western water
ASSOCIATES LTD
Consultants in Hydrogeology and Environmental Science

April 27, 2017 WWAL Project: 15-069-04

Mr. Rod Steward
Box 411, Golden, B.C.
V0A 4HO

Re: ASSESSMENT OF WATER QUALITY FROM PEARL CREEK – PROPOSED 5 LOT SUBDIVISION, 2346 BLAEBERRY ROAD, NEAR GOLDEN, B.C.

Western Water Associates Ltd. (WWAL) is pleased to provide this letter report pertaining to the above-noted property. The purpose of this assessment is to evaluate a water quality sample from Pearl Creek, proposed as a drinking water source for one of the lots in the above-noted subdivision, with respect to the Guidelines for Canadian Drinking Water Quality (GCDWQ - Health Canada 2014[1]).

The property is located within Columbia Shuswap Regional District (CSRD) Electoral Area "A". The civic and legal addresses of the property are:

- 2346 Blaeberry Road.
- Block C, Section 1, Township 29, Range 22, West of the 5th Meridian, Kootenay District.
- PID: 008-098-255

WWAL previously completed an assessment of four wells which were proposed as drinking water sources for four of the lots in the subdivision (WWAL 2016). Lots to be serviced by groundwater wells include Lots 1, 3, 4 and the Remainder. Proposed Lot 2 will be provided with domestic water from Pearl Creek, licensed point of diversion C052355, which is held by the property owner Mr. Rod Steward. Figures 1 through 3 from our 2016 well assessment report are included as attachments to this letter, and depict the location of the subject property, proposed subdivision layout and the location of Surface Water point of diversion C052355.

It is our understanding that a water quality sample was collected by the property owner from the point of diversion collection box adjacent to Pearl Creek (essentially at the source). The sample was collected on March 27, 2017, and submitted to CARO Analytical in Kelowna, B.C. for potability testing. The laboratory water quality report is included as an attachment.

WATER QUALITY EVALUATION

For this assessment, we define the term potability as water which is pure enough and of sufficient quality to be consumed or used with low risk of immediate or long-term harm. With respect to evaluation against GCDWQ, potable water meets all health-based Maximum Allowable Concentrations (MACs). In samples where parameters are found to exceed only Aesthetic Objectives (AOs), the water is considered to be potable but treatment may be desired to address subjective taste, odour or other aesthetic concerns. Table 1 below provides a summary of selected water quality results evaluated against the GCDWQ.

[1] http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php#t2

Table 1 – Summary of Water Quality Results

		WPN37580	GCDWQ
Sample Date		27-Mar-2017	
pH	pH units	8.32	AO = 6.5 - 8.5
Conductivity	us/cm	558	No Guidelines
Turbidity	NTU	0.48	varies
Total Dissolved Solids	mg/L	310	AO < 500
hardness	mg/L	329	No Guidelines
Fluoride	mg/L	<0.10	MAC = 1.5
Nitrate, N	mg/L	0.185	MAC =10
Nitrite, N	mg/L	<0.010	MAC = 1
Chloride	mg/L	1.19	AO < 250
Sulfate	mg/L	32.1	AO < 500
Total Metals			
Aluminum	mg/L	0.008	OG < 0.1
Antimony	mg/L	<0.0001	MAC = 0.006
Arsenic	mg/L	<0.0005	MAC = 0.01
Barium	mg/L	0.016	MAC = 1
Cadmium	mg/L	<0.0001	MAC =0.005
Chromium	mg/L	<0.0005	MAC = 0.05
Iron	mg/L	0.02	AO < 0.30
Lead	mg/L	<0.0001	MAC = 0.01
Manganese	mg/L	0.0003	AO < 0.05
Selenium	mg/L	<0.0005	MAC = 0.01
Sodium	mg/L	4.39	AO < 200
Uranium	mg/L	0.00190	MAC = 0.02
Zinc	mg/L	0.006	AO < 5
Microbiological			
Total Coliforms	CFU/100 mL	<1	MAC < 1
E. Coli	CFU/100 mL	<1	MAC < 1

Notes:

1. MAC = Maximum Allowable Concentration, a health-based guideline. Orange shaded cells indicate and exceedance of a MAC.
2. AO = Aesthetic Objective, a subjective taste or odour concern. Green shaded cell indicate an exceedance of an Aesthetic Objective.
3. OG = Operational Guideline. Guidelines set primarily for municipal water treatment facilities to ensure water treatment systems (filtration, flocculation) operate properly.

