

# **Drinking Water Annual Report -2013**

## **City of Quesnel Water System**

### **PURPOSE**

The City of Quesnel annual water report describes the water system and provides a summary of quality testing and water management during 2013. It is a requirement under the British Columbia Drinking Water Regulations Drinking Water Protection Act.

### **WATER SYSTEM OVERVIEW**

The City of Quesnel water system is comprised of 6 operating groundwater wells (main system), 8 reservoirs, 5 booster pump stations, 2 main PRV stations and approximately 100 km of water main. In addition the City also maintains one independent groundwater well on Sword Road (small system) in South Quesnel to provide water to the ball parks. At present there is no treatment or disinfection provided to the City's water system. Approximately 10,500 residents are serviced by the City water system. In 2013, there was 2,669,753 cubic meters of water used.

### **WATER MANAGEMENT**

The SCADA monitoring system enables City staff to observe real-time data and information of changing water system conditions which includes well operation and reservoir levels. System operators have the ability to remotely respond to system conditions and demands. Should an alarm arise in the water system which requires response from an operator; the SCADA will contact the operator by pager and cell phone to report the condition. This reduces failure of equipment as well as increases pumping efficiency. Upgrades to the SCADA are ongoing as equipment becomes obsolete and communications between stations require updates to operate effectively. As Telus continues elimination of copper data lines, the City SCADA has been updating to radio communication between the Utilities office and water wells/pumping stations.

The water system emergency plan is updated annually. Operating procedures continue to be reviewed in order to improve reliability of the distribution network. It is critical to the system to maintain pumps and equipment to a high standard which avoids costly failures.

Water system operators are certified under the Environmental Operators Certification Program. In order to maintain certification, operators must receive 24 hours of approved training in every two year period and achieve a minimum of 70% on written examinations.

Structural inspection of City water reservoirs was completed late in 2013 and long term planning regarding recommendations to maintain useful life of reservoirs is underway.

## **WATER MONITORING**

To ensure the delivery of safe drinking water, the City has a program to monitor water quality at the source.

Historically, drinking water quality within the City has been monitored in consultation with the Provincial Health Inspector. The responsibility to ensure safe drinking water has been assisted by the adoption of the "British Columbia Drinking Water Regulations" by the province in May 2003. In accordance with these regulations, the City has developed a drinking water quality monitoring program to enhance present practices.

The City sends water samples to an approved lab in Kelowna for all sampling points. Samples have also been received directly by Northern Health. There is direct contact between the City and lab on results and concerns. Our local Drinking Water Officer, as well as the Public Health Engineer at Northern Health Authority, also have access to these results. From the laboratory, the results are downloaded directly to Water Trax, the City's water quality database.

The sampling parameters used to monitor potability are listed in the Guidelines for Canadian Drinking Water Quality (GCDWQ) and the British Columbia Drinking Water Regulations (BCDWR). These sampling parameters are used as indicators for bacteriological, chemical and physical contaminants.

Sampling frequency is also important in obtaining an accurate overview of water quality within the distribution system. As a minimum, the number of samples to be taken of the source and distribution system as required by provincial regulations, are based on population. The minimum number of samples to be taken for the City of Quesnel's approximately 10,500 people is 13 per month. The City exceeds that number of monthly samples. The City samples 16 individual sites bi-weekly, for total coliforms, E. Coli, heterotrophic plate count and turbidity. As well, all reservoirs and wells are tested on a monthly basis for bacterial contaminants. In addition to the bacteriological parameters, additional testing is done for chemical & physical contaminants.

## **WATER QUALITY**

Samples are taken at the start, middle and end of the entire City water distribution system. Lab results are transmitted to the City via email, as well as to the Drinking Water Officer. Results are then downloaded into the City's water quality database, Water Trax.

If it is observed during testing that certain parameters exceed the limits specified in the GCDWQ or BCDWR guidelines, a procedure is in place for retesting and notification of any results or conditions that render or could render the water unfit to drink.

The standard protocol when a water sample is found to contain the presence of coliforms, however minute, is to resample the water immediately at the same location and resubmit for testing. The provincial Environmental Health Officer will determine if any action by the City is necessary only after a second test also shows the presence of coliforms.

In accordance with the regulations of our operating permit, the City has a plan in effect to respond to emergencies to ensure the delivery of safe drinking water to all its residents.

In 2013, 370 samples were tested for E.Coli with zero exceedences. There were 371 samples tested for total coliform with nineteen exceedences. ("Attachment "B") The results of subsequent testing at these sites had no detect of coliform.

Complaints regarding water quality are addressed and followed up on a case by case basis. The majority of customer complaints are of "dirty" or black water. This is due to manganese found in the City water which adheres to pipe walls in the distribution system until it is disturbed or breaks free. Homeowners are advised to run a cold tap until the water clears. In some cases the City will flush the mains through a hydrant or blowoff. All mains are flushed each fall to remove mineral scale and buildup in the lines in addition to ensuring proper operation and maintenance of all City fire hydrants.

There are occasional complaints of cold water smelling like rotten eggs or sulfur. This is caused from the City water having a reaction with the small diameter "feed line" tubing which connects the household plumbing to the faucet under the sink. It is most common in homes that have new or recently upgraded taps or plumbing fixtures. A corrective measure for this is suggest homeowners replace the feed lines with metal tubing such as copper or alternatively clean the lines with sodium hypochlorite (household bleach), then rinse and reinstall.

City of Quesnel Bylaw 1567 of 2004 was adopted in 2005 to ensure provisions for the elimination of cross connections between potable water and any non potable source. The City has two Certified Backflow Assembly Testers on staff who annually test assemblies in City parks and the City water supply system to protect against potential backflows and cross connections. They also install backflow prevention devices which are a secondary line of defence for backflow prevention.

It is the responsibility of the owner or operator of private buildings to install and test the approved backflow assembly upon installation and annually thereafter by a certified tester. Following the test a copy of the report is to be forwarded to the City of Quesnel. This program has not been completely implemented as there is a lack of resources and staff to track and account for these assemblies. What staff time is available is focused on communication with contractors/plumbers and high risk users. The main group addressed is industrial, commercial and institutions. Utilities staff communicate and keep a watchful eye out for any potential cross connection.

