

Site Location: RIVER WELLS  
 Your C.O.C. #: G030472

**Attention: Bob Weir**  
 Town of Qualicum Beach  
 201-660 Primrose St  
 P.O. Box 130  
 Qualicum Beach, BC  
 Canada V9K 1S7

Report Date: 2012/10/18

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B292040**  
**Received: 2012/10/12, 09:00**

Sample Matrix: Water  
 # Samples Received: 5

| Analyses                               | Quantity | Date       |            | Laboratory Method | Analytical Method    |
|--|----------|------------|------------|-------------------|----------------------|
|  |          | Extracted  | Analyzed   |                   |                      |
| Colour (True)                          | 5        | N/A        | 2012/10/12 | BBY6SOP-00021     | SM-2120B             |
| Hardness Total (calculated as CaCO3)   | 5        | N/A        | 2012/10/18 | BBY WI-00033      | Calculated Parameter |
| ICP-AES Total Metals in Water          | 5        | 2012/10/16 | 2012/10/18 | BBY7SOP-00018     | EPA 200.7            |
| Nitrogen (Total)                       | 5        | 2012/10/17 | 2012/10/17 | BBY6SOP-00022     | SM-4500N C           |
| Ammonia-N (Preserved)                  | 5        | N/A        | 2012/10/15 | BBY6SOP-00009     | SM-4500NH3G          |
| Nitrate + Nitrite (N)                  | 5        | N/A        | 2012/10/12 | BBY6SOP-00010     | USEPA 353.2          |
| Nitrite (N) by CFA                     | 5        | N/A        | 2012/10/12 | BBY6SOP-00010     | EPA 353.2            |
| Nitrogen - Nitrate (as N)              | 5        | N/A        | 2012/10/15 | BBY6SOP-00010     | Based on EPA 353.2   |
| pH Water                               | 5        | N/A        | 2012/10/13 | BBY6SOP-00026     | SM-4500H+B           |
| Total Dissolved Solids (Filt. Residue) | 5        | 2012/10/12 | 2012/10/12 | BBY6SOP-00033     | SM 2540C             |
| TKN (Calc. TN, N/N) total              | 5        | N/A        | 2012/10/17 |                   |                      |
| Carbon (Total Organic)                 | 5        | N/A        | 2012/10/15 | BBY6SOP-00003     | SM-5310C             |
| Total Phosphorus                       | 5        | N/A        | 2012/10/15 | BBY6SOP-00013     | SM 4500 PE           |
| Turbidity                              | 5        | N/A        | 2012/10/12 | BBY6SOP-00027     | SM - 2130B           |

\* Results relate only to the items tested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jazz Bamra, Burnaby Project Manager  
 Email: JBamra@Maxxam.ca  
 Phone# (604) 639-2615

=====  
 This report has been generated and distributed using a secure automated process.  
 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.

