.17						
SS-418	W202	Alpine W1	10/16/2014				< 1				< 0.5			
SS-418	W202	Alpine W1	10/17/2014					< 0.10						
SS-418	W202	Alpine W1	11/27/2014					< 0.10	0.012					
SS-419	W210	Alpine W2	01/07/2014				< 1				< 0.5			
SS-419	W210	Alpine W2	01/30/2014					< 0.10						
SS-419	W210	Alpine W2	09/19/2014					< 0.10						
SS-419	W210	Alpine W2	09/25/2014				< 1				< 0.5			
SS-419	W210	Alpine W2	10/16/2014				< 1				< 0.5			
SS-419	W210	Alpine W2	10/17/2014					< 0.10						
SS-419	W210	Alpine W2	11/27/2014					< 0.10	< 0.002					
SS-420	W213	Alpine W3	01/08/2014				< 1				< 0.5			
SS-420	W213	Alpine W3	01/30/2014					< 0.10						
SS-420	W213	Alpine W3	06/27/2014					0.15						
SS-420	W213	Alpine W3	07/03/2014				< 1				< 0.5			
SS-420	W213	Alpine W3	09/19/2014					< 0.10						
SS-420	W213	Alpine W3	09/25/2014				< 1				< 0.5			
SS-420	W213	Alpine W3	10/16/2014				< 1				< 0.5			
SS-420	W213	Alpine W3	10/17/2014					< 0.10						
SS-420	W213	Alpine W3	11/27/2014					< 0.10	< 0.002					
SS-436	R231	21 Mile Creek	05/09/2014				ND				**3.1**			
SS-436	R231	21 Mile Creek	06/19/2014				< 1							
SS-436	R231	21 Mile Creek	09/08/2014				< 1				< 0.5			
SS-436	R231	21 Mile Creek	12/17/2014					< 0.10	< 0.002					
SS-439	R232	Blackcomb Creek	01/02/2014					< 0.10	< 0.002					

2014 Quarterly Source Water Site Quality Sampling				Dibromoacetic Acid	Dichloroacetic Acid	Haloacetic Acids 5 (HAA5)	Heterotrophic Plate Count (HPC)	Iron (Total)	Manganese (Total)	Monochloroacetic Acid	Total Organic Carbon (TOC)	Total PAH	Total Trihalomethanes (TTHM)	Trichloroacetic Acid
Sample Site			Collection Date	µg/L	µg/L	µg/L	CFU/mL	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
SS-439	R232	Blackcomb Creek	05/09/2014				ND				**5.2**			
SS-439	R232	Blackcomb Creek	06/19/2014				< 1							
SS-439	R232	Blackcomb Creek	07/03/2014				3				< 0.5			
SS-439	R232	Blackcomb Creek	09/08/2014				< 1				< 0.5			
SS-439	R232	Blackcomb Creek	10/06/2014				< 1				1.3			
SS-439	R232	Blackcomb Creek	11/13/2014					< 0.10	< 0.002					
SS-439	R232	Blackcomb Creek	12/18/2014				< 1				0.5			
SS-444	W205-1	Community Well 1	01/08/2014				< 1	< 0.10	< 0.002		< 0.5			
SS-444	W205-1	Community Well 1	07/03/2014				< 1				0.6			
SS-444	W205-1	Community Well 1	09/18/2014				< 1				1.1			
SS-444	W205-1	Community Well 1	10/17/2014				< 1				< 0.5			
SS-444	W205-1	Community Well 1	12/18/2014				< 1	< 0.10	< 0.002		< 0.5			
SS-445	W205-2	Community Well 2	01/08/2014				3	< 0.10	< 0.002		< 0.5			
SS-445	W205-2	Community Well 2	07/03/2014				< 1				0.5			
SS-445	W205-2	Community Well 2	09/18/2014				< 1				0.9			
SS-445	W205-2	Community Well 2	10/17/2014				< 1				< 0.5			
SS-445	W205-2	Community Well 2	12/19/2014				< 1	< 0.10	< 0.002		< 0.5			
SS-446	W205-3	Community Well 3	01/08/2014				< 1	< 0.10	< 0.002		< 0.5			