The water quality from Pearl Creek is slightly alkaline and displays a low level of mineralization. No parameters assessed were found to exceed MAC Guidelines, and as such the raw water is considered potable. Further, no parameters were found to exceed AO guidelines and aesthetic water quality is also very good.

No total coliform or *E.Coli* bacteria were detected. We note that the lab report indicates that samples arrived at the laboratory frozen, which could potentially have affected the bacteriological results. Other water quality parameters would not be expected to be influenced by the samples being frozen.

While there is no water quality guideline for hardness, the water from Pearl Creek is considered very hard, and softening for household domestic may be desired.

LIMITATIONS OF THIS ASSESSMENT

We were not present during the sampling of Pearl Creek but were provided with the laboratory water quality results. While we were not on site to witness the sampling, we assume that proper protocols were used for sampling and that the samples were received at the analytical chemistry lab within the appropriate holding time for the testing completed. We take the information we were provided at face value and assume it is accurate and representative of water from Pearl Creek. Our service is limited strictly to an evaluation of water quality results provided against the Canadian Guidelines for Drinking Water Quality an assessment of the need for treatment to make the water potable.

Regarding water quality, the data should be considered a snapshot only of water quality and only at the location sampled. The spatial and temporal water quality in the Creek may vary.

CONCLUSIONS

Raw water from Pearl Creek is considered potable (no exceedances of MAC guidelines) and aesthetic water quality is also good (no exceedances of AO guidelines). If Pearl Creek water quality is consistent throughout the year and from year to year, water treatment to make the water potable is not required.

Surface water quality from streams often varies throughout the year, in particular during freshet when increased flows can increase turbidity. In addition, bacteriological water quality may worsen in the summer months when water temperatures increase. We recommend that homeowners sample their water periodically to ensure that the water remains potable (at least yearly). If turbidity issues associated with freshet or bacteria are present at times of the year, water treatment including filtration and Ultraviolet light disinfection would be warranted.

We trust that the professional opinions and advice presented in this document are sufficient for your current requirements. If you have any questions or concerns or if we can be of additional service please contact the undersigned at (250)-541-1030.

WESTERN WATER ASSOCIATES LTD.

Ryan Rhodes, P.Geo., P.Geol.
Hydrogeologist

Attachments: Water Quality Report; Figures 1 through 3

References:

Western Water Associates Ltd. (WWAL). 2016. Hydrogeological Evaluation of Water Quantity and Quality in support of Proposed 4 Lot Subdivision, 2346 Blaeberry Road, near Golden, B.C.

CERTIFICATE OF ANALYSIS

REPORTED TO	Western Water Associates Ltd 106 - 5145 26th Street Vernon, BC V1T 8G4	**TEL** **FAX**	(250) 541-1030 (250) 575-4764
ATTENTION	Ryan Rhodes	**WORK ORDER**	7031903
PO NUMBER		**RECEIVED / TEMP**	2017-03-28 07:50 / 5°C
PROJECT	Comprehensive- Ryan Rhodes	**REPORTED**	2017-04-04
PROJECT INFO	Steward	**COC NUMBER**	B43313

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.

Authorized By: **Sara Gulenchyn, B.Sc, P.Chem.**
Client Service Coordinator

If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

Locations:

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

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

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

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ANALYSIS INFORMATION

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7031903
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Analysis Description	Method Reference	Technique	Location
Alkalinity in Water	APHA 2320 B*	Titration with H2SO4	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Coliforms, Total (MF-CCA) in Water	APHA 9222*	Membrane Filtration / Incubation on Chromocult Agar	Kelowna
Colour, True in Water	APHA 2120 C	Spectrophotometry (456 nm)	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection Analysis with In-Line Ultraviolet Digestion and Amperometric Detection	Kelowna
E. coli (MF-CCA) in Water	APHA 9222*	Membrane Filtration / Incubation on Chromocult Agar	Kelowna
Hardness (as CaCO3) in Water	APHA 2340 B*	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Estimated)	N/A
Langelier Index in Water	APHA 2330 B	Calculation	N/A
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Solids, Total Dissolved (calc) in Water	APHA 1030 E	Calculation: 100 x ([Cations]-[Anions])/ ([Cations]+[Anions])	N/A
Temperature (lab) in Water	APHA 2550 B	Thermometer	Kelowna
Total Metals by ICPMS in Water	APHA 3030 E* / APHA 3125 B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Turbidity in Water	APHA 2130 B	Nephelometry	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Method Reference Descriptions:

APHA	Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Association/American Water Works Association/Water Environment Federation
ASTM	ASTM International Test Methods

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
AO	Aesthetic objective
MAC	Maximum acceptable concentration (health based)
OG	Operational guideline (treated water)
°C	Degrees Celcius
CFU/100 mL	Colony Forming Units per 100 millilitres
CU	Colour Units (referenced against a platinum cobalt standard)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre

Standards / Guidelines Referenced in this Report:

Guidelines for Canadian Drinking Water Quality (Feb 2017)

Website: http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom-eng.pdf

Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user

SAMPLE ANALYTICAL DATA

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Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Water Liscence (7031903-01) [Water] Sampled: 2017-03-27 15:00							FRO
Anions							
Chloride	**1.19**	AO ≤ 250	0.10	mg/L	N/A	2017-03-30	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	N/A	2017-03-30	
Nitrate (as N)	**0.185**	MAC = 10	0.010	mg/L	N/A	2017-03-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	N/A	2017-03-30	
Sulfate	**32.1**	AO ≤ 500	1.0	mg/L	N/A	2017-03-30	
General Parameters							
Alkalinity, Total (as CaCO3)	**287**	N/A	2	mg/L	N/A	2017-03-29	
Alkalinity, Phenolphthalein (as CaCO3)	**2**	N/A	2	mg/L	N/A	2017-03-29	
Alkalinity, Bicarbonate (as CaCO3)	**284**	N/A	2	mg/L	N/A	2017-03-29	
Alkalinity, Carbonate (as CaCO3)	**3**	N/A	2	mg/L	N/A	2017-03-29	
Alkalinity, Hydroxide (as CaCO3)	< 1	N/A	2	mg/L	N/A	2017-03-29	
Colour, True	< 5	AO ≤ 15	5	CU	N/A	2017-03-29	
Conductivity (EC)	**558**	N/A	2.0	µS/cm	N/A	2017-03-29	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	N/A	2017-03-29	
pH	**8.32**	7-10.5	0.01	pH units	N/A	2017-03-29	HT2
Temperature, at pH	**23**	N/A		°C	N/A	2017-03-29	HT2
Turbidity	**0.48**	OG < 0.1	0.10	NTU	N/A	2017-03-29	
Calculated Parameters							
Hardness, Total (as CaCO3)	**329**	N/A	0.500	mg/L	N/A	N/A	
Langelier Index	**1.0**	N/A	-5.0	-	N/A	2017-04-04	
Solids, Total Dissolved (calc)	**310**	N/A	1.00	mg/L	N/A	N/A	
Total Metals							
Aluminum, total	**0.008**	OG < 0.1	0.005	mg/L	2017-03-30	2017-03-30	
Antimony, total	< 0.0001	MAC = 0.006	0.0001	mg/L	2017-03-30	2017-03-30	
Arsenic, total	< 0.0005	MAC = 0.01	0.0005	mg/L	2017-03-30	2017-03-30	
Barium, total	**0.016**	MAC = 1	0.005	mg/L	2017-03-30	2017-03-30	
Boron, total	< 0.004	MAC = 5	0.004	mg/L	2017-03-30	2017-03-30	
Cadmium, total	< 0.00001	MAC = 0.005	0.00001	mg/L	2017-03-30	2017-03-30	
Calcium, total	**40.1**	N/A	0.2	mg/L	2017-03-30	2017-03-30	
Chromium, total	< 0.0005	MAC = 0.05	0.0005	mg/L	2017-03-30	2017-03-30	
Cobalt, total	< 0.00005	N/A	0.00005	mg/L	2017-03-30	2017-03-30	
Copper, total	**0.0003**	AO ≤ 1	0.0002	mg/L	2017-03-30	2017-03-30	
Iron, total	**0.02**	AO ≤ 0.3	0.01	mg/L	2017-03-30	2017-03-30	
Lead, total	< 0.0001	MAC = 0.01	0.0001	mg/L	2017-03-30	2017-03-30	
Magnesium, total	**55.4**	N/A	0.01	mg/L	2017-03-30	2017-03-30	
Manganese, total	**0.0003**	AO ≤ 0.05	0.0002	mg/L	2017-03-30	2017-03-30	
Mercury, total	< 0.00002	MAC = 0.001	0.00002	mg/L	2017-03-30	2017-03-30	
Molybdenum, total	< 0.0001	N/A	0.0001	mg/L	2017-03-30	2017-03-30	
Nickel, total	< 0.0002	N/A	0.0002	mg/L	2017-03-30	2017-03-30	
Potassium, total	**0.76**	N/A	0.02	mg/L	2017-03-30	2017-03-30	
Selenium, total	< 0.0005	MAC = 0.05	0.0005	mg/L	2017-03-30	2017-03-30	
Sodium, total	**4.39**	AO ≤ 200	0.02	mg/L	2017-03-30	2017-03-30	
Uranium, total	**0.00190**	MAC = 0.02	0.00002	mg/L	2017-03-30	2017-03-30	

