

**REPORT TO MAGIC LAKE ESTATES
WATER AND SEWER LOCAL SERVICES COMMITTEE
MEETING OF TUESDAY, APRIL 14, 2015**

SUBJECT WATER QUALITY UPDATE

March Program Summary

The water quality monitoring program in March consisted of weekly chlorine residuals and one monthly set of samples collected for analysis of bacteria and conventional parameters, including taste and odour and total organic carbon.

The results indicated the absence of bacteria in the distribution system. The taste and odour analyses indicated a “moderately strong grassy odour” in the Magic Lake raw water, and “moderately strong hay odour” in the Buck Lake raw water. The blended raw had “low to moderate grassy and hay odours” and the treated water had moderate to strong chlorine odour and taste in the distribution system.

The potassium permanganate system remained operational to continue to address on-going colour issues from manganese in the raw water. Staff visually assessed the water leaving the treatment plant to confirm that it was colour-free. Samples of treated water were also left to stand to confirm that colour didn’t develop over time.

The Capital Regional District (CRD) did not receive any complaints concerning water colour, taste or odour during March.

Additional Analyses

During the February 10, 2015 meeting, the Committee submitted a water filter from an individual home to the CRD for analysis. The Committee passed a motion requesting that a full metal scan be performed on the filter to determine what caused the filter to prematurely expire. The filter appeared saturated with thick brown sludge. Based on the information provided by the Committee, the filter was installed and used between November 2014 and mid-January 2015.

The CRD submitted the filter sample to Maxxam lab on February 11, 2015 and received the results on February 17, 2015. The lab analytical results are attached as Appendix A.

The laboratory results indicated that the “brown sludge” was predominantly due to high manganese level. The Magic Lake Estates Water System had experienced elevated manganese conditions during that time frame. The lab analysis indicated a manganese concentration at the filter of 8,970 mg/kg. It should be noted, however, that this number is not representative of manganese levels in the drinking water during that time period as a filter concentrates materials. The filter also contained elevated concentrations of other metals including copper, aluminum and lead which were magnitudes higher on this filter than in the actual drinking water. Manganese was, however, by far the predominant metal detected on this filter sample which corresponds well with the manganese typical brown appearance of the

material attached to the filter.

Manganese in drinking water is not a health concern and possesses only an aesthetic objective of 50 µg/l as per Guidelines for Canadian Drinking Water Quality. In concentrations above this aesthetic objective, manganese can cause discolouration of the water resulting in staining fixtures and laundry. There are no known health implications from exposure to naturally occurring manganese concentrations in drinking water sources.

It is expected that the implemented potassium permanganate pre-oxidization treatment in conjunction with additional source water monitoring equipment will enable the CRD to mitigate and minimize manganese episodes like that in the future in this water system.

RECOMMENDATION

That the Magic Lake Estates Water and Sewer Local Services Committee receive this report for information.

Christoph Moch, P.Eng.
Manager, Water Quality Operations

Glenn Harris, Ph.D., R.P.Bio
Senior Manager, Environmental Protection
Concurrence

CM:cam

Attachments:

- Appendix A – Analytical Lab Results for Tested Filter

Your Project #: PENDER ISLAND - MAGIC LAKE EST
 Site Location: RESIDENTIAL CONCERN
 Your C.O.C. #: 08400637

Attention: Christoph Moch
 Capital Regional District
 Water Department
 479 Island Hwy
 Victoria, BC
 Canada V9B 1H7

Report Date: 2015/02/17
 Report #: R1804376
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B511249
Received: 2015/02/11, 14:20
 Sample Matrix: Solid
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICP-AES (acid extr. solid)	1	2015/02/17	2015/02/17	BBY7SOP-00018	EPA 6010c R3 m

Reference Method suffix "m" Indicates test methods incorporate validated modifications from specific reference methods to improve performance.
 * RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key



Maxxam
 17 Feb 2015 15:21:54 -08:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager:
 Debbie Nordbruket, Project Manager
 Email: DNordbruket@maxxam.ca
 Phone# (250)385-6112

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 Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B511249
Report Date: 2015/02/17

Capital Regional District
Client Project #: PENDER ISLAND - MAGIC LAKE EST
Site Location: RESIDENTIAL CONCERN