Total cover pages: 1

Maxxam Job #: B292040  
 Report Date: 2012/10/18

Town of Qualicum Beach

Site Location: RIVER WELLS

**RESULTS OF CHEMICAL ANALYSES OF WATER**

| Maxxam ID                            |              | ES1983                | ES1984              | ES1985              | ES1986              | ES1987              |            |
|--------------------------------------|--------------|-----------------------|---------------------|---------------------|---------------------|---------------------|------------|
| Sampling Date                        |              | 2012/10/11 08:30      | 2012/10/11 08:10    | 2012/10/11 07:42    | 2012/10/11 08:05    | 2012/10/11 07:53    |            |
| COC#                                 |              | G030472               | G030472             | G030472             | G030472             | G030472             |            |
|                                      | <b>UNITS</b> | <b>RIVER WELL 1-A</b> | <b>RIVER WELL 3</b> | <b>RIVER WELL 5</b> | <b>RIVER WELL 6</b> | <b>RIVER WELL 7</b> | <b>RDL</b> |
| <b>ANIONS</b>                        |              |                       |                     |                     |                     |                     |            |
| Nitrite (N)                          | mg/L         | <0.0050               | <0.0050             | <0.0050             | <0.0050             | <0.0050             | 0.0050     |
| <b>Calculated Parameters</b>         |              |                       |                     |                     |                     |                     |            |
| Total Hardness (CaCO3)               | mg/L         | 41.8                  | 43.8                | 46.5                | 44.2                | 87.5                | 0.50       |
| Nitrate (N)                          | mg/L         | 0.118                 | 0.104               | 0.227               | 0.182               | 0.142               | 0.020      |
| <b>Misc. Inorganics</b>              |              |                       |                     |                     |                     |                     |            |
| Total Organic Carbon (C)             | mg/L         | 0.84                  | 0.81                | <0.50               | 0.77                | 0.96                | 0.50       |
| <b>MISCELLANEOUS</b>                 |              |                       |                     |                     |                     |                     |            |
| True Colour                          | Col. Unit    | 5.0                   | <5.0                | <5.0                | <5.0                | <5.0                | 5.0        |
| <b>Nutrients</b>                     |              |                       |                     |                     |                     |                     |            |
| Ammonia (N)                          | mg/L         | 0.037                 | 0.019               | 0.025               | 0.019               | 0.11                | 0.0050     |
| Total Total Kjeldahl Nitrogen (Calc) | mg/L         | 0.061                 | 0.090               | 0.043               | 0.059               | 0.088               | 0.020      |
| Nitrate plus Nitrite (N)             | mg/L         | 0.118                 | 0.104               | 0.227               | 0.182               | 0.142               | 0.020      |
| Total Nitrogen (N)                   | mg/L         | 0.180                 | 0.194               | 0.270               | 0.241               | 0.231               | 0.020      |
| Total Phosphorus (P)                 | mg/L         | <0.0050               | <0.0050             | <0.0050             | <0.0050             | <0.0050             | 0.0050     |
| <b>Physical Properties</b>           |              |                       |                     |                     |                     |                     |            |
| pH                                   | pH Units     | 7.56                  | 7.40                | 7.33                | 7.61                | 7.27                |            |
| <b>Physical Properties</b>           |              |                       |                     |                     |                     |                     |            |
| Total Dissolved Solids               | mg/L         | 54                    | 60                  | 70                  | 68                  | 128                 | 10         |
| Turbidity                            | NTU          | <0.10                 | <0.10               | <0.10               | <0.10               | <0.10               | 0.10       |

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**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

| Maxxam ID                  |       | ES1983           | ES1984           | ES1985           | ES1986           | ES1987           |        |
|----------------------------|-------|------------------|------------------|------------------|------------------|------------------|--------|
| Sampling Date              |       | 2012/10/11 08:30 | 2012/10/11 08:10 | 2012/10/11 07:42 | 2012/10/11 08:05 | 2012/10/11 07:53 |        |
| COC#                       |       | G030472          | G030472          | G030472          | G030472          | G030472          |        |
|                            | UNITS | RIVER WELL 1-A   | RIVER WELL 3     | RIVER WELL 5     | RIVER WELL 6     | RIVER WELL 7     | RDL    |
| <b>Total Metals by ICP</b> |       |                  |                  |                  |                  |                  |        |
| Total Aluminum (Al)        | mg/L  | <0.050           | <0.050           | <0.050           | <0.050           | <0.050           | 0.050  |
| Total Antimony (Sb)        | mg/L  | <0.050           | <0.050           | <0.050           | <0.050           | <0.050           | 0.050  |
| Total Arsenic (As)         | mg/L  | <0.030           | <0.030           | <0.030           | <0.030           | <0.030           | 0.030  |
| Total Barium (Ba)          | mg/L  | 0.0029           | 0.0034           | 0.0013           | 0.0012           | 0.0022           | 0.0010 |
| Total Beryllium (Be)       | mg/L  | <0.0030          | <0.0030          | <0.0030          | <0.0030          | <0.0030          | 0.0030 |
| Total Bismuth (Bi)         | mg/L  | <0.050           | <0.050           | <0.050           | <0.050           | <0.050           | 0.050  |
| Total Boron (B)            | mg/L  | <0.010           | <0.010           | <0.010           | 0.010            | <0.010           | 0.010  |
| Total Cadmium (Cd)         | mg/L  | <0.0050          | <0.0050          | <0.0050          | <0.0050          | <0.0050          | 0.0050 |
| Total Chromium (Cr)        | mg/L  | <0.010           | <0.010           | <0.010           | <0.010           | <0.010           | 0.010  |
| Total Cobalt (Co)          | mg/L  | <0.020           | <0.020           | <0.020           | <0.020           | <0.020           | 0.020  |
| Total Copper (Cu)          | mg/L  | 0.039            | 0.021            | 0.244            | 0.181            | 0.076            | 0.020  |
| Total Iron (Fe)            | mg/L  | <0.010           | 0.010            | 0.096            | 0.011            | <0.010           | 0.010  |
| Total Lead (Pb)            | mg/L  | <0.030           | <0.030           | <0.030           | <0.030           | 0.033            | 0.030  |
| Total Lithium (Li)         | mg/L  | <0.020           | <0.020           | <0.020           | <0.020           | <0.020           | 0.020  |
| Total Manganese (Mn)       | mg/L  | <0.0030          | <0.0030          | <0.0030          | <0.0030          | <0.0030          | 0.0030 |
| Total Molybdenum (Mo)      | mg/L  | <0.020           | <0.020           | <0.020           | <0.020           | <0.020           | 0.020  |
| Total Nickel (Ni)          | mg/L  | <0.020           | <0.020           | <0.020           | <0.020           | <0.020           | 0.020  |
| Total Phosphorus (P)       | mg/L  | <0.050           | <0.050           | <0.050           | <0.050           | <0.050           | 0.050  |
| Total Selenium (Se)        | mg/L  | <0.10            | <0.10            | <0.10            | <0.10            | <0.10            | 0.10   |
| Total Silicon (Si)         | mg/L  | 3.15             | 3.60             | 5.02             | 4.12             | 6.57             | 0.050  |
| Total Silver (Ag)          | mg/L  | <0.010           | <0.010           | <0.010           | <0.010           | <0.010           | 0.010  |
| Total Strontium (Sr)       | mg/L  | 0.0329           | 0.0321           | 0.0339           | 0.0332           | 0.0620           | 0.0010 |
| Total Tin (Sn)             | mg/L  | <0.030           | <0.030           | <0.030           | <0.030           | <0.030           | 0.030  |
| Total Titanium (Ti)        | mg/L  | <0.0050          | <0.0050          | <0.0050          | <0.0050          | <0.0050          | 0.0050 |
| Total Vanadium (V)         | mg/L  | <0.010           | <0.010           | <0.010           | <0.010           | <0.010           | 0.010  |
| Total Zinc (Zn)            | mg/L  | 0.0259           | 0.0141           | 0.0431           | 0.0757           | 0.0593           | 0.0050 |
| Total Zirconium (Zr)       | mg/L  | <0.020           | <0.020           | <0.020           | <0.020           | <0.020           | 0.020  |
| Total Calcium (Ca)         | mg/L  | 13.4             | 13.9             | 14.4             | 13.9             | 25.6             | 0.050  |
| Total Magnesium (Mg)       | mg/L  | 2.01             | 2.22             | 2.55             | 2.31             | 5.73             | 0.050  |
| Total Potassium (K)        | mg/L  | <0.30            | <0.30            | <0.30            | <0.30            | <0.30            | 0.30   |
| Total Sodium (Na)          | mg/L  | 1.93             | 2.03             | 2.46             | 2.20             | 3.68             | 0.10   |
| Total Sulphur (S)          | mg/L  | 0.49             | 0.46             | 1.27             | 0.50             | 9.24             | 0.10   |