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Analyte	Result / *Recovery*	Standard / Guideline	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Water Liscence (7031903-01) [Water] Sampled: 2017-03-27 15:00, Continued							FRO
Total Metals, Continued							
Zinc, total	**0.006**	AO ≤ 5	0.004	mg/L	2017-03-30	2017-03-30	
Microbiological Parameters							
Coliforms, Total	< 1	MAC = None Detected	1	CFU/100 mL	N/A	2017-03-28	
E. coli	< 1	MAC = None Detected	1	CFU/100 mL	N/A	2017-03-28	

Sample / Analysis Qualifiers:

FRO	Sample frozen after sampling and arrived at lab < 0C
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup)**: Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS)**: A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM)**: A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Anions, Batch B7C1817										
Blank (B7C1817-BLK1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B7C1817-BLK2)				Prepared: 2017-03-30, Analyzed: 2017-03-30						
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B7C1817-BS2)				Prepared: 2017-03-30, Analyzed: 2017-03-30						
Chloride	15.4	0.10	mg/L	16.0		96	90-110			
Fluoride	3.77	0.10	mg/L	4.00		94	88-108			
Nitrate (as N)	3.70	0.010	mg/L	4.00		93	93-108			
Nitrite (as N)	1.80	0.010	mg/L	2.00		90	83-110			
Sulfate	15.1	1.0	mg/L	16.0		95	91-109			
General Parameters, Batch B7C1743										
Blank (B7C1743-BLK1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Cyanide, Total	< 0.0020	0.0020	mg/L							
LCS (B7C1743-BS1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Cyanide, Total	0.0199	0.0020	mg/L	0.0200		99	85-115			
LCS Dup (B7C1743-BSD1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Cyanide, Total	0.0188	0.0020	mg/L	0.0200		94	85-115	6	10	
General Parameters, Batch B7C1788										

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Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B7C1788, Continued										
Blank (B7C1788-BLK1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Alkalinity, Total (as CaCO3)	< 1	2	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1	2	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1	2	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1	2	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1	2	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B7C1788-BLK2)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Alkalinity, Total (as CaCO3)	< 1	2	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1	2	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1	2	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1	2	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1	2	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B7C1788-BS1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Alkalinity, Total (as CaCO3)	102	2	mg/L	100		102	92-106			
LCS (B7C1788-BS2)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Conductivity (EC)	1400	2.0	µS/cm	1410		100	95-104			
LCS (B7C1788-BS3)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Alkalinity, Total (as CaCO3)	102	2	mg/L	100		102	92-106			
LCS (B7C1788-BS4)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Conductivity (EC)	1420	2.0	µS/cm	1410		100	95-104			
Reference (B7C1788-SRM1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
pH	7.00	0.01	pH units	7.00		100	98-102			HT2
Reference (B7C1788-SRM2)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
pH	7.00	0.01	pH units	7.00		100	98-102			HT2
General Parameters, Batch B7C1791										
Blank (B7C1791-BLK1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Colour, True	< 5	5	CU							
LCS (B7C1791-BS1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Colour, True	11	5	CU	10.0		105	85-115			
General Parameters, Batch B7C1797										
Blank (B7C1797-BLK1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Turbidity	< 0.10	0.10	NTU							
LCS (B7C1797-BS1)				Prepared: 2017-03-29, Analyzed: 2017-03-29						
Turbidity	38.4	0.10	NTU	40.0		96	90-110			
Microbiological Parameters, Batch B7C1704										
Blank (B7C1704-BLK1)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							