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		LR2833		
Sampling Date		2015/02/10		
COC Number		08400637		
	Units	MLE - RESIDENTIAL FILTER	RDL	QC Batch
Total Metals by ICP				
Total Aluminum (Al)	mg/kg	2170	5.0	7809531
Total Antimony (Sb)	mg/kg	<5.0	5.0	7809531
Total Arsenic (As)	mg/kg	<3.0	3.0	7809531
Total Barium (Ba)	mg/kg	20.0	0.10	7809531
Total Beryllium (Be)	mg/kg	<0.30	0.30	7809531
Total Boron (B)	mg/kg	<1.0	1.0	7809531
Total Cadmium (Cd)	mg/kg	<0.50	0.50	7809531
Total Calcium (Ca)	mg/kg	599	5.0	7809531
Total Chromium (Cr)	mg/kg	<1.0	1.0	7809531
Total Cobalt (Co)	mg/kg	<2.0	2.0	7809531
Total Copper (Cu)	mg/kg	1440	2.0	7809531
Total Iron (Fe)	mg/kg	796	1.0	7809531
Total Lead (Pb)	mg/kg	97.8	3.0	7809531
Total Magnesium (Mg)	mg/kg	51.1	5.0	7809531
Total Manganese (Mn)	mg/kg	8970	0.30	7809531
Total Molybdenum (Mo)	mg/kg	<2.0	2.0	7809531
Total Nickel (Ni)	mg/kg	4.4	2.0	7809531
Total Phosphorus (P)	mg/kg	112	5.0	7809531
Total Potassium (K)	mg/kg	<30	30	7809531
Total Selenium (Se)	mg/kg	<10	10	7809531
Total Silver (Ag)	mg/kg	<1.0	1.0	7809531
Total Sodium (Na)	mg/kg	38	10	7809531
Total Strontium (Sr)	mg/kg	8.01	0.10	7809531
Total Sulphur (S)	mg/kg	74	10	7809531
Total Tin (Sn)	mg/kg	<3.0	3.0	7809531
Total Titanium (Ti)	mg/kg	0.63	0.50	7809531
Total Vanadium (V)	mg/kg	1.2	1.0	7809531
Total Zinc (Zn)	mg/kg	52.4	0.50	7809531
Total Zirconium (Zr)	mg/kg	<5.0	5.0	7809531
RDL = Reportable Detection Limit				

Maxxam Job #: B511249
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Site Location: RESIDENTIAL CONCERN

GENERAL COMMENTS

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Method Blank		RPD		QC Standard	
			Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7809531	Total Aluminum (Al)	2015/02/17	<5.0	mg/kg				
7809531	Total Antimony (Sb)	2015/02/17	<5.0	mg/kg				
7809531	Total Arsenic (As)	2015/02/17	<3.0	mg/kg				
7809531	Total Barium (Ba)	2015/02/17	<0.10	mg/kg				
7809531	Total Beryllium (Be)	2015/02/17	<0.30	mg/kg				
7809531	Total Boron (B)	2015/02/17	<1.0	mg/kg				
7809531	Total Cadmium (Cd)	2015/02/17	<0.50	mg/kg				
7809531	Total Calcium (Ca)	2015/02/17	<5.0	mg/kg				
7809531	Total Chromium (Cr)	2015/02/17	<1.0	mg/kg				
7809531	Total Cobalt (Co)	2015/02/17	<2.0	mg/kg				
7809531	Total Copper (Cu)	2015/02/17	<2.0	mg/kg				
7809531	Total Iron (Fe)	2015/02/17	<1.0	mg/kg				
7809531	Total Lead (Pb)	2015/02/17	<3.0	mg/kg	7.0	35	89	80 - 120
7809531	Total Magnesium (Mg)	2015/02/17	<5.0	mg/kg				
7809531	Total Manganese (Mn)	2015/02/17	<0.30	mg/kg				
7809531	Total Molybdenum (Mo)	2015/02/17	<2.0	mg/kg				
7809531	Total Nickel (Ni)	2015/02/17	<2.0	mg/kg				
7809531	Total Phosphorus (P)	2015/02/17	<5.0	mg/kg				
7809531	Total Potassium (K)	2015/02/17	<30	mg/kg				
7809531	Total Selenium (Se)	2015/02/17	<10	mg/kg				
7809531	Total Silver (Ag)	2015/02/17	<1.0	mg/kg				
7809531	Total Sodium (Na)	2015/02/17	<10	mg/kg				
7809531	Total Strontium (Sr)	2015/02/17	<0.10	mg/kg				
7809531	Total Sulphur (S)	2015/02/17	<10	mg/kg				
7809531	Total Tin (Sn)	2015/02/17	<3.0	mg/kg				
7809531	Total Titanium (Ti)	2015/02/17	<0.50	mg/kg				
7809531	Total Vanadium (V)	2015/02/17	<1.0	mg/kg				
7809531	Total Zinc (Zn)	2015/02/17	<0.50	mg/kg				
7809531	Total Zirconium (Zr)	2015/02/17	<5.0	mg/kg				

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.