SS-446	W205-3	Community Well 3	07/03/2014				< 1				< 0.5			
SS-446	W205-3	Community Well 3	09/26/2014				< 1				< 0.5			
SS-446	W205-3	Community Well 3	10/17/2014				< 1				< 0.5			
SS-446	W205-3	Community Well 3	12/18/2014				< 1	< 0.10	< 0.002		< 0.5			
SS-447	W211	Whistler Village	01/08/2014				< 1	< 0.10	< 0.002		< 0.5			
SS-447	W211	Whistler Village	07/03/2014				< 1				< 0.5			
SS-447	W211	Whistler Village	09/26/2014				< 1				0.6			
SS-447	W211	Whistler Village	10/17/2014				< 1				< 0.5			
SS-447	W211	Whistler Village	12/19/2014				< 1	0.12	< 0.002		< 0.5			
SS-462	P264	Nordic Estates	01/06/2014	< 2	7	12	< 1			< 2			10	6
SS-462	P264	Nordic Estates	05/16/2014	< 2	< 2	< 2				< 2			< 4	< 2
SS-462	P264	Nordic Estates	05/22/2014				8							
SS-462	P264	Nordic Estates	07/31/2014	< 2	3	3	< 1			< 2			< 4	< 2
SS-462	P264	Nordic Estates	10/07/2014	< 2	< 2	< 2	< 1			< 2			20	< 2
SS-474	R228	Baxter Reservoir	01/09/2014				< 1		0.006					
SS-474	R228	Baxter Reservoir	05/30/2014				< 1							
SS-474	R228	Baxter Reservoir	07/31/2014				< 1							
SS-474	R228	Baxter Reservoir	10/15/2014				< 1							
SS-483	W212-1	Function W1	01/09/2014				< 1	0.21	**0.06**		< 0.5			
SS-483	W212-1	Function W1	05/02/2014				< 1	0.16	**0.105**		0.6			
SS-483	W212-1	Function W1	09/18/2014				< 1				1.5			
SS-483	W212-1	Function W1	10/01/2014					0.14	**1.37**					
SS-483	W212-1	Function W1	10/09/2014				< 1	< 0.10	**0.076**		1.8			
SS-483	W212-1	Function W1	11/27/2014					0.15	**0.062**					
SS-483	W212-1	Function W1	12/30/2014								< 0.5			
SS-489	W217	Cheakamus Crossing	01/02/2014					< 0.10	< 0.002					
SS-489	W217	Cheakamus Crossing	06/05/2014				< 1				0.6			
SS-489	W217	Cheakamus Crossing	07/10/2014											
SS-489	W217	Cheakamus Crossing	09/08/2014				< 1				< 0.5			
SS-489	W217	Cheakamus Crossing	10/06/2014				< 1				**6.4**			
SS-489	W217	Cheakamus Crossing	11/13/2014					< 0.10	< 0.002					
SS-489	W217	Cheakamus Crossing	12/18/2014				< 1				< 0.5			
SS-493	W218	Rainbow Park	01/02/2014				3	< 0.10	< 0.002		< 0.5			
SS-493	W218	Rainbow Park	05/29/2014				< 1				< 0.5			
SS-493	W218	Rainbow Park	08/07/2014				< 1				< 0.5			

2014 Quarterly Distribution System Water Quality Sampling				Dibromoacetic Acid	Dichloroacetic Acid	Haloacetic Acids 5 (HAA5)	Heterotrophic Plate Count (HPC)	Iron (Total)	Manganese (Total)	Monochloroacetic Acid	Total Organic Carbon (TOC)	Total PAH	Total Trihalomethanes (TTHM)	Trichloroacetic Acid
Sample Site			Collection Date	µg/L	µg/L	µg/L	CFU/mL	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
SS-493	W218	Rainbow Park	09/22/2014											
SS-493	W218	Rainbow Park	10/07/2014				< 1				2.7			
SS-493	W218	Rainbow Park	11/27/2014					< 0.10	< 0.002					
SS-438A	W212-2	Function W2	01/29/2014				< 1	< 0.10	1.02		< 0.5			
SS-438A	W212-2	Function W2	06/12/2014				< 1	< 0.10	2.17		1			
