



# Drinking Water Annual Report

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2018

Joe Law, Utilities Superintendent  
PUBLIC WORKS | 21 JOHNSTON BRIDGE LOOP

## **PURPOSE**

The City of Quesnel annual water report describes the water system and provides a summary of water quality testing results and water management during 2018. The City is required by British Columbia Drinking Water Regulations, Drinking Water Protection Act to create the Water System Annual Report, which is to be presented at Council annually. This ensures accountability to the community for the water service provided.

## **WATER SYSTEM OVERVIEW**

The City of Quesnel water distribution system provides untreated potable water to approximately 10,500 residents, commercial businesses, and the local industry.

The water system is comprised of 6 operating groundwater production wells, 8 reservoirs, 5 booster pump stations, 2 main PRV stations, and approximately 114 km of water main with 457 fire hydrants and 3655 service connections. The City of Quesnel also operates one bulk water delivery site where, for a fee, customers fill their water container with potable water.

Water consumption for the City of Quesnel in 2018 amounted to a total of 2,718,996 cubic meters, which is an increase of 7% from the 2017 total volume.

## **WATER MANAGEMENT**

In the interest of public health and environmental protection, the Environmental Operators Certification Program (EOCP) is named in legislation and is tasked with the responsibility of Classification of Facilities and Certification of Operators to enable the prudent management of water in British Columbia and the Yukon. The EOCP requires that all facilities must have an Operator with certification commensurate with the level of facility classification and that all hands-on Operators must be certified appropriate to their position. The classification level is determined by the size and complexity of the facility. The City of Quesnel water distribution system is classified as a Class 2 system. As Class 2 Water Distribution Operators, City staff are required to possess a minimum of 5400 hours of experience (or 3 year full time), achieve a minimum score of 70% on written examinations and must receive 24 hours of approved training in every two year period to maintain their certification. Operator training is critical to maintaining facility classification and ensures that current industry standards and best practices are being met. Training also provides staff an opportunity to network with other operators over common challenges faced in field operations.

\*Note: In 2019 an EOCP review of facility classifications for the City of Quesnel resulted in a Level III classification of the water system. The experience and training requirements for an operator to receive a Level III certification are:

- Operator Level II Certificate *PLUS*
- 2 years related post-secondary or 90 CEUs *PLUS*
- 4 years operating experience at a Class II facility
- including 2 years Direct Responsible Charge at a Class II facility

Currently, no operators within the City of Quesnel are EOCP certified as Level III Water Distribution operators.

The City of Quesnel maintains a Water System Emergency Response Plan, which is reviewed and updated annually to ensure that standard operating procedures remain applicable and up-to-date.

The SCADA (Supervisory Control and Data Acquisition) monitoring system enables staff to observe real-time data and information related to water system operating conditions, including water well operation and reservoir levels. System operators have the ability to remotely respond to system conditions and demands which reduces equipment failure and increases pumping efficiency.

Water system capital projects in 2018 included:

- Completion of the Pinecrest Reservoir and Pump Station Upgrade
- Pinecrest Water Trunkmain Replacement
- Reid Street/Barlow Ave Waterline Renewal

In total these projects accounted for the replacement of 1.7 km of water main, 41 renewed water service connections, 6 fire hydrants, one water reservoir, and the installation of 3 booster pumps and related piping.

## **WATER MONITORING**

To ensure the delivery of safe drinking water, the City has a program to monitor water quality at the source. The City sends water samples to an approved lab for all sampling points and is notified on results and concerns.

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.

As a minimum, the number of samples to be taken from 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, Ecoli, 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 parameters.

## **WATER QUALITY**

Samples are taken at the start, middle and end of the entire City water distribution system. 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 re-testing 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.

Water sampling in 2018 showed:

- 347 samples tested for Ecoli resulting in zero exceedances
- 347 samples tested for Total Coliform resulting in 8 exceedances with subsequent testing proving negative for total coliforms

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. The 2018 guideline for Canadian Drinking Water Quality aesthetic objective for manganese is 0.05 mg/L. The City of Quesnel wells vary from .014-.59 mg/L.

