

**REPORTED TO** Black Mountain Irrigation District  
285 Gray Avenue  
KELOWNA, BC V1X 1W8

**TEL** (250) 765-5169  
**FAX** (250) 765-0277

**ATTENTION** Bob Hrasko

**WORK ORDER** 3111053

**PO NUMBER**

**RECEIVED / TEMP** Nov-20-13 09:45 / 6°C

**PROJECT** Comprehensive

**REPORTED** Nov-27-13

**PROJECT INFO**

**COC NUMBER** no number

**General Comments:**

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.



Issued By:

**Jennifer Shanko, ASCT**  
Administration Coordinator

**Please contact CARO if more information is needed or to provide feedback on our services.**

**Locations:**

#110 4011 Viking Way  
Richmond, BC V6V 2K9  
Tel: 604-279-1499 Fax: 604-279-1599

#102 3677 Highway 97N  
Kelowna, BC V1X 5C3  
Tel: 250-765-9646 Fax: 250-765-3893

17225 109 Avenue  
Edmonton, AB T5S 1H7  
Tel: 780-489-9100 Fax: 780-489-9700

[www.caro.ca](http://www.caro.ca)

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Analysis Description	Method Reference (* = modified from)		Location
	Preparation	Analysis	
Alkalinity, total	N/A	APHA 2320 B	Kelowna
Chloride in Water by IC	N/A	APHA 4110 B	Kelowna
Colour, True at 410 nm	N/A	APHA 2120 C *	Kelowna
Conductivity in Water	N/A	APHA 2510 B	Kelowna
Cyanide, Total in Liquids	APHA 4500-CN C	APHA 4500-CN E	Kelowna
E. coli (by CCA)	N/A	APHA 9222 *	Kelowna
Fluoride in Water by IC	N/A	APHA 4110 B	Kelowna
Hardness as CaCO <sub>3</sub> (CALC)	N/A	APHA 2340 B	Richmond
Nitrate-N in Water by IC	N/A	APHA 4110 B	Kelowna
Nitrite-N in Water by IC	N/A	APHA 4110 B	Kelowna
pH in Water	N/A	APHA 4500-H+ B	Kelowna
Sulfate in Water by IC	N/A	APHA 4110 B	Kelowna
Total Coliforms (by CCA)	N/A	APHA 9222 *	Kelowna
Total Recoverable Metals	APHA 3030E *	APHA 3125 B	Richmond
Transmissivity at 254nm	N/A	APHA 5910 B	Kelowna
Turbidity	N/A	APHA 2130 B	Kelowna

*Note: The numbers in brackets represent the year that the method was published/approved*

**Method Reference Descriptions:**

APHA Standard Methods for the Examination of Water and Wastewater, American Public Health Association

**Glossary of Terms:**

MRL Method Reporting Limit  
 < Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences  
 % Percent W/W  
 CFU/100mL Colony Forming Units per 100 mL  
 Color Unit Colour referenced against a platinum cobalt standard  
 mg/L Milligrams per litre  
 NTU Nephelometric Turbidity Units  
 pH units pH < 7 = acidic, pH > 7 = basic  
 uS/cm Microsiemens per centimeter

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Analyte	Result / Recovery	MRL / Limit	Units	Prepared	Analyzed	Notes
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**Anions**

**Sample ID: Booster #1 (3111053-01) [Water] Sampled: Nov-20-13 09:00**

Alkalinity, Total as CaCO <sub>3</sub>	37	1	mg/L	N/A	Nov-20-13	
Chloride	9.02	0.10	mg/L	N/A	Nov-20-13	
Fluoride	< 0.10	0.10	mg/L	N/A	Nov-20-13	
Nitrogen, Nitrate as N	< 0.010	0.010	mg/L	N/A	Nov-20-13	
Nitrogen, Nitrite as N	< 0.010	0.010	mg/L	N/A	Nov-20-13	
Sulfate	5.3	1.0	mg/L	N/A	Nov-20-13	