## **CONCLUSION**

The 2013 City of Quesnel Water System Annual Report is presented to Council as required by the British Columbia Drinking Water Regulations Drinking Water Protection Act. It has been established as a requirement to ensure accountability to the community for the water service provided. In order to meet the terms and conditions of the City's Water System Operating Permit issued by the BC Drinking Water Officer, this report is made available to the public.

Additional information may be obtained from the City of Quesnel Utilities Department at 250-992-6330, attention: Chris Coben, Utilities Superintendent.

Attachment "A" contains:

- a list of the sampling point sites and the parameters tested for the City of Quesnel

Attachment "B" contains:

- Water sampling result summary reports for 2013 on both of the City's water systems; Main System, & Small System (on Sword Road).

### **LINKS:**

The Health Canada website ( [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca) ) contains "Summary of Guidelines for Canadian Drinking Water Quality", which Health Canada publishes on current guidelines and updates each spring on their website.



# Attachment "A"

## City of Quesnel Water Quality Monitoring Program

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SITE	LOCATION	PARAMETERS
BI-WEEKLY (Distribution System)		
FIRST WEEK		
Water Trax Locator #		
94 E4	Airport	Parameters: Total coliforms, Ecoli, HPC's, turbidity, temp
94 E5	Mills Rd	
94 E7	Marsh Dr	
94 E8	Graham Avenue	
94 E9	West Fraser Rd	
94 FO	Pederson Rd	
94 EF	Carson Pit	
179 CA	Dennis Road	
THIRD WEEK		
94 E6	Carradice Rd	Parameters: Total coliforms, Ecoli, HPC's, turbidity, temp
94 F1	Dixon St	
94 F2	Front St – Hospital	
94 F3	Nason St	
94 F4	N. Star Dragon Hill	
94 F6	N Star South Hill	
94 F7	Chew Rd	
21 D9B	Bulk Water on North Star	
MONTHLY (Reservoirs)		
94 EA	R-1 Shadow Heights	Parameters: Total coliforms, Ecoli, Temp
94 F9	R-2 Pinecrest	
94 FA	R-3 Sugar Loaf	
94 EB	R-4 Abbott Dr 1	
94 EC	R-4 Abbott Dr 2	
94 FC	R-5 Dragon Hill	
94 FF	R-6 New Tatchell Reservoir	
MONTHLY (Wells)		
94 ED	Well A Sword Rd	Parameters: Total coliforms, Ecoli, Temp
94 D1	Well 3 Rolph at Roddis	
94 DC	Well 6 Rolph at Robertson	
94 EO	Well 7 N. Fraser Dr	
94 E1	Well 8 Hilborn Rd	
94 DF	Well 9 Carson Sub	
28000	Well 10 Hilborn Rd	

**City of Quesnel**  
**Water Quality Monitoring Program**

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**QUARTERLY (Wells)**

**(first week of March, June, Sept, Dec)**

Water Trax Locator #		
94 ED	Well A Sword Rd	Parameters: Chloride, Nitrate, Nitrite, Temperature
94 D1	Well 3 Rolph at Roddis	
94 DC	Well 6 Rolph at Robertson	
94 EO	Well 7 N. Fraser Drive	
94 E1	Well 8 Hilborn Rd	
94 DF	Well 9 Carson Sub	
28000	Well 10 Hilborn Rd	

**SEMI - ANNUALLY (Distribution System)**

**(first week Oct & April)**

94 E5	Mills Rd (94E5)	Parameters: Copper, Zinc, Lead, Iron, Vinyl chloride, Manganese, Temperature
94 FO	Pederson Rd (94F0)	

**ANNUALLY (Wells)**

94 ED	Well A Sword Rd	Parameters: Enhanced Potability , Metals, Langelier saturation index ( LSI) Volatile Organic Compounds, Temp.
94 D1	Well 3 Rolph at Roddis	
94 DC	Well 6 Rolph at Robertson	
94 EO	Well 7 N. Fraser Drive	
94 E1	Well 8 Hilborn Rd	
94 DF	Well 9 Carson Sub	
28000	Well 10 Hilborn Rd	

## **Attachment "B"**

**Water sample result reports (in pdf format):**

- **2013 Quesnel Main System Coliform/Ecoli Stats** (includes Caro alternate sampling)
- **2013 Quesnel Small System Coliform/Ecoli Stats**
- **2013 Quesnel Main System Coliform/Ecoli Exceedences**
- **2013 Quesnel Small System Coliform/Ecoli Exceedences**
- **2013 May Semi-Annual Summary on Main & Small System**
- **2013 November Semi-Annual Summary on Main & Small System**
- **2013 Quarterly on Main System**
- **2013 Quarterly on Small System**

## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Facility: Distribution System  
Sampling Point: Bulk Water Site #1 (7-15-QC, 21D9B)

Escherichia coli / E. coli (counts)

# samples: 11  
# detects: 0  
# non-detects: 11  
# of Exceedences: 0  
min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 11  
# detects: 0  
# non-detects: 11  
# of Exceedences: 0  
min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Facility: Distribution System  
Sampling Point: S-Airport (7-1-MR, 94E4)

Escherichia coli / E. coli (counts)

# samples: 16  
# detects: 0  
# non-detects: 16  
# of Exceedences: 0  
min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 16  
min: < 1 counts/100mL

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## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# detects: 2	max: 2 counts/100mL
# non-detects: 14	Geometric Mean: 1.414 counts/100mL (based on 2 numerical results)
# of Exceedences: 2	

Facility: Distribution System  
Sampling Point: S-Carradice Rd (7-3-MR, 94E6)  
Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 2	max: 3 counts/100mL
# non-detects: 9	Geometric Mean: 2.449 counts/100mL (based on 2 numerical results)
# of Exceedences: 2	

Facility: Distribution System  
Sampling Point: S-Chew Rd (7-13-MR, 94F7)  
Escherichia coli / E. coli (counts)

# samples: 10	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 10	Geometric Mean: n/a (based on 0 numerical results)



## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# of Exceedences: 0

Total coliforms (counts)

# samples: 10

# detects: 0

# non-detects: 10

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Facility:

Distribution System

Sampling Point:

S- Dennis Road (7-14-MD, 179CA)

Escherichia coli / E. coli (counts)

# samples: 14

# detects: 0

# non-detects: 14

# of Exceedences: 0

min: < 1 CFU/100mL

max: < 1 CFU/100mL

Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 14

# detects: 2

# non-detects: 12

# of Exceedences: 2

min: < 1 counts/100mL

max: 1 counts/100mL

Geometric Mean: 1.000 counts/100mL (based on 1 numerical results)