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Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Microbiological Parameters, Batch B7C1704, Continued										
Blank (B7C1704-BLK2)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK3)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK4)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK5)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK6)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK7)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK8)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLK9)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLKA)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLKB)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLKC)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Blank (B7C1704-BLKD)				Prepared: 2017-03-28, Analyzed: 2017-03-28						
Coliforms, Total	< 1	1	CFU/100 mL							
E. coli	< 1	1	CFU/100 mL							
Total Metals, Batch B7C1854										
Blank (B7C1854-BLK1)				Prepared: 2017-03-30, Analyzed: 2017-03-30						
Aluminum, total	< 0.005	0.005	mg/L							
Antimony, total	< 0.0001	0.0001	mg/L							
Arsenic, total	< 0.0005	0.0005	mg/L							
Barium, total	< 0.005	0.005	mg/L							
Boron, total	< 0.004	0.004	mg/L							
Cadmium, total	< 0.00001	0.00001	mg/L							
Calcium, total	< 0.2	0.2	mg/L							

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7031903
PROJECT	Comprehensive- Ryan Rhodes	**REPORTED**	2017-04-04

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Total Metals, Batch B7C1854, Continued										
Blank (B7C1854-BLK1), Continued				Prepared: 2017-03-30, Analyzed: 2017-03-30						
Chromium, total	< 0.0005	0.0005	mg/L							
Cobalt, total	< 0.00005	0.00005	mg/L							
Copper, total	< 0.0002	0.0002	mg/L							
Iron, total	< 0.01	0.01	mg/L							
Lead, total	< 0.0001	0.0001	mg/L							
Magnesium, total	< 0.01	0.01	mg/L							
Manganese, total	< 0.0002	0.0002	mg/L							
Mercury, total	< 0.00002	0.00002	mg/L							
Molybdenum, total	< 0.0001	0.0001	mg/L							
Nickel, total	< 0.0002	0.0002	mg/L							
Potassium, total	< 0.02	0.02	mg/L							
Selenium, total	< 0.0005	0.0005	mg/L							
Sodium, total	< 0.02	0.02	mg/L							
Uranium, total	< 0.00002	0.00002	mg/L							
Zinc, total	< 0.004	0.004	mg/L							
Reference (B7C1854-SRM1)				Prepared: 2017-03-30, Analyzed: 2017-03-30						
Aluminum, total	0.297	0.005	mg/L	0.303		98	81-129			
Antimony, total	0.0522	0.0001	mg/L	0.0511		102	88-114			
Arsenic, total	0.122	0.0005	mg/L	0.118		103	88-114			
Barium, total	0.783	0.005	mg/L	0.823		95	72-104			
Boron, total	3.14	0.004	mg/L	3.45		91	75-121			
Cadmium, total	0.0501	0.00001	mg/L	0.0495		101	89-111			
Calcium, total	11.6	0.2	mg/L	11.6		100	86-121			
Chromium, total	0.261	0.0005	mg/L	0.250		105	89-114			
Cobalt, total	0.0400	0.00005	mg/L	0.0377		106	91-113			
Copper, total	0.526	0.0002	mg/L	0.486		108	91-115			
Iron, total	0.52	0.01	mg/L	0.488		106	77-124			
Lead, total	0.208	0.0001	mg/L	0.204		102	92-113			
Magnesium, total	3.91	0.01	mg/L	3.79		103	78-120			
Manganese, total	0.109	0.0002	mg/L	0.109		100	90-114			
Mercury, total	0.00544	0.00002	mg/L	0.00489		111	50-150			
Molybdenum, total	0.202	0.0001	mg/L	0.198		102	90-111			
Nickel, total	0.259	0.0002	mg/L	0.249		104	90-111			
Potassium, total	7.58	0.02	mg/L	7.21		105	84-113			
Selenium, total	0.138	0.0005	mg/L	0.121		114	85-115			
Sodium, total	7.95	0.02	mg/L	7.54		105	82-123			
Uranium, total	0.0309	0.00002	mg/L	0.0306		101	85-120			
Zinc, total	2.57	0.004	mg/L	2.49		103	85-111			