**Sample ID: Well #4 (3111053-02) [Water] Sampled: Nov-20-13 09:30**

Alkalinity, Total as CaCO <sub>3</sub>	201	1	mg/L	N/A	Nov-20-13	
Chloride	11.7	0.10	mg/L	N/A	Nov-20-13	
Fluoride	0.13	0.10	mg/L	N/A	Nov-20-13	
Nitrogen, Nitrate as N	4.31	0.010	mg/L	N/A	Nov-20-13	
Nitrogen, Nitrite as N	< 0.010	0.010	mg/L	N/A	Nov-20-13	
Sulfate	25.1	1.0	mg/L	N/A	Nov-20-13	

**General Parameters**

**Sample ID: Booster #1 (3111053-01) [Water] Sampled: Nov-20-13 09:00**

Colour, True	< 5	5	Color Unit	N/A	Nov-20-13	
Conductivity (EC)	118	2	uS/cm	N/A	Nov-20-13	
Cyanide, total	< 0.010	0.010	mg/L	Nov-27-13	Nov-27-13	
pH	7.46	0.01	pH units	N/A	Nov-20-13	
Turbidity	0.5	0.1	NTU	N/A	Nov-21-13	
UV Transmittance @ 254nm	90.9	0.1	%	N/A	Nov-20-13	

**Sample ID: Well #4 (3111053-02) [Water] Sampled: Nov-20-13 09:30**

Colour, True	< 5	5	Color Unit	N/A	Nov-20-13	
Conductivity (EC)	498	2	uS/cm	N/A	Nov-20-13	
Cyanide, total	< 0.010	0.010	mg/L	Nov-27-13	Nov-27-13	
pH	7.83	0.01	pH units	N/A	Nov-20-13	
Turbidity	< 0.1	0.1	NTU	N/A	Nov-21-13	
UV Transmittance @ 254nm	96.8	0.1	%	N/A	Nov-20-13	

**Calculated Parameters**

**Sample ID: Booster #1 (3111053-01) [Water] Sampled: Nov-20-13 09:00**

Hardness, Total (Total as CaCO <sub>3</sub> )	43.8	5.0	mg/L	N/A	N/A	
Solids, Total Dissolved	56.4	2.0	mg/L	N/A	N/A	

**Sample ID: Well #4 (3111053-02) [Water] Sampled: Nov-20-13 09:30**

Hardness, Total (Total as CaCO <sub>3</sub> )	242	5.0	mg/L	N/A	N/A	
Solids, Total Dissolved	279	2.0	mg/L	N/A	N/A	

**Total Recoverable Metals**

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**Total Recoverable Metals, Continued**

**Sample ID: Booster #1 (3111053-01) [Water] Sampled: Nov-20-13 09:00**

Aluminum, total	0.14	0.05	mg/L	Nov-21-13	Nov-22-13	
Antimony, total	< 0.001	0.001	mg/L	Nov-21-13	Nov-22-13	
Arsenic, total	< 0.005	0.005	mg/L	Nov-21-13	Nov-22-13	
Barium, total	< 0.05	0.05	mg/L	Nov-21-13	Nov-22-13	
Beryllium, total	< 0.001	0.001	mg/L	Nov-21-13	Nov-22-13	
Boron, total	< 0.04	0.04	mg/L	Nov-21-13	Nov-22-13	
Cadmium, total	< 0.0001	0.0001	mg/L	Nov-21-13	Nov-22-13	
Calcium, total	12.4	2.0	mg/L	Nov-21-13	Nov-22-13	
Chromium, total	< 0.005	0.005	mg/L	Nov-21-13	Nov-22-13	
Cobalt, total	< 0.0005	0.0005	mg/L	Nov-21-13	Nov-22-13	
Copper, total	< 0.002	0.002	mg/L	Nov-21-13	Nov-22-13	
Iron, total	< 0.10	0.10	mg/L	Nov-21-13	Nov-22-13	
Lead, total	< 0.001	0.001	mg/L	Nov-21-13	Nov-22-13	
Magnesium, total	3.1	0.1	mg/L	Nov-21-13	Nov-22-13	
Manganese, total	0.008	0.002	mg/L	Nov-21-13	Nov-22-13	
Mercury, total	< 0.0002	0.0002	mg/L	Nov-21-13	Nov-23-13	
Molybdenum, total	0.002	0.001	mg/L	Nov-21-13	Nov-22-13	
Nickel, total	< 0.002	0.002	mg/L	Nov-21-13	Nov-22-13	
Phosphorus, total	< 0.2	0.2	mg/L	Nov-21-13	Nov-22-13	
Potassium, total	0.4	0.2	mg/L	Nov-21-13	Nov-22-13	
Selenium, total	< 0.005	0.005	mg/L	Nov-21-13	Nov-22-13	
Silicon, total	< 5	5	mg/L	Nov-21-13	Nov-22-13	
Silver, total	< 0.0005	0.0005	mg/L	Nov-21-13	Nov-22-13	
Sodium, total	3.3	0.2	mg/L	Nov-21-13	Nov-22-13	
Uranium, total	< 0.0002	0.0002	mg/L	Nov-21-13	Nov-22-13	
Vanadium, total	< 0.01	0.01	mg/L	Nov-21-13	Nov-22-13	
Zinc, total	< 0.04	0.04	mg/L	Nov-21-13	Nov-22-13	