Facility:

Distribution System

Sampling Point:

S- Dixon (7-8-MR, 94F-1)

Escherichia coli / E. coli (counts)

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## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 10	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 10	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 10	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 10	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Distribution System  
Sampling Point: S-Marsh Drive (7-4-MD, 94E7)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 1	max: 1 counts/100mL
# non-detects: 10	Geometric Mean: 1.000 counts/100mL (based on 1 numerical results)
# of Exceedences: 1	

Facility: Distribution System

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## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Sampling Point: S-Mills Rd (7-2-MR, 94E5)

Escherichia coli / E. coli (counts)

# samples: 12	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 12	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 12	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 12	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Distribution System

Sampling Point: S-N. Star Dragon Hill (7-11-MD, 94F4)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)

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## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# of Exceedences: 0

Facility: Distribution System  
Sampling Point: S-N.Star South Hill (7-12-MD, 94F6)

Escherichia coli / E. coli (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 counts/100mL  
max: < 1 counts/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Facility: Distribution System  
Sampling Point: S-Nason (7-10-MD, 94F3)

Escherichia coli / E. coli (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

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## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Distribution System  
Sampling Point: S-Pederson Rd (7-7-MD, 94F0)

Escherichia coli / E. coli (counts)

# samples: 16	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 16	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 16	min: < 1 counts/100mL
# detects: 8	max: 7 counts/100mL
# non-detects: 8	Geometric Mean: 3.009 counts/100mL (based on 8 numerical results)
# of Exceedences: 8	

Facility: Distribution System  
Sampling Point: S-West Fraser Rd (7-6-MR, 94E9)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)

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## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# of Exceedences: 0

Total coliforms (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Facility:

Distribution System

Sampling Point:

S-Graham Ave (7-5-MD, 94E8)

Escherichia coli / E. coli (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 CFU/100mL

max: < 1 CFU/100mL

Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Facility:

Distribution System

Sampling Point:

S-Hospital (7-9-MD, 94F2)

Escherichia coli / E. coli (counts)

## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Reservoirs

Sampling Point: R-1 Shadow Heights (8-1-MR, 94EA)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Reservoirs

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## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Sampling Point: R-2 Pinecrest (8-4-MR, 94F9)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Reservoirs

Sampling Point: R-3 Sugarloaf (8-5-MR, 94FA)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)

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## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# of Exceedences: 0

Facility:

Reservoirs

Sampling Point:

R-4 Abbott Dr 1 (8-2-MR, 94EB)

Escherichia coli / E. coli (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 CFU/100mL

max: < 1 CFU/100mL

Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Facility:

Reservoirs

Sampling Point:

R-4 Abbott Dr 2 (8-3-MR, 94EC)

Escherichia coli / E. coli (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 CFU/100mL

max: < 1 CFU/100mL

Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

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## 2013 Main System Coliform/Ecoli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Reservoirs  
Sampling Point: R-5 Dragon Hill (8-6-MR, 94FC)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Reservoirs  
Sampling Point: R-6 New Tatchell Reservoir (8-8-MR, 94FF)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)



## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# of Exceedences: 0

Total coliforms (counts)

# samples: 11

# detects: 0

# non-detects: 11

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Facility:

Well 10 Hilborn Rd., Well No 10

Sampling Point:

Well No 10 Hilborn Rd. (9-1-EP, 28000)

Escherichia coli / E. coli (counts)

# samples: 12

# detects: 0

# non-detects: 12

# of Exceedences: 0

min: < 1 CFU/100mL

max: < 1 CFU/100mL

Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 12

# detects: 0

# non-detects: 12

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Facility:

Well 3 Rolph at Roddis, Well No 3

Sampling Point:

Well 3 Rolph at Roddis (1-2-EP, 94D1)

Escherichia coli / E. coli (counts)

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## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 8	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 8	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

### Total coliforms (counts)

# samples: 8	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 8	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility: Well 6 Rolph at Robertson, Well No 6  
Sampling Point: Well 6 Rolph at Robertson (3-2-EP, 94DC)

### Escherichia coli / E. coli (counts)

# samples: 12	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 12	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

### Total coliforms (counts)

# samples: 12	min: < 1 counts/100mL
# detects: 1	max: 4 counts/100mL
# non-detects: 11	Geometric Mean: 4.000 counts/100mL (based on 1 numerical results)
# of Exceedences: 1	

Facility: Well 7 N. Fraser Dr, Well No 7

Report created on 01/08/2014 9:42:52 AM





## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Sampling Point: Well 7 N. Fraser Dr (4-2-EP, 94E0)

Escherichia coli / E. coli (counts)

# samples: 11	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 11	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 11	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Facility:

Well 8 Hilborn Rd; Well No 8

Sampling Point:

Well 8 Hilborn Rd (5-1-EP, 94E1)

Escherichia coli / E. coli (counts)

# samples: 12	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 12	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Total coliforms (counts)

# samples: 12	min: < 1 counts/100mL
# detects: 0	max: < 1 counts/100mL
# non-detects: 12	Geometric Mean: n/a (based on 0 numerical results)

Report created on 01/08/2014 9:42:52 AM

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## 2013 Main System Coliform/E.coli Summary Stats

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# of Exceedences: 0

Facility:

Well 9 Carson Sub; Well No 9

Sampling Point:

Well 9 Carson Sub (6-2-EP, 94DF)

Escherichia coli / E. coli (counts)

# samples: 12

# detects: 0

# non-detects: 12

# of Exceedences: 0

min: < 1 CFU/100mL

max: < 1 CFU/100mL

Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 12

# detects: 0

# non-detects: 12

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

Result Legend:

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

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> means greater than upper detection limit shown

« means detected & less than number shown

» means detected & greater than number shown

\* Indicates Criteria is exceeded

### First Week

### Third Week

## Monthly Reservoirs

## Monthly Wells

[illegible]



## 2013 Small System Coliform Ecoli Stats Summary

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Small System

Facility: Distribution System  
Sampling Point: S-Carson Plt (2-1-MR, 94EF)

Escherichia coli / E. coli (counts)

# samples: 11  
# detects: 0  
# non-detects: 11  
# of Exceedences: 0  
min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 12  
# detects: 0  
# non-detects: 11  
# of Exceedences: 1  
min: < 1 counts/100mL  
max: < 1 counts/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Facility: Well A Sword Rd; Well A Sword Rd  
Sampling Point: Well A Sword Rd (1-1-EP, 94ED)