SS-438A	W212-2	Function W2	06/26/2014						1.13					
SS-438A	W212-2	Function W2	08/25/2014					0.14	1.57		< 0.5			
SS-438A	W212-2	Function W2	10/01/2014				< 1	1.01	0.056		1			
SS-438A	W212-2	Function W2	10/15/2014				< 1	0.13	1.17		0.7			
SS-438A	W212-2	Function W2	12/30/2014								< 0.5			

2014 Quarterly Distribution System Water Quality Sampling				Dibromoacetic Acid	Dichloroacetic Acid	Haloacetic Acids 5 (HAA5)	Heterotrophic Plate Count (HPC)	Iron (Total)	Manganese (Total)	Monochloroacetic Acid	Total Organic Carbon (TOC)	Total PAH	Total Trihalomethanes (TTHM)	Trichloroacetic Acid
Sample Site			Collection Date	µg/L	µg/L	µg/L	CFU/mL	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
SS-403	S131	Emerald Estates	01/07/2014	< 2	< 2	< 0.002	< 1			< 2			5	< 2
SS-403	S131	Emerald Estates	06/12/2014	< 2	3	0.003	< 1			< 2			7	< 2
SS-403	S131	Emerald Estates	08/06/2014	< 2	< 2	< 0.002	< 1			< 2			4	< 2
SS-403	S131	Emerald Estates	10/07/2014	< 2	< 2	< 0.002	< 1			< 2			6	< 2
SS-406	R238	Emerald Estates	01/08/2014				< 1							
SS-406	R238	Emerald Estates	06/12/2014				< 1							
SS-406	R238	Emerald Estates	08/06/2014				< 1							
SS-406	R238	Emerald Estates	10/08/2014				< 1							
SS-412	P245	Alpine Meadows	01/28/2014				< 1	< 0.10	< 0.002					
SS-412	P245	Alpine Meadows	01/30/2014					1.09						
SS-412	P245	Alpine Meadows	06/19/2014				< 1							
SS-412	P245	Alpine Meadows	06/27/2014					0.15						
SS-412	P245	Alpine Meadows	09/04/2014				< 1							
SS-412	P245	Alpine Meadows	09/19/2014					0.27						
SS-412	P245	Alpine Meadows	10/16/2014				< 1							
SS-412	P245	Alpine Meadows	10/17/2014					0.17						
SS-421	S101	Alpine Meadows	01/07/2014				< 1							
SS-421	S101	Alpine Meadows	01/30/2014					0.26						
SS-421	S101	Alpine Meadows	06/19/2014				< 1							
SS-421	S101	Alpine Meadows	06/27/2014					0.28						
SS-421	S101	Alpine Meadows	08/06/2014				< 1							
SS-421	S101	Alpine Meadows	09/19/2014					0.19						
SS-421	S101	Alpine Meadows	10/16/2014				< 1							
SS-421	S101	Alpine Meadows	10/17/2014					< 0.10						
SS-424	P266/S123	Nicklaus North	02/03/2014				< 1							
SS-424	P266/S123	Nicklaus North	06/19/2014				< 1							
SS-424	P266/S123	Nicklaus North	09/04/2014				< 1							
SS-424	P266/S123	Nicklaus North	10/16/2014				< 1							
SS-427	P267/S126	Spruce Grove	01/08/2014	< 2	9	17	< 1			< 2			18	8
SS-427	P267/S126	Spruce Grove	05/23/2014	< 2	< 2	< 2				< 2			< 4	< 2
SS-427	P267/S126	Spruce Grove	06/19/2014				< 1							

2014 Quarterly Distribution System Water Quality Sampling				Dibromoacetic Acid	Dichloroacetic Acid	Haloacetic Acids 5 (HAA5)	Heterotrophic Plate Count (HPC)	Iron (Total)	Manganese (Total)	Monochloroacetic Acid	Total Organic Carbon (TOC)	Total PAH	Total Trihalomethanes (TTHM)	Trichloroacetic Acid