RDL = Reportable Detection Limit

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|           |       |
|-----------|-------|
| Package 1 | 2.7°C |
|-----------|-------|

Each temperature is the average of up to three cooler temperatures taken at receipt

#### General Comments

Sample ES1983-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Sample ES1984-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Sample ES1985-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Sample ES1986-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Sample ES1987-01: The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Validation Signature Page

Maxxam Job #: B292040

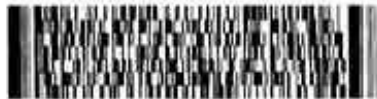
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The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



\_\_\_\_\_  
David Huang, BBV Scientific Specialist

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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#: B292040

B292040

Invoice to require report? Yes  No

Company Name: "as on report"

Contact Name: \_\_\_\_\_

Address: \_\_\_\_\_

PC: \_\_\_\_\_

Phone / Fax#: Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Report To: Town of Qualicum Beach.

Contact Name: Bob Weir

Address: #201-660 Primrose St.

P.O. Box 130 PC: V9K 1S7

Phone / Fax#: Ph: 2507526921 Fax: 2507521243

E-mail: BobWeir@QualicumBeach.com

PO #: \_\_\_\_\_

Quotation #: \_\_\_\_\_

Project #: \_\_\_\_\_

Proj. Name: \_\_\_\_\_

Location: River wells

Sampled By: \_\_\_\_\_

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- CSR
  - Regular Turn Around Time (TAT) (5 days for most tests)
  - CCME
  - BC Water Quality
  - Other
  - DRINKING WATER
  - RUSH (Please contact the lab)
  - 1 Day  2 Day  3 Day
- Date Required: \_\_\_\_\_

Special Instructions:

Return Cooler  Ship Sample Bottles (please specify)

ship back same as recieved as well as additives

"All samples are from raw water"