Escherichia coli / E. coli (counts)

# samples: 12  
# detects: 0  
# non-detects: 12  
# of Exceedences: 0  
min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Total coliforms (counts)

# samples: 12  
min: < 1 counts/100mL

**2013 Small System Coliform Ecoli Stats  
Summary**

**City of Quesnel**

**01/01/2013 to 12/31/2013 (mm/dd/yyyy)**

**City of Quesnel – Small System**

# detects: 1	max: 9 counts/100mL
# non-detects: 11	Geometric Mean: 9.000 counts/100mL (based on 1 numerical results)
# of Exceedences: 1	

**Result Legend:**

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

< means less than lower detection limit shown  
> means greater than upper detection limit shown  
« means detected & less than number shown  
» means detected & greater than number shown

\* Indicates Criteria is exceeded



## 2013 Main System Exceedences

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Facility: Distribution System  
Sampling Point: Bulk Water Site #1 (7-15-QC, 21D9B)

Facility: Distribution System  
Sampling Point: S-Airport (7-1-MR, 94E4)

### Total coliforms (counts)

#### Criteria

\* 05/28/2013 09:45 1 counts/100mL <=0, OG, P User-Defined  
\* 11/20/2013 14:30 2 counts/100mL <=0, OG, P User-Defined

# samples: 16

# detects: 2

# non-detects: 14

# of Exceedences: 2

min: < 1 counts/100mL  
max: 2 counts/100mL  
Geometric Mean: 1.414 counts/100mL (based on 2 numerical results)

Facility: Distribution System  
Sampling Point: S-Carradice Rd (7-3-MR, 94E6)

### Total coliforms (counts)

#### Criteria

\* 05/22/2013 10:40 3 counts/100mL <=0, OG, P User-Defined  
\* 10/08/2013 11:45 2 counts/100mL <=0, OG, P User-Defined

# samples: 11

# detects: 2

# non-detects: 9

# of Exceedences: 2

min: < 1 counts/100mL  
max: 3 counts/100mL  
Geometric Mean: 2.449 counts/100mL (based on 2 numerical results)

Facility: Distribution System  
Sampling Point: S-Chew Rd (7-13-MR, 94F7)

Facility: Distribution System

Report created on 01/08/2014 9:50:08 AM



## 2013 Main System Exceedences

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Sampling Point: S-Dennis Road (7-14-MD, 179CA)

Total coliforms (counts)

Criteria

\* 08/28/2013 13:40 » 8 counts/100mL <=0, OG, P User-Defined  
 \* 09/25/2013 14:20 1 counts/100mL <=0, OG, P User-Defined

# samples: 14

# detects: 2

# non-detects: 12

# of Exceedences: 2

min: < 1 counts/100mL  
 max: 1 counts/100mL  
 Geometric Mean: 1.000 counts/100mL (based on 1 numerical results)

Facility: Distribution System  
 Sampling Point: S-Dixon (7-8-MR, 94F1)

Facility: Distribution System  
 Sampling Point: S-Marsh Drive (7-4-MD, 94E7)

Total coliforms (counts)

Criteria

\* 11/20/2013 15:20 1 counts/100mL <=0, OG, P User-Defined

# samples: 11

# detects: 1

# non-detects: 10

# of Exceedences: 1

min: < 1 counts/100mL  
 max: 1 counts/100mL  
 Geometric Mean: 1.000 counts/100mL (based on 1 numerical results)

Facility: Distribution System  
 Sampling Point: S-Mills Rd (7-2-MR, 94E5)

Facility: Distribution System  
 Sampling Point: S-N. Star Dragon Hill (7-11-MD, 94F4)

Report created on 01/08/2014 9:50:08 AM





## 2013 Main System Exceedences

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Facility: Distribution System  
Sampling Point: S-N.Star South Hill (7-12-MD, 94F6)

Facility: Distribution System  
Sampling Point: S-Nason (7-10-MD, 94F3)

Facility: Distribution System  
Sampling Point: S-Pederson Rd (7-7-MD, 94F0)

### Total coliforms (counts)

		Criteria	
* 04/09/2013 14:00	1 counts/100mL	<=0, OG, P	User-Defined
* 04/11/2013 14:00	4 counts/100mL	<=0, OG, P	User-Defined
* 08/28/2013 13:15	1 counts/100mL	<=0, OG, P	User-Defined
* 09/09/2013 18:00	6 counts/100mL	<=0, OG, P	User-Defined
* 09/25/2013 15:00	2 counts/100mL	<=0, OG, P	User-Defined
* 10/23/2013 15:10	5 counts/100mL	<=0, OG, P	User-Defined
* 10/30/2013 15:40	4 counts/100mL	<=0, OG, P	User-Defined
* 11/20/2013 10:20	7 counts/100mL	<=0, OG, P	User-Defined

# samples: 16  
# detects: 8  
# non-detects: 8  
# of Exceedences: 8

min: < 1 counts/100mL  
max: 7 counts/100mL  
Geometric Mean: 3.009 counts/100mL (based on 8 numerical results)

Facility: Distribution System  
Sampling Point: S-West Fraser Rd (7-6-MR, 94E9)

Facility: Distribution System  
Sampling Point: S-Graham Ave (7-5-MD, 94E8)

Facility: Distribution System  
Sampling Point: S-Hospital (7-9-MD, 94F2)

Facility: Reservoirs

Report created on 01/08/2014 9:50:08 AM

## 2013 Main System Exceedences

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Sampling Point:	R-1 Shadow Heights (8-1-MR, 94EA)
Facility:	Reservoirs
Sampling Point:	R-2 Pinecrest (8-4-MR, 94F9)
Facility:	Reservoirs
Sampling Point:	R-3 Sugarloaf (8-5-MR, 94FA)
Facility:	Reservoirs
Sampling Point:	R-4 Abbott Dr 1 (8-2-MR, 94EB)
Facility:	Reservoirs
Sampling Point:	R-4 Abbott Dr 2 (8-3-MR, 94EC)
Facility:	Reservoirs
Sampling Point:	R-5 Dragon Hill (8-6-MR, 94FC)
Facility:	Reservoirs
Sampling Point:	R-6 New Tatchell Reservoir (8-8-MR, 94FF)
Facility:	Well 10 Hilborn Rd.; Well No 10
Sampling Point:	Well No 10 Hilborn Rd. (9-1-EP, 28000)
Facility:	Well 3 Rolph at Roddis; Well No 3
Sampling Point:	Well 3 Rolph at Roddis (1-2-EP, 94D1)
Facility:	Well 6 Rolph at Robertson; Well No 6
Sampling Point:	Well 6 Rolph at Robertson (3-2-EP, 94DC)
Total coliforms (counts)	Criteria
* 06/10/2013 11:19	4 counts/100mL <=0, OG, P User-Defined
# samples: 12	min: < 1 counts/100mL
# detects: 1	max: 4 counts/100mL
# non-detects: 11	Geometric Mean: 4.000 counts/100mL (based on 1 numerical