QC Qualifiers:

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

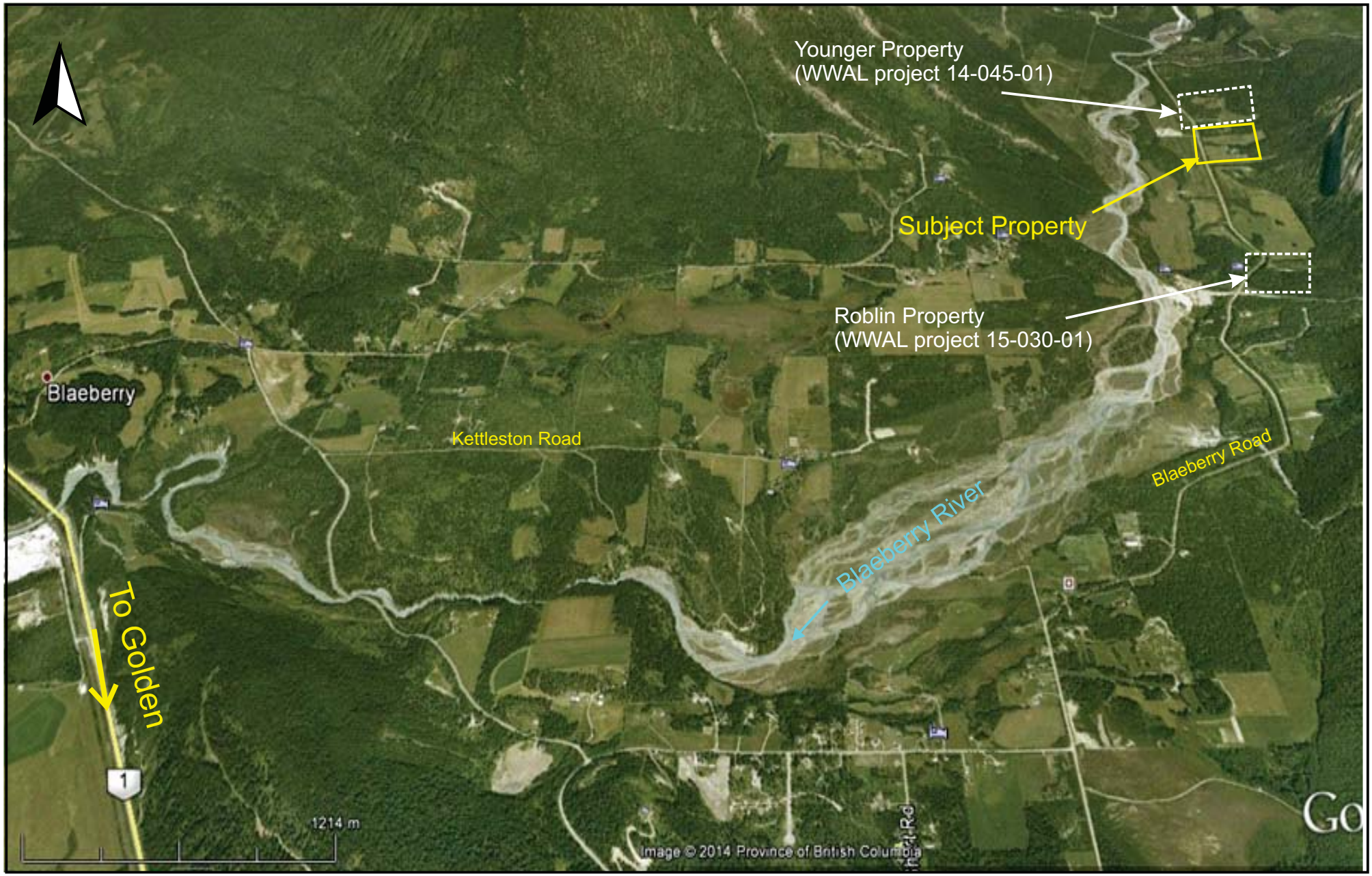

Figure 1 - General Location of Project Site

Date: April 2016	Image Source: Google Earth		Scale: Oblique View - varies
Drawn by: WG	Checked by: RR	Client: Tom Coughlin	WWAL Project #: 15-069-02