Sample Site			Collection Date	µg/L	µg/L	µg/L	CFU/mL	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
SS-427	P267/S126	Spruce Grove	08/07/2014	< 2	7	12	< 1			< 2			13	4
SS-427	P267/S126	Spruce Grove	10/06/2014	< 2	9	15	< 1			< 2			14	6
SS-430	Snowflake Park	Whistler Cay	02/03/2014				< 1							
SS-430	Snowflake Park	Whistler Cay	06/13/2014				< 1							
SS-430	Snowflake Park	Whistler Cay	09/25/2014				< 1							
SS-430	Snowflake Park	Whistler Cay	10/07/2014				< 1							
SS-441	P256	Blackcomb Benchlands	01/28/2014				< 1							
SS-441	P256	Blackcomb Benchlands	02/03/2014	< 2	23	53				< 2			35	30
SS-441	P256	Blackcomb Benchlands	05/23/2014	< 2	13	27				< 2			23	14
SS-441	P256	Blackcomb Benchlands	06/05/2014				< 1							
SS-441	P256	Blackcomb Benchlands	09/24/2014	< 2	9	19	< 1			< 2			14	10
SS-441	P256	Blackcomb Benchlands	10/07/2014	< 2	17	39	< 1			< 2			31	22
SS-450	Main Street	Whistler Village	01/08/2014	< 2	8	16	< 1			< 2			18	8
SS-450	Main Street	Whistler Village	05/23/2014	< 2	< 2	< 2				< 2			< 4	< 2
SS-450	Main Street	Whistler Village	06/13/2014				< 1							
SS-450	Main Street	Whistler Village	08/07/2014	< 2	7	12	< 1			< 2			11	5
SS-450	Main Street	Whistler Village	10/07/2014	< 2	7	13	< 1			< 2			15	6
SS-453	Mountain Square	Whistler Village	02/03/2014				< 1							
SS-453	Mountain Square	Whistler Village	06/05/2014				< 1							
SS-453	Mountain Square	Whistler Village	09/19/2014				< 1							
SS-453	Mountain Square	Whistler Village	10/16/2014				< 1							
SS-456	P265	Brio	01/07/2014				< 1							
SS-456	P265	Brio	05/29/2014				< 1							
SS-459	S104	Alta Vista	02/03/2014				< 1							
SS-459	S104	Alta Vista	06/05/2014				< 1							
SS-459	S104	Alta Vista	09/19/2014				< 1							
SS-459	S104	Alta Vista	10/15/2014				< 1							
SS-465	P270	Taluswood	05/22/2014				< 1							
SS-465	P270	Taluswood	09/04/2014				< 1							
SS-465	P270	Taluswood	10/06/2014				< 1							
SS-471	S106	Whistler Creek	01/07/2014				< 1							
SS-471	S106	Whistler Creek	05/02/2014				< 1							
SS-471	S106	Whistler Creek	08/07/2014				< 1							
SS-471	S106	Whistler Creek	10/09/2014				< 1							
SS-477	S121	Millars Pond	01/08/2014				2							
SS-477	S121	Millars Pond	05/30/2014				< 1							
SS-477	S121	Millars Pond	08/07/2014				< 1							
SS-477	S121	Millars Pond	10/15/2014				< 1							
SS-480	P273/S132	Spring Creek	06/05/2014				< 1							
SS-480	P273/S132	Spring Creek	09/18/2014				< 1							
SS-480	P273/S132	Spring Creek	10/07/2014				< 1							
SS-482	1300 Alta Lake Road	Twin Lakes	01/30/2014				< 1							
SS-482	1300 Alta Lake Road	Twin Lakes	05/29/2014				< 1							
SS-482	1300 Alta Lake Road	Twin Lakes	09/18/2014				< 1							
SS-482	1300 Alta Lake Road	Twin Lakes	10/09/2014				< 1							
SS-488	P275	21 Mile Creek	01/06/2014				< 1							
SS-488	P275	21 Mile Creek	05/02/2014				< 1							