*\*In May 2019, the GCDWQ updated the parameter regarding Manganese in drinking water. The maximum acceptable concentration (MAC) for total manganese in drinking water is 0.12 mg/L (120 µg/L). The aesthetic objective (AO) for total manganese in drinking water is 0.02 mg/L (20 µg/L). Water System sampling and consultations are currently taking place to determine next steps towards compliance with these new guidelines.*

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 that annually tests 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 connections.

## **CONCLUSION**

The 2018 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: Joe Law, Utilities Superintendent.

## **ATTACHMENTS**

### **Attachment "A"**

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

### **Attachment "B"**

- Water sampling result summary reports for 2018

## **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

SITE	LOCATION	PARAMETERS
<i>BI-WEEKLY (Distribution System)</i>		
<b>FIRST WEEK</b>		
<b>Water Trax Locator #</b>		
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	
35D91K	Carson Pit	
179 CA	Dennis Road	
<b>THIRD WEEK</b>		
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	

**SEMI - ANNUALLY (Distribution System)**  
(first week April & Oct)

94 E5	Mills Rd (94E5)	Parameters: Copper, Zinc, Lead, Iron, Vinyl chloride, Manganese, Temperature
94 FO	Pederson Rd (94F0)	
35D91K	Carson Pit	

<i>ANNUALLY (Wells)</i>		
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):

- Main System Coliform/Ecoli Stats 2018
- Main System Coliform/Ecoli Exceedences 2018
- May Semi-Annual Summary on Main 2018
- November Semi-Annual Summary on Main 2018

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

<b># samples:</b>	347	<b>min:</b>	< 1 CFU/100ml
<b># detects:</b>	0	<b>max:</b>	< 1 CFU/100ml
<b># non-detects:</b>	347	<b>Geometric Mean:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

**Total Coliforms (counts)**

<b># samples:</b>	347	<b>min:</b>	< 1 counts/100ml
<b># detects:</b>	9	<b>max:</b>	3 counts/100ml
<b># non-detects:</b>	338	<b>Geometric Mean:</b>	1 counts/100ml (based on 9 numerical results)
<b># of Exceedences:</b>	8		

**Result Legend:**

P=present, A=absent, PR=presumptive, ND=non-detect, OR=over-range, OG=overgrown, Y=yes, N=no,  
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**

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

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

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

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

**Facility:** Distribution System  
**Sampling Point:** S- Dennis Road (7-14-MD, 179CA)

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

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

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

Total Coliforms (counts)	Criteria		
* 06/19/2018 09:30	1 counts/100ml	<=0, OG, P	User-Defined

<b># samples:</b>	13	<b>min:</b>	< 1 counts/100ml
<b># detects:</b>	1	<b>max:</b>	1 counts/100ml
<b># non-detects:</b>	12	<b>Geometric Mean:</b>	1 counts/100ml (based on 1 numerical results)
<b># of Exceedences:</b>	1		

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

**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)

<b>Total Coliforms (counts)</b>		<b>Criteria</b>	
* 08/29/2018 11:55	<b>3 counts/100ml</b>	<b>&lt;=0, OG, P</b>	<b>User-Defined</b>

<b># samples:</b>	14	<b>min:</b>	< 1 counts/100ml
<b># detects:</b>	1	<b>max:</b>	3 counts/100ml
<b># non-detects:</b>	13	<b>Geometric Mean:</b>	3 counts/100ml (based on 1 numerical results)
<b># of Exceedences:</b>	1		

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

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

**Facility:** Distribution System  
**Sampling Point:** S-Carson Pit (7-16-MR, 35D91)

<b>Total Coliforms (counts)</b>		<b>Criteria</b>	
* 01/30/2018 13:48	<b>1 counts/100ml</b>	<b>&lt;=0, OG, P</b>	<b>User-Defined</b>
* 02/14/2018 13:05	<b>1 counts/100ml</b>	<b>&lt;=0, OG, P</b>	<b>User-Defined</b>
* 09/10/2018 15:30	<b>1 counts/100ml</b>	<b>&lt;=0, OG, P</b>	<b>User-Defined</b>

<b># samples:</b>	16	<b>min:</b>	< 1 counts/100ml
<b># detects:</b>	3	<b>max:</b>	1 counts/100ml
<b># non-detects:</b>	13	<b>Geometric Mean:</b>	1 counts/100ml (based on 3 numerical results)
<b># of Exceedences:</b>	3		