**2013 Main System Exceedences**

**City of Quesnel**

**01/01/2013 to 12/31/2013 (mm/dd/yyyy)**

**City of Quesnel – Main System**

# of Exceedences: 1	results)
Facility:	Well 7 N. Fraser Dr; Well No 7
Sampling Point:	Well 7 N. Fraser Dr (4-2-EP, 94E0)
Facility:	Well 8 Hilborn Rd; Well No 8
Sampling Point:	Well 8 Hilborn Rd (5-1-EP, 94E1)
Facility:	Well 9 Carson Sub; Well No 9
Sampling Point:	Well 9 Carson Sub (6-2-EP, 94DF)

**Result Legend:**

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

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> means greater than upper detection limit shown  
« means detected & less than number shown  
» means detected & greater than number shown

\* Indicates Criteria is exceeded





## 2013 Small System Exceedences

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Small System

Facility: Distribution System  
Sampling Point: S-Carson Pit (2-1-MR, 94EF)

Total coliforms (counts) Criteria

\* 07/31/2013 10:40 OG counts/100mL <=0, OG, P User-Defined

# samples: 12

# detects: 0 min: < 1 counts/100mL  
max: < 1 counts/100mL

# non-detects: 11 Geometric Mean: n/a (based on 0 numerical results)

# of Exceedences: 1

Facility: Well A Sword Rd; Well A Sword Rd  
Sampling Point: Well A Sword Rd (1-1-EP, 94ED)

Total coliforms (counts) Criteria

\* 06/10/2013 10:40 9 counts/100mL <=0, OG, P User-Defined

# samples: 12

# detects: 1 min: < 1 counts/100mL  
max: 9 counts/100mL

# non-detects: 11 Geometric Mean: 9.000 counts/100mL (based on 1 numerical results)

# of Exceedences: 1

### Result Legend:

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment  
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> means greater than upper detection limit shown  
« means detected & less than number shown  
» means detected & greater than number shown

\* Indicates Criteria is exceeded

Report created on 01/08/2014 9:52:02 AM



**2013 May Semi Annuals**

**City of Quesnel**

**05/08/2013 to 05/08/2013 (mm/dd/yyyy)**

**City of Quesnel – Main System**

**Facility:** Distribution System  
**Sampling Point:** S-Mills Rd (7-2-MR, 94E5)

**Copper (total)**

05/08/2013 11:20

0.002 mg/L

**Criteria**  
≤1.0

AO

# samples: 1  
# detects: 1  
# non-detects: 0  
# of Exceedences: 0

min: 0.002 mg/L  
max: 0.002 mg/L  
avg: 0.002 mg/L (based on 1 numerical results)

**Escherichia coli / E. coli (counts)**

05/08/2013 11:20

< 1 CFU/100mL

**Criteria**  
≤0, P, PR User-Defined

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0

min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

**Heterotrophic Plate Count / HPC**

05/08/2013 11:20

< 1 CFU/mL

**Criteria**  
≤500 User-Defined

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0

min: < 1 CFU/mL  
max: < 1 CFU/mL  
Geometric Mean: n/a (based on 0 numerical results)

**Iron (total)**

05/08/2013 11:20

< 0.1 mg/L

**Criteria**  
≤0.3 AO

Report created on 01/08/2014 11:04:26 AM



## 2013 May Semi Annuals

City of Quesnel

05/08/2013 to 05/08/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 1	min: < 0.1 mg/L
# detects: 0	max: < 0.1 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# of Exceedences: 0	

Lead (total)	Criteria
05/08/2013 11:20	<=0.010 MAC

# samples: 1	min: < 0.001 mg/L
# detects: 0	max: < 0.001 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# of Exceedences: 0	

Manganese (total)	Criteria
05/08/2013 11:20	<=0.05 AO

# samples: 1	min: 0.005 mg/L
# detects: 1	max: 0.005 mg/L
# non-detects: 0	avg: 0.005 mg/L (based on 1 numerical results)
# of Exceedences: 0	

Temperature	Criteria
05/08/2013 11:20	5.7 degrees C
05/08/2013 11:20	5.7 degrees C

# samples: 2	min: 5.7 degrees C
# detects: 2	max: 5.7 degrees C
# non-detects: 0	avg: 5.700 degrees C (based on 2 numerical results)
# of Exceedences: 0	



## 2013 May Semi Annuals

City of Quesnel

### 05/08/2013 to 05/08/2013 (mm/dd/yyyy)

City of Quesnel – Main System

#### Total coliforms (counts)

#### Criteria

05/08/2013 11:20

< 1 counts/100mL

<=0, OG, P

User-Defined

# samples: 1

# detects: 0

# non-detects: 1

# of Exceedences: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Geometric Mean: n/a (based on 0 numerical results)

#### Turbidity

#### Criteria

05/08/2013 11:20

< 0.1 NTU

<=1

User-Defined

# samples: 1

# detects: 0

# non-detects: 1

# of Exceedences: 0

min: < 0.1 NTU

max: < 0.1 NTU

avg: n/a (based on 0 numerical results)

#### Zinc (total)

#### Criteria

05/08/2013 11:20

< 0.040 mg/L

<=5

AO

# samples: 1

# detects: 0

# non-detects: 1

# of Exceedences: 0

min: < 0.040 mg/L

max: < 0.040 mg/L

avg: n/a (based on 0 numerical results)

#### Facility:

Distribution System

#### Sampling Point:

S-Pederson Rd (7-7-MD, 94F0)