SS-488	P275	21 Mile Creek	08/07/2014				< 1							
SS-488	P275	21 Mile Creek	10/09/2014				< 1							
SS-491	1300 Mount Fee Road	Cheakamus Crossing	01/30/2014	< 2	< 2		< 1			< 2				< 2
SS-491	1300 Mount Fee Road	Cheakamus Crossing	05/16/2014	< 2	2	2				< 2			< 0.004	< 2

2014 Quarterly Source Water Site Quality Sampling				Dibromoacetic Acid	Dichloroacetic Acid	Haloacetic Acids 5 (HAA5)	Heterotrophic Plate Count (HPC)	Iron (Total)	Manganese (Total)	Monochloroacetic Acid	Total Organic Carbon (TOC)	Total PAH	Total Trihalomethanes (TTHM)	Trichloroacetic Acid
Sample Site			Collection Date	µg/L	µg/L	µg/L	CFU/mL	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L
SS-491	1300 Mount Fee Road	Cheakamus Crossing	05/22/2014				< 1							
SS-491	1300 Mount Fee Road	Cheakamus Crossing	09/18/2014	< 2	< 2	< 2	< 1			< 2			< 0.004	< 2
SS-491	1300 Mount Fee Road	Cheakamus Crossing	10/07/2014	< 2	< 2	< 2	< 1			< 2			0.005	< 2
SS-494	S137	Rainbow	01/07/2014				< 1							
SS-494	S137	Rainbow	01/30/2014					0.14						
SS-494	S137	Rainbow	06/19/2014				< 1							
SS-494	S137	Rainbow	06/27/2014					0.12						
SS-494	S137	Rainbow	08/06/2014				< 1							
SS-494	S137	Rainbow	09/19/2014					0.14						
SS-494	S137	Rainbow	10/16/2014				< 1							
SS-494	S137	Rainbow	10/17/2014					0.24						

10.6 Annual Water Sampling Results 2014

2014 Annual Water Chemistry Sampling Results			SS-409 W201-1 Emerald W1	SS-410 W201-2 Emerald W2	SS-411 W-201-3 Emerald W3	SS-418 W-202 Alpine W1	SS-419 W-210 Alpine W2	SS-420 W213 Alpine W3	SS-436 R231 21 Mile Creek	SS-439 R232 Blackcomb Creek	SS-444 W205-1 Community W1	SS-445 W205-2 Community W2	SS-446 W205-3 Community W3	SS-447 W211 Whistler Village	SS-474 R228 Baxter	SS-483 W212-1 Function W1	SS-483A W212-2 Function W2	SS-489 W217 Cheakamus Crossing	SS-493 W218 Rainbow Park
Test Parameter	**GCDWQ Standard**	**Units**	19-Nov-14	19-Nov-14	19-Nov-14	27-Nov-14	27-Nov-14	27-Nov-14	17-Dec-14	13-Nov-14	18-Dec-14	19-Dec-14	18-Dec-14	19-Dec-14	8-Jan-15	27-Nov-14	9-Jan-15	13-Nov-14	27-Nov-14
Aluminum	-	mg/L	< 0.05	< 0.05	< 0.05	2.58	< 0.05	< 0.05	0.05	0.10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05
Antimony	0.006	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	0.01	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Barium	1	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Boron	5	mg/L	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Cadmium	0.005	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	-	mg/L	29.4	24.1	29.0	19.1	10.7	32.4	4.2	8.4	63.5	86.3	39.9	47.1	12.9	13.2	16.0	14.9	13.6
Chloride	250	mg/L	49.5	11.8	30.4	10.0	0.23	8.09	0.25	0.23	52.4	45.1	21.5	34.3	23.0	33.5	72.7	6.58	1.85
Chromium	0.05	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Cobalt	-	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Colour	15	TCU	< 5	< 5	< 5	< 5	< 5	< 5	8	7	< 5	< 5	< 5	< 5	< 6	< 5	< 5	< 5	< 5