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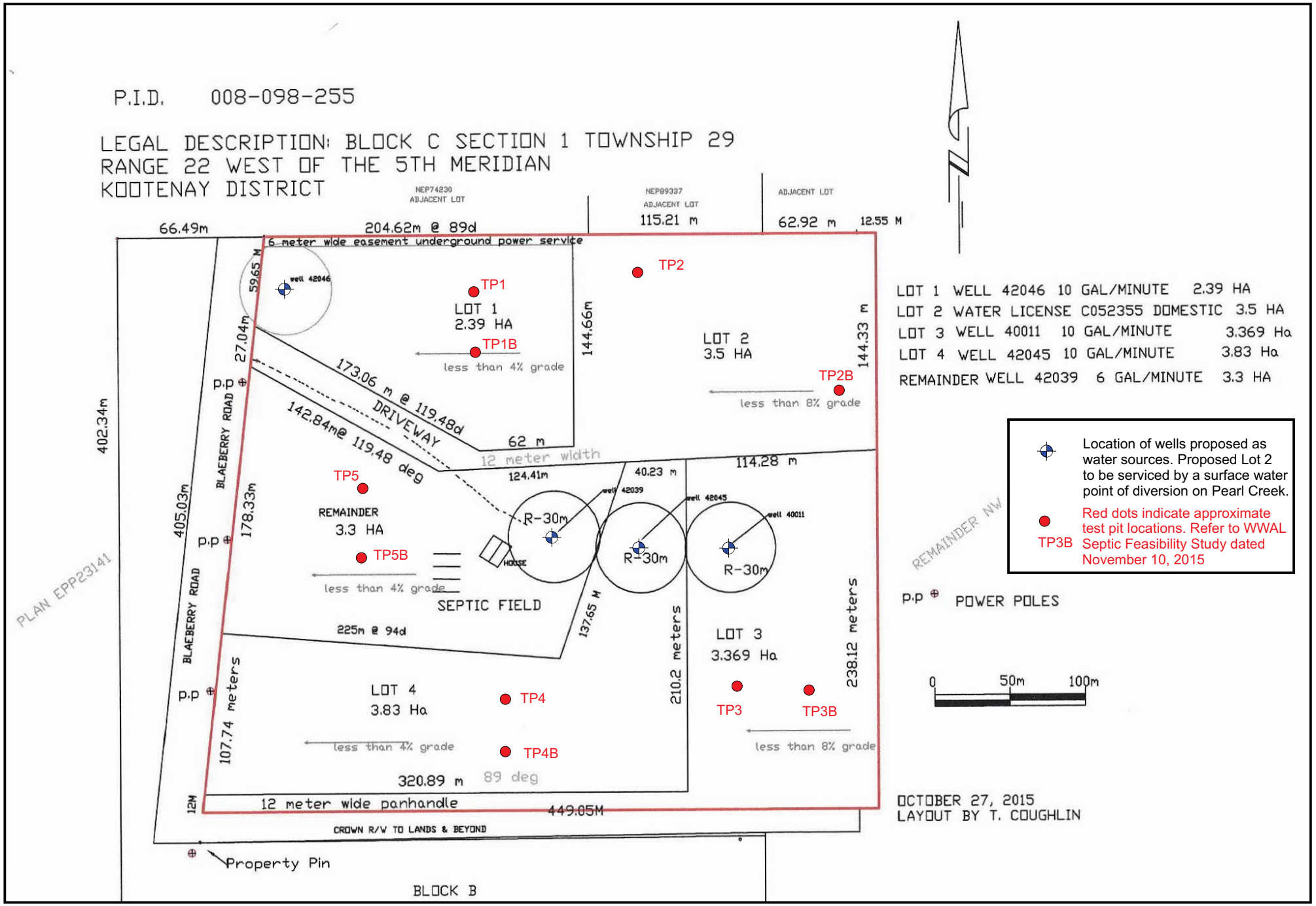

Figure 2 - Well Locations and Site Plan

Date: April 2016	Image Source: Base Plan prepared by McMurdo Consulting		WWAL Project: 15-069-02
Drawn by: WG	Checked by: RR	Client: Tom Coughlin	Client Project:

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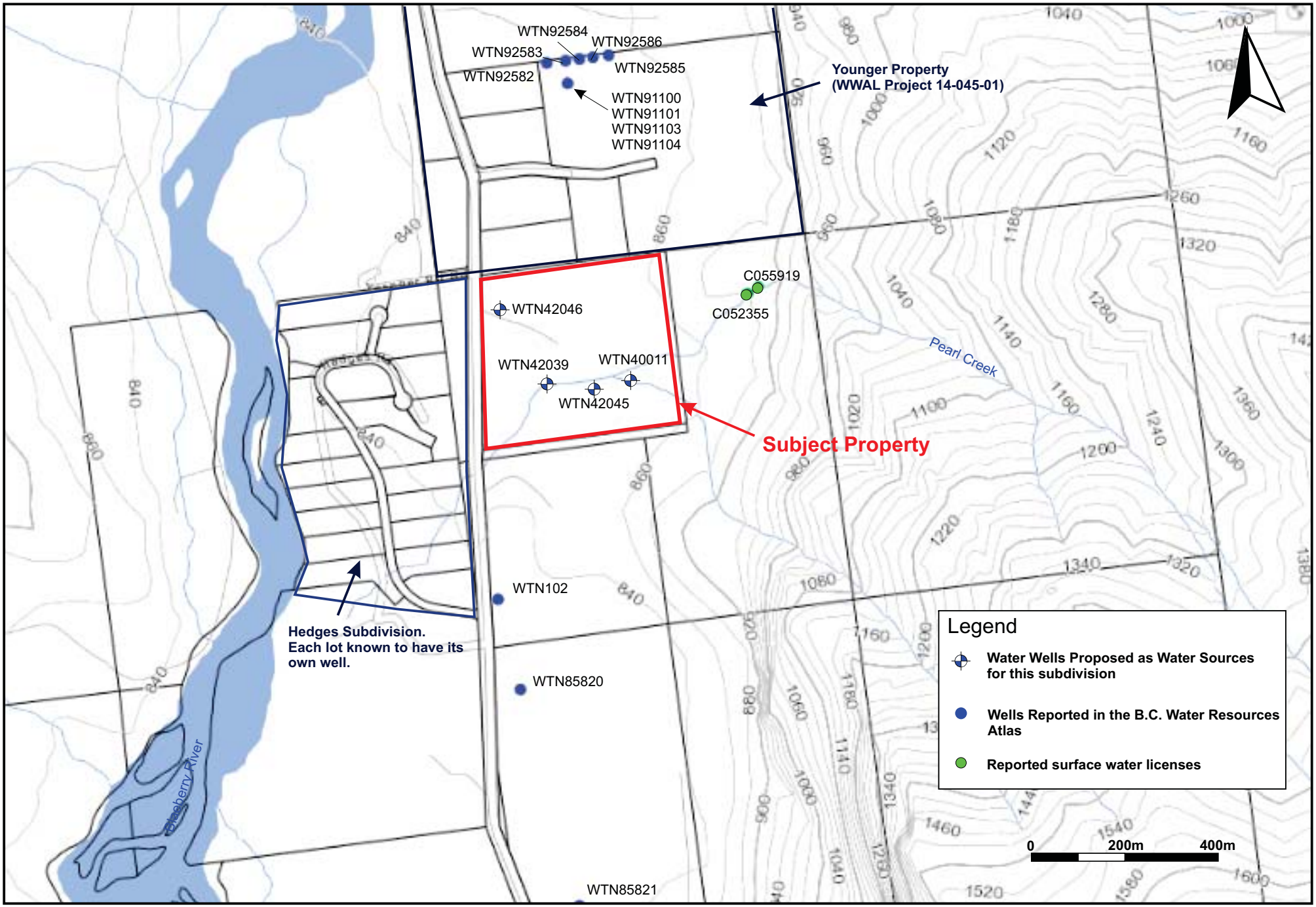

Figure 3 - Reported Water Wells on and Near the Subject Property

Date: April 2016	Image Source: BC Water Resources Atlas (FLNRO 2016)		WWAL Project: 15-069-02
Drawn by: WG	Checked by: RR	Client: Tom Coughlin	Client Project:

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