#### Copper (total)

#### Criteria

05/08/2013 14:20

0.008 mg/L

<=1.0

AO

Report created on 01/08/2014 11:04:26 AM

## 2013 May Semi Annuals

City of Quesnel

05/08/2013 to 05/08/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 1	min: 0.008 mg/L
# detects: 1	max: 0.008 mg/L
# non-detects: 0	avg: 0.008 mg/L (based on 1 numerical results)
# of Exceedences: 0	

Escherichia coli / E. coli (counts)	Criteria
05/08/2013 14:20	<=0, P, PR User-Defined
< 1 CFU/100mL	

# samples: 1	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 1	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Heterotrophic Plate Count / HPC	Criteria
05/08/2013 14:20	<=500 User-Defined
3 CFU/mL	

# samples: 1	min: 3 CFU/mL
# detects: 1	max: 3 CFU/mL
# non-detects: 0	Geometric Mean: 3.000 CFU/mL (based on 1 numerical results)
# of Exceedences: 0	

Iron (total)	Criteria
05/08/2013 14:20	<=0.3 AO
< 0.1 mg/L	

# samples: 1	min: < 0.1 mg/L
# detects: 0	max: < 0.1 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# of Exceedences: 0	

# 2013 May Semi Annuals

City of Quesnel

## 05/08/2013 to 05/08/2013 (mm/dd/yyyy)

City of Quesnel – Main System

### Lead (total)

#### Criteria

05/08/2013 14:20 < 0.001 mg/L

<=0.010

MAC

# samples: 1

# detects: 0

# non-detects: 1

# of Exceedences: 0

min: < 0.001 mg/L

max: < 0.001 mg/L

avg: n/a (based on 0 numerical results)

### Manganese (total)

#### Criteria

\* 05/08/2013 14:20 0.060 mg/L

<=0.05

AO

# samples: 1

# detects: 1

# non-detects: 0

# of Exceedences: 1

min: 0.060 mg/L

max: 0.060 mg/L

avg: 0.060 mg/L (based on 1 numerical results)

### Temperature

#### Criteria

05/08/2013 14:20 6.7 degrees C  
05/08/2013 14:20 6.7 degrees C

# samples: 2

# detects: 2

# non-detects: 0

# of Exceedences: 0

min: 6.7 degrees C

max: 6.7 degrees C

avg: 6.700 degrees C (based on 2 numerical results)

### Total coliforms (counts)

#### Criteria

05/08/2013 14:20 < 1 counts/100mL

<=0, OG, P User-Defined

# samples: 1

# detects: 0

min: < 1 counts/100mL

max: < 1 counts/100mL

Report created on 01/08/2014 11:04:26 AM





## 2013 May Semi Annuals

City of Quesnel

05/08/2013 to 05/08/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# non-detects: 1  
# of Exceedences: 0  
**Geometric Mean: n/a (based on 0 numerical results)**

**Turbidity**  
**Criteria**

05/08/2013 14:20 < 0.1 NTU <=1 User-Defined

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0  
**min: < 0.1 NTU**  
**max: < 0.1 NTU**  
**avg: n/a (based on 0 numerical results)**

**Zinc (total)**  
**Criteria**

05/08/2013 14:20 < 0.040 mg/L <=5 AO

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0  
**min: < 0.040 mg/L**  
**max: < 0.040 mg/L**  
**avg: n/a (based on 0 numerical results)**

### Result Legend:

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown,  
TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

< means less than lower detection limit shown  
> means greater than upper detection limit shown  
« means detected & less than number shown  
» means detected & greater than number shown

\* Indicates Criteria is exceeded



# 2013 November Semi Annuals

City of Quesnel

11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Facility: Distribution System  
Sampling Point: S-Mills Rd (7-2-MR, 94E5)

Copper (total)

Criteria

11/20/2013 15:00	0.015 mg/L	<=1.0	AO
------------------	------------	-------	----

# samples: 1	min: 0.015 mg/L
# detects: 1	max: 0.015 mg/L
# non-detects: 0	avg: 0.015 mg/L (based on 1 numerical results)
# of Exceedences: 0	

Escherichia coli / E. coli (counts)

Criteria

11/20/2013 15:00	< 1 CFU/100mL	<=0, P, PR	User-Defined
------------------	---------------	------------	--------------

# samples: 1	min: < 1 CFU/100mL
# detects: 0	max: < 1 CFU/100mL
# non-detects: 1	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Heterotrophic Plate Count / HPC

Criteria

11/20/2013 15:00	< 5 CFU/mL	<=500	User-Defined
------------------	------------	-------	--------------

# samples: 1	min: < 5 CFU/mL
# detects: 0	max: < 5 CFU/mL
# non-detects: 1	Geometric Mean: n/a (based on 0 numerical results)
# of Exceedences: 0	

Iron (total)

Criteria

11/20/2013 15:00	< 0.10 mg/L	<=0.3	AO
------------------	-------------	-------	----

Report created on 01/08/2014 11:05:48 AM



## 2013 November Semi Annuals

City of Quesnel

11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 1	min: < 0.10 mg/L
# detects: 0	max: < 0.10 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# of Exceedences: 0	

Lead (total)	Criteria
11/20/2013 15:00	<=0.010 MAC

# samples: 1	min: 0.003 mg/L
# detects: 1	max: 0.003 mg/L
# non-detects: 0	avg: 0.003 mg/L (based on 1 numerical results)
# of Exceedences: 0	

Manganese (total)	Criteria
11/20/2013 15:00	<=0.05 AO

# samples: 1	min: 0.002 mg/L
# detects: 1	max: 0.002 mg/L
# non-detects: 0	avg: 0.002 mg/L (based on 1 numerical results)
# of Exceedences: 0	

Temperature	Criteria
11/20/2013 15:00	10 degrees C
11/20/2013 15:00	10 degrees C

# samples: 2	min: 10 degrees C
# detects: 2	max: 10 degrees C
# non-detects: 0	avg: 10.000 degrees C (based on 2 numerical results)
# of Exceedences: 0	