Conductivity	-	µS/cm	331	176	244	145	66	204	26	51	449	578	281	352	162	213	374	108	95
Copper	1	mg/L	0.067	0.018	0.042	0.009	0.005	-	< 0.002	< 0.002	0.019	0.005	0.024	0.009	0.011	0.005	0.002	< 0.002	< 0.002
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	< 0.10	< 0.10	< 0.11	< 0.10	< 0.10	< 0.10	< 0.10
Hardness (CaCO3)	-	mg/L	79.4	64.2	77.0	50.9	28.5	85.2	11.2	22.3	165	222	103	123	37.9	40.2	51.8	40.9	37.4
Iron	0.3	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	0.15	< 0.10	< 0.10	< 0.10
Lead	0.01	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001
Magnesium	-	mg/L	1.4	1.0	1.1	0.8	0.4	1.0	0.2	0.3	1.6	1.7	0.8	1.3	1.1	1.7	2.9	0.9	0.8
Manganese	0.05	mg/L	< 0.002	< 0.002	< 0.002	0.012	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.015	**0.062**	**1.33**	< 0.002	< 0.002
Mercury	1	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	-	-	-	-	< 0.03	< 0.2	< 0.02	< 0.2	< 0.2
Nitrate	10	mg/L	0.391	0.144	0.198	0.178	0.027	0.149	0.017	0.053	0.404	0.258	0.136	0.275	1.062	0.143	0.051	0.190	0.041
Nitrite	1	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.011	< 0.010	< 0.010	< 0.010	< 0.010
pH	6.5-8.5	-	7.14	7.39	7.38	7.13	7.25	7.32	7.08	7.37	6.81	6.95	6.95	6.78	6.84	6.94	6.98	6.83	7.05
Potassium	-	mg/L	1.3	0.6	0.4	0.8	0.4	1.4	< 0.2	0.8	0.7	0.6	< 0.2	0.3	1.2	2.0	3.4	1.0	0.8
Selenium	0.01	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.006	< 0.005	< 0.005	< 0.005	< 0.005
Sodium	200	mg/L	33.7	8.9	18.4	7.3	1.0	4.8	0.5	0.9	20.2	22.9	14.0	15.1	12.7	25.6	44.6	4.9	2.3
Sulphate	500	mg/L	18.9	13.9	15.7	20.0	10.8	48.3	2.2	3.7	80.7	146	54.8	77.2	16.8	14.3	10.1	12.1	23.4
Total Dissolved Solids	500	mg/L	167	91.3	126	77.4	34.2	117	12.9	26.9	255	341	163	204	81.4	111	172	56.8	52.3
Turbidity	1	NTU	0.13	< 0.1	0.24	< 0.1	0.2	< 0.1	0.26	0.9	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.9	0.4	< 0.1	0.1
Uranium	0.02	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.006	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Zinc	5	mg/L	< 0.04	< 0.04	< 0.04	0.08	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04

10.7 Microscopic Particulate Analysis (MPA) Results 2014

Emerald Estates Wells	Unit	W201-1	W201-2	W201-3
Date	DD-MM-YY	30-Oct-14	30-Oct-14	30-Oct-14
Giardia cysts	Count/100L	2.41	0.00	0.00
Cryptosporidium oocysts	Count/100L	0.00	0.00	0.00
Diatoms	Count/380L	0.00	0.00	0.00
Other Algae	Count/380L	9.17	9.09	0.00
Insect/Larvae	Count/380L	0.00	0.00	9.62
Rotifers	Count/380L	0.00	0.00	0.00
Plant Debris	Count/380L	27.52	0.00	28.86
Pollen	Count/380L	0.0	9.1	9.6
Nematodes	Count/380L	36.7	0.0	19.2
Crustacea	Count/380L	0	0	0
Amoebae	Count/380L	0	0	0
Cilicates/Flagellates	Count/380L	0	0	0
Other	Count/380L	0	0	0
Risk Factor	EPA Consensus Method	**25 - HIGH**	**4 - LOW**	**4 - LOW**