APPENDIX A

Maxxam Job #: B511249
Report Date: 2015/02/17

Capital Regional District
Client Project #: PENDER ISLAND - MAGIC LAKE EST
Site Location: RESIDENTIAL CONCERN

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, Data Validation Coordinator

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BS11249

CHAIN OF CUSTODY RECORD



BBY FCD-00077/05 Page of

Burnaby, 4606 Canada Way, Burnaby, BC V5G 1J5, Toll Free (800) 665-6566

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required	
Company Name: Capital Regional District	Company Name: Capital Regional District	Question #: _____	Project #: _____	Regular TAT 5 days (Next business)	<input checked="" type="checkbox"/> Regular TAT 5 days (Next business)		
Contact Name: Christoph Moch	Contact Name: Christoph Moch, Kristi Wilson, Jennifer Blenly	P.O. # / A/F/E/R: _____	Project #: _____	Rush TAT (Surcharges will be applied)			
Address: 479 Island Highway	Address: _____	PC: _____	Site Location: Residential concern	Some Day	2 Days	3 Days	
Phone: 250-74-5903	Phone: 250-474-9603; 250-474-5543; 250-474-5996	Site #: _____	Sampled By: Unknown	Date Requested: _____			
Email: christoph.moch@crd.bc.ca	Email: christoph.moch@crd.bc.ca; kristi.wilson@crd.bc.ca; jennifer.blenly@crd.bc.ca						

Regulatory Criteria		Special Instructions	
<input type="checkbox"/> BC CSF Soil	<input type="checkbox"/> BC CSR Water	<input type="checkbox"/> Return Cooler	
<input type="checkbox"/> COSE (Specify)	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Ship Sample Bottles (Please Specify)	
<input type="checkbox"/> Drinking Water	<input type="checkbox"/> BC Water Quality		

Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Media	Analysis Requested	Analysis Results	Hold - DO NOT ANALYZE	LABORATORY USE ONLY
1 MLE - residential filter	LR2833	10/02/2015		Solid	<input checked="" type="checkbox"/> Total Metals <input type="checkbox"/> Total Mercury <input type="checkbox"/> Total Nitrate <input type="checkbox"/> Total Phosphate <input type="checkbox"/> Total Suspended Solids <input type="checkbox"/> Volatile Organic Compounds <input type="checkbox"/> Semi-Volatile Organic Compounds <input type="checkbox"/> PCBs <input type="checkbox"/> PAHs <input type="checkbox"/> Lead <input type="checkbox"/> Cadmium <input type="checkbox"/> Copper <input type="checkbox"/> Zinc <input type="checkbox"/> Nickel <input type="checkbox"/> Manganese <input type="checkbox"/> Selenium <input type="checkbox"/> Silver <input type="checkbox"/> Barium <input type="checkbox"/> Bismuth <input type="checkbox"/> Boron <input type="checkbox"/> Bromine <input type="checkbox"/> Calcium <input type="checkbox"/> Chlorine <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Fluorine <input type="checkbox"/> Gallium <input type="checkbox"/> Germanium <input type="checkbox"/> Iodine <input type="checkbox"/> Iron <input type="checkbox"/> Lead <input type="checkbox"/> Magnesium <input type="checkbox"/> Manganese <input type="checkbox"/> Mercury <input type="checkbox"/> Molybdenum <input type="checkbox"/> Nickel <input type="checkbox"/> Nitrogen <input type="checkbox"/> Potassium <input type="checkbox"/> Silicon <input type="checkbox"/> Sodium <input type="checkbox"/> Strontium <input type="checkbox"/> Sulfur <input type="checkbox"/> Tellurium <input type="checkbox"/> Thallium <input type="checkbox"/> Tin <input type="checkbox"/> Vanadium <input type="checkbox"/> Zinc <input type="checkbox"/> Zirconium			Actual sample date unknown
2								
3								
4								
5								
6								
7								
8								
9								
10								

REQUISITIONED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXIMUM JOB #
<i>J. Moch</i>	15/02/11	<i>Debbie Nodder</i>	2015 Feb 11	1420	