## 2013 November Semi Annuals

City of Quesnel

### 11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Total coliforms (counts)		Criteria	
11/20/2013 15:00	< 1 counts/100mL	<=0, OG, P	User-Defined
<b># samples: 1</b> <b># detects: 0</b> <b># non-detects: 1</b> <b># of Exceedences: 0</b>			
		<b>min: &lt; 1 counts/100mL</b> <b>max: &lt; 1 counts/100mL</b> <b>Geometric Mean: n/a (based on 0 numerical results)</b>	
Turbidity		Criteria	
11/20/2013 15:00	< 0.1 NTU	<=1	User-Defined
<b># samples: 1</b> <b># detects: 0</b> <b># non-detects: 1</b> <b># of Exceedences: 0</b>			
		<b>min: &lt; 0.1 NTU</b> <b>max: &lt; 0.1 NTU</b> <b>avg: n/a (based on 0 numerical results)</b>	
Vinyl chloride		Criteria	
11/20/2013 15:00	< 0.0020 mg/L	<=0.002	MAC
<b># samples: 1</b> <b># detects: 0</b> <b># non-detects: 1</b> <b># of Exceedences: 0</b>			
		<b>min: &lt; 0.0020 mg/L</b> <b>max: &lt; 0.0020 mg/L</b> <b>avg: n/a (based on 0 numerical results)</b>	
Zinc (total)		Criteria	
11/20/2013 15:00	< 0.04 mg/L	<=5	AO
<b># samples: 1</b> <b># detects: 0</b>			
		<b>min: &lt; 0.04 mg/L</b> <b>max: &lt; 0.04 mg/L</b>	

# 2013 November Semi Annuals

City of Quesnel

11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# non-detects: 1  
# of Exceedences: 0  
avg: n/a (based on 0 numerical results)

Facility: Distribution System  
Sampling Point: S-Pederson Rd (7-7-MD, 94F0)

Copper (total)  
11/20/2013 10:20 0.013 mg/L  
Criteria  
11/20/2013 10:20 <=1.0 AO

# samples: 1  
# detects: 1  
# non-detects: 0  
# of Exceedences: 0  
min: 0.013 mg/L  
max: 0.013 mg/L  
avg: 0.013 mg/L (based on 1 numerical results)

Escherichia coli / E. coli (counts)  
11/20/2013 10:20 < 1 CFU/100mL  
Criteria  
11/20/2013 10:20 <=0, P, PR User-Defined

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0  
min: < 1 CFU/100mL  
max: < 1 CFU/100mL  
Geometric Mean: n/a (based on 0 numerical results)

Heterotrophic Plate Count / HPC  
11/20/2013 10:20 < 5 CFU/mL  
Criteria  
11/20/2013 10:20 <=500 User-Defined

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0  
min: < 5 CFU/mL  
max: < 5 CFU/mL  
Geometric Mean: n/a (based on 0 numerical results)



## 2013 November Semi Annuals

City of Quesnel

### 11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Iron (total)		Criteria	
11/20/2013 10:20	< 0.10 mg/L	<=0.3	AO
# samples: 1 # detects: 0 # non-detects: 1 # of Exceedences: 0			
min: < 0.10 mg/L max: < 0.10 mg/L avg: n/a (based on 0 numerical results)			
Lead (total)		Criteria	
11/20/2013 10:20	0.002 mg/L	<=0.010	MAC
# samples: 1 # detects: 1 # non-detects: 0 # of Exceedences: 0			
min: 0.002 mg/L max: 0.002 mg/L avg: 0.002 mg/L (based on 1 numerical results)			
Manganese (total)		Criteria	
* 11/20/2013 10:20	0.152 mg/L	<=0.05	AO
# samples: 1 # detects: 1 # non-detects: 0 # of Exceedences: 1			
min: 0.152 mg/L max: 0.152 mg/L avg: 0.152 mg/L (based on 1 numerical results)			
Temperature		Criteria	
11/20/2013 10:20	10 degrees C		
11/20/2013 10:20	10 degrees C		
# samples: 2 # detects: 2			
min: 10 degrees C max: 10 degrees C			

Report created on 01/08/2014 11:05:48 AM





## 2013 November Semi Annuals

City of Quesnel

11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# non-detects: 0  
# of Exceedences: 0  
avg: 10.000 degrees C (based on 2 numerical results)

Total coliforms (counts)

\* 11/20/2013 10:20 7 counts/100mL <=0, OG, P User-Defined

# samples: 1  
# detects: 1  
# non-detects: 0  
# of Exceedences: 1  
min: 7 counts/100mL  
max: 7 counts/100mL  
Geometric Mean: 7.000 counts/100mL (based on 1 numerical results)

Turbidity

11/20/2013 10:20 < 0.1 NTU <=1 User-Defined

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0  
min: < 0.1 NTU  
max: < 0.1 NTU  
avg: n/a (based on 0 numerical results)

Vinyl chloride

11/20/2013 10:20 < 0.0020 mg/L <=0.002 MAC

# samples: 1  
# detects: 0  
# non-detects: 1  
# of Exceedences: 0  
min: < 0.0020 mg/L  
max: < 0.0020 mg/L  
avg: n/a (based on 0 numerical results)

Zinc (total)

11/20/2013 10:20 < 0.04 mg/L <=5 AO

Report created on 01/08/2014 11:05:48 AM



## 2013 November Semi Annuals

City of Quesnel

11/20/2013 to 11/20/2013 (mm/dd/yyyy)

City of Quesnel – Main System

# samples: 1	min: < 0.04 mg/L
# detects: 0	max: < 0.04 mg/L
# non-detects: 1	avg: n/a (based on 0 numerical results)
# of Exceedences: 0	

### Result Legend:

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

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» means detected & greater than number shown

\* Indicates Criteria is exceeded

## 2013 Main System Quarterlies

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

### Facility:

Well 10 Hilborn Rd.; Well No 10

### Sampling Point:

Well No 10 Hilborn Rd. (9-1-EP, 28000)

### Chloride

#### Criteria

02/20/2013 13:40	14.3 mg/L	<=250	AO
05/14/2013 13:10	13.4 mg/L	<=250	AO
06/10/2013 14:25	12.6 mg/L	<=250	AO
08/06/2013 14:25	11.6 mg/L	<=250	AO

### Nitrate (as N)

#### Criteria

02/20/2013 13:40	< 0.010 mg/L
05/14/2013 13:10	< 0.010 mg/L
06/10/2013 14:25	< 0.010 mg/L
08/06/2013 14:25	< 0.010 mg/L

### Nitrite (as N)

#### Criteria

02/20/2013 13:40	< 0.010 mg/L
05/14/2013 13:10	< 0.010 mg/L
06/10/2013 14:25	< 0.010 mg/L
08/06/2013 14:25	< 0.010 mg/L