ANALYSIS REQUESTED

| Sample ID | Lab ID        | Sample Type | Date/Time Sampled | MTBE    | VOC/MPH | TEH | LEPH/EPH | CCME-PHC (Fractions 1-4 Plus BTEX) | CCME-PHC (Fractions 2-4) | CCME BTEX (Fraction 1 Plus BTEX) | PCB | Phenols by 4AAP | Phenols by GCMS | MOG | SWOG | Disolved Metals | Field Filtered | Field Analyzed | Total Metals Field Analyzed? | Nitrate | Nitrite | Ammonia | Chloride | Fluoride | Sulfate | Total Suspended Solids-TSS | TDS | pH | Conductivity | Alkalinity | BOD | COD | Coliform, Total & E.coli | Fecal | Asbestos | Iron (Total) | Hardness | HOLD |
|-----------|---------------|-------------|-------------------|---------|---------|-----|----------|------------------------------------|--------------------------|----------------------------------|-----|-----------------|-----------------|-----|------|-----------------|----------------|----------------|------------------------------|---------|---------|---------|----------|----------|---------|----------------------------|-----|----|--------------|------------|-----|-----|--------------------------|-------|----------|--------------|----------|------|
| 1         | River Well 1A | ES1983      | H <sub>2</sub> O  | 8:30 AM |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         |         |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 2         | "             | 3           | BS1984            | "       |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         |         |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 3         | "             | 5           | ES 1985           | "       |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         |         |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 4         | "             | 6           | ES 1986           | "       |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         |         |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 5         | "             | 7           | ES 1987           | "       |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         |         |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 6         | River Well 1A | ES-1988     | H <sub>2</sub> O  | 8:30 AM |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         | X       |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 7         | "             | 3           | "                 | 8:10 AM |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         | X       |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 8         | "             | 5           | "                 | 7:42 AM |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         | X       |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 9         | "             | 6           | "                 | 8:05 AM |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         | X       |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |
| 10        | "             | 7           | "                 | 7:53 AM |         |     |          |                                    |                          |                                  |     |                 |                 |     |      |                 |                |                |                              |         |         | X       |          |          |         |                            |     |    |              |            |     |     |                          |       | X        | X            |          |      |

|                                    |                                  |             |                                 |                                  |                    |  |   |  |
|------------------------------------|----------------------------------|-------------|---------------------------------|----------------------------------|--------------------|--|---|--|
| *Relinquished by: <u>P. Burrow</u> | Date (YY/MM/DD): <u>12/10/11</u> | Time: _____ | Received by: <u>M. Lawrence</u> | Date (YY/MM/DD): <u>12/10/11</u> | Time: <u>08:45</u> | Time Sensitive: <input type="checkbox"/> | Temperature on Receipt (°C): <u>3, 2, 3</u> | Custody Seal Intact on Cooler? <u>NA</u>                 |
|                                    |                                  |             |                                 |                                  | <u>09:20</u>       |  |   | Yes <input type="checkbox"/> No <input type="checkbox"/> |



Maxxam Job#: B292040

Report To:

Town OF Qualicum Beach.  
Bob Weir  
201-660 Primrose St.  
P.O. Box 130 PC V9K 1S7  
Ph: 250 752-6921 Fax: 250 752 1243  
Bob Weir @ Qualicum Beach, Co.

PO #:   
Quotation #:   
Project #:   
Proj. Name:   
Location: River wells   
Sampled By:

Company Name: 'as on report'   
Contact Name:   
Address:   
Phone / Fax#:   
E-mail:

Company Name:   
Contact Name:   
Address:   
Phone / Fax#:   
E-mail:

REGULATORY REQUIREMENTS SERVICE REQUESTED:

CSR  Regular Turn Around Time (TAT)  (5 days for most tests)   
CCME  RUSH (Please contact the lab)   
BC Water Quality  1 Day  2 Day  3 Day   
Other  Date Required:   
DRINKING WATER

Special Instructions:

Return Cooler  Ship Sample Bottles (please specify)    
same as recieved and additives

\* all samples are raw water \*

ANALYSIS REQUESTED

Table with columns for various chemical and physical analyses (MTBE, PCB, TOC, etc.) and checkboxes for analysis requests. Includes handwritten notes like '5 x 120ml H2SO4' and '5 x 1 Litre'.

Table with columns: Sample Identification, Lab Identification, Sample Type, Date/Time Sampled. Contains handwritten entries for River Well 1A and 1-A.

Bottom section containing 'Refiniquished by: P. Buron', 'Received by: [Signature]', 'Date: 12/10/11', 'Date: 10/21/12', 'Time: 09:20', 'Temperature on Receipt (°C): 3, 2, 3', and 'Custody Seal Impact on Cooler? NA'.