**Sample ID: Well #4 (3111053-02) [Water] Sampled: Nov-20-13 09:30**

Aluminum, total	< 0.05	0.05	mg/L	Nov-21-13	Nov-22-13	
Antimony, total	0.001	0.001	mg/L	Nov-21-13	Nov-22-13	
Arsenic, total	< 0.005	0.005	mg/L	Nov-21-13	Nov-22-13	
Barium, total	< 0.05	0.05	mg/L	Nov-21-13	Nov-22-13	
Beryllium, total	< 0.001	0.001	mg/L	Nov-21-13	Nov-22-13	
Boron, total	< 0.04	0.04	mg/L	Nov-21-13	Nov-22-13	
Cadmium, total	< 0.0001	0.0001	mg/L	Nov-21-13	Nov-22-13	
Calcium, total	74.2	2.0	mg/L	Nov-21-13	Nov-22-13	
Chromium, total	< 0.005	0.005	mg/L	Nov-21-13	Nov-22-13	
Cobalt, total	< 0.0005	0.0005	mg/L	Nov-21-13	Nov-22-13	
Copper, total	< 0.002	0.002	mg/L	Nov-21-13	Nov-22-13	
Iron, total	< 0.10	0.10	mg/L	Nov-21-13	Nov-22-13	
Lead, total	< 0.001	0.001	mg/L	Nov-21-13	Nov-22-13	
Magnesium, total	13.9	0.1	mg/L	Nov-21-13	Nov-22-13	
Manganese, total	< 0.002	0.002	mg/L	Nov-21-13	Nov-22-13	
Mercury, total	< 0.0002	0.0002	mg/L	Nov-21-13	Nov-23-13	

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**Total Recoverable Metals, Continued**

**Sample ID: Well #4 (3111053-02) [Water] Sampled: Nov-20-13 09:30, Continued**

Molybdenum, total	0.003	0.001	mg/L	Nov-21-13	Nov-22-13	
Nickel, total	< 0.002	0.002	mg/L	Nov-21-13	Nov-22-13	
Phosphorus, total	< 0.2	0.2	mg/L	Nov-21-13	Nov-22-13	
Potassium, total	1.6	0.2	mg/L	Nov-21-13	Nov-22-13	
Selenium, total	0.006	0.005	mg/L	Nov-21-13	Nov-22-13	
Silicon, total	< 5	5	mg/L	Nov-21-13	Nov-22-13	
Silver, total	< 0.0005	0.0005	mg/L	Nov-21-13	Nov-22-13	
Sodium, total	10.1	0.2	mg/L	Nov-21-13	Nov-22-13	
Uranium, total	0.0010	0.0002	mg/L	Nov-21-13	Nov-22-13	
Vanadium, total	< 0.01	0.01	mg/L	Nov-21-13	Nov-22-13	
Zinc, total	< 0.04	0.04	mg/L	Nov-21-13	Nov-22-13	

**Microbiological Parameters**

**Sample ID: Booster #1 (3111053-01) [Water] Sampled: Nov-20-13 09:00**

Coliforms, Total	< 1	1	CFU/100mL	Nov-20-13	Nov-21-13	
E. coli	< 1	1	CFU/100mL	Nov-20-13	Nov-21-13	

**Sample ID: Well #4 (3111053-02) [Water] Sampled: Nov-20-13 09:30**

Coliforms, Total	< 1	1	CFU/100mL	Nov-20-13	Nov-21-13	
E. coli	< 1	1	CFU/100mL	Nov-20-13	Nov-21-13	