### Facility:

Well 3 Rolph at Roddis; Well No 3

### Sampling Point:

Well 3 Rolph at Roddis (1-2-EP, 94D1)

### Chloride

#### Criteria

06/10/2013 12:49	8.42 mg/L	<=250	AO
08/06/2013 15:00	7.46 mg/L	<=250	AO

### Nitrate (as N)

#### Criteria

06/10/2013 12:49	< 0.010 mg/L
08/06/2013 15:00	0.012 mg/L

### Nitrite (as N)

#### Criteria

Report created on 01/08/2014 11:17:48 AM



## 2013 Main System Quarterlies

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Nitrite (as N)		Criteria
06/10/2013 12:49	< 0.010 mg/L	
08/06/2013 15:00	< 0.010 mg/L	
Facility: Well 6 Rolph at Robertson; Well No 6		
Sampling Point: Well 6 Rolph at Robertson (3-2-EP, 94DC)		
Chloride		Criteria
02/20/2013 10:50	16.3 mg/L	<=250 AO
05/14/2013 11:35	14.8 mg/L	<=250 AO
06/10/2013 11:19	12.8 mg/L	<=250 AO
08/06/2013 09:55	13.1 mg/L	<=250 AO
Nitrate (as N)		
02/20/2013 10:50		0.087 mg/L
05/14/2013 11:35		0.118 mg/L
06/10/2013 11:19		0.109 mg/L
08/06/2013 09:55		0.495 mg/L
Criteria		
Nitrite (as N)		Criteria
02/20/2013 10:50		< 0.010 mg/L
05/14/2013 11:35		< 0.010 mg/L
06/10/2013 11:19		< 0.010 mg/L
08/06/2013 09:55		< 0.010 mg/L
Facility: Well 7 N. Fraser Dr; Well No 7		
Sampling Point: Well 7 N. Fraser Dr (4-2-EP, 94E0)		
Chloride		Criteria
02/20/2013 11:30		7.92 mg/L
05/14/2013 12:05		4.74 mg/L
06/10/2013 13:20		6.32 mg/L
08/06/2013 10:50		9.50 mg/L
Criteria		
		<=250 AO
		<=250 AO
		<=250 AO
		<=250 AO

**2013 Main System Quarterlies**

City of Quesnel

**01/01/2013 to 12/31/2013 (mm/dd/yyyy)**

City of Quesnel – Main System

**Nitrate (as N)****Criteria**

02/20/2013 11:30	0.064 mg/L
05/14/2013 12:05	0.102 mg/L
06/10/2013 13:20	0.165 mg/L
08/06/2013 10:50	0.175 mg/L

**Nitrite (as N)****Criteria**

02/20/2013 11:30	< 0.010 mg/L
05/14/2013 12:05	< 0.010 mg/L
06/10/2013 13:20	< 0.010 mg/L
08/06/2013 10:50	< 0.010 mg/L

**Facility:**

Well 8 Hilborn Rd; Well No 8

**Sampling Point:**

Well 8 Hilborn Rd (5-1-EP, 94E1)

**Chloride****Criteria**

02/20/2013 13:55	3.68 mg/L	<=250	AO
05/14/2013 13:35	2.03 mg/L	<=250	AO
06/10/2013 14:00	3.19 mg/L	<=250	AO
08/06/2013 14:00	1.42 mg/L	<=250	AO

**Nitrate (as N)****Criteria**

02/20/2013 13:55	< 0.010 mg/L
05/14/2013 13:35	< 0.010 mg/L
06/10/2013 14:00	< 0.010 mg/L
08/06/2013 14:00	< 0.010 mg/L

**Nitrite (as N)****Criteria**

02/20/2013 13:55	< 0.010 mg/L
05/14/2013 13:35	< 0.010 mg/L
06/10/2013 14:00	< 0.010 mg/L
08/06/2013 14:00	< 0.010 mg/L

**Facility:**

Well 9 Carson Sub; Well No 9

Report created on 01/08/2014 11:17:48 AM

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## 2013 Main System Quarterlies

City of Quesnel

01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Main System

Sampling Point: Well 9 Carson Sub (6-2-EP, 94DF)

### Chloride

		Criteria	
02/20/2013 13:05	0.49 mg/L	<=250	AO
05/14/2013 11:05	0.47 mg/L	<=250	AO
06/10/2013 15:10	0.45 mg/L	<=250	AO
08/06/2013 11:15	0.57 mg/L	<=250	AO

### Nitrate (as N)

		Criteria	
02/20/2013 13:05	< 0.010 mg/L		
05/14/2013 11:05	< 0.010 mg/L		
06/10/2013 15:10	< 0.010 mg/L		
08/06/2013 11:15	< 0.010 mg/L		

### Nitrite (as N)

		Criteria	
02/20/2013 13:05	< 0.010 mg/L		
05/14/2013 11:05	< 0.010 mg/L		
06/10/2013 15:10	< 0.010 mg/L		
08/06/2013 11:15	< 0.010 mg/L		

### Result Legend:

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## 2013 Small System Quarterlies

City of Quesnel

### 01/01/2013 to 12/31/2013 (mm/dd/yyyy)

City of Quesnel – Small System

Facility: Well A Sword Rd; Well A Sword Rd  
Sampling Point: Well A Sword Rd (1-1-EP, 94ED)

Chloride		Criteria	
02/20/2013 10:20	0.28 mg/L	<=250	AO
05/14/2013 10:40	0.27 mg/L	<=250	AO
06/10/2013 10:40	0.31 mg/L	<=250	AO
08/06/2013 09:20	0.35 mg/L	<=250	AO
Nitrate (as N)		Criteria	
02/20/2013 10:20	0.093 mg/L		
05/14/2013 10:40	0.118 mg/L		
06/10/2013 10:40	0.124 mg/L		
08/06/2013 09:20	0.128 mg/L		
Nitrite (as N)		Criteria	
02/20/2013 10:20	< 0.010 mg/L		
05/14/2013 10:40	< 0.010 mg/L		
06/10/2013 10:40	< 0.010 mg/L		
08/06/2013 09:20	< 0.010 mg/L		

#### Result Legend:

P=present, A=absent, PR=presumptive, ND=non-detect, U=non-detect, OR=over-range, OG=overgrown, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

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» means detected & greater than number shown

\* Indicates Criteria is exceeded