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

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



Total Coliforms (counts)		Criteria	
* 10/24/2018 11:50	1 counts/100ml	<=0, OG, P	User-Defined

# samples:	13	min:	< 1 counts/100ml
# detects:	1	max:	1 counts/100ml
# non-detects:	12	Geometric Mean:	1 counts/100ml (based on 1 numerical results)
# of Exceedences:	1		

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

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

Total Coliforms (counts)		Criteria	
* 06/12/2018 11:20	1 counts/100ml	<=0, OG, P	User-Defined

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

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)

Total Coliforms (counts)		Criteria	
* 06/12/2018 09:50	1 counts/100ml	<=0, OG, P	User-Defined

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

**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)

**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, OR=over-range, OG=overgrown, Y=yes, N=no,  
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



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

**Copper (total)** **Criteria**  
 05/23/2018 09:40 0.00622 mg/L <=1.0 AO

**# samples:** 1 **min:** 0.00622 mg/L  
**# detects:** 1 **max:** 0.00622 mg/L  
**# non-detects:** 0 **avg:** 0.00622 mg/L (based on 1 numerical results)  
**# of Exceedences:** 0

**Iron (total)** **Criteria**  
 05/23/2018 09:40 < 0.010 mg/L <=0.3 AO

**# samples:** 1 **min:** < 0.010 mg/L  
**# detects:** 0 **max:** < 0.010 mg/L  
**# non-detects:** 1 **avg:** n/a (based on 0 numerical results)  
**# of Exceedences:** 0

**Lead (total)** **Criteria**  
 05/23/2018 09:40 0.00028 mg/L <=0.005 MAC

**# samples:** 1 **min:** 0.00028 mg/L  
**# detects:** 1 **max:** 0.00028 mg/L  
**# non-detects:** 0 **avg:** 0.00028 mg/L (based on 1 numerical results)  
**# of Exceedences:** 0

**Manganese (total)** **Criteria**  
 05/23/2018 09:40 0.00567 mg/L <=0.05 AO

**# samples:** 1 **min:** 0.00567 mg/L  
**# detects:** 1 **max:** 0.00567 mg/L  
**# non-detects:** 0 **avg:** 0.00567 mg/L (based on 1 numerical results)  
**# of Exceedences:** 0

**Vinyl chloride** **Criteria**  
 05/23/2018 09:40 < 0.0010 mg/L <=0.002 MAC

**# samples:** 1 **min:** < 0.0010 mg/L  
**# detects:** 0 **max:** < 0.0010 mg/L  
**# non-detects:** 1 **avg:** n/a (based on 0 numerical results)  
**# of Exceedences:** 0



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

05/23/2018 09:40 < 0.0040 mg/L <=5 AO

<b># samples:</b>	1	<b>min:</b>	< 0.0040 mg/L
<b># detects:</b>	0	<b>max:</b>	< 0.0040 mg/L
<b># non-detects:</b>	1	<b>avg:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

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

**Copper (total)** **Criteria**

05/23/2018 10:30 0.00339 mg/L <=1.0 AO

<b># samples:</b>	1	<b>min:</b>	0.00339 mg/L
<b># detects:</b>	1	<b>max:</b>	0.00339 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.00339 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		

**Iron (total)** **Criteria**

05/23/2018 10:30 < 0.010 mg/L <=0.3 AO

<b># samples:</b>	1	<b>min:</b>	< 0.010 mg/L
<b># detects:</b>	0	<b>max:</b>	< 0.010 mg/L
<b># non-detects:</b>	1	<b>avg:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

**Lead (total)** **Criteria**

05/23/2018 10:30 0.00059 mg/L <=0.005 MAC

<b># samples:</b>	1	<b>min:</b>	0.00059 mg/L
<b># detects:</b>	1	<b>max:</b>	0.00059 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.00059 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		

**Manganese (total)** **Criteria**

05/23/2018 10:30 0.00343 mg/L <=0.05 AO

<b># samples:</b>	1	<b>min:</b>	0.00343 mg/L
<b># detects:</b>	1	<b>max:</b>	0.00343 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.00343 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		



**Vinyl chloride** **Criteria**

05/23/2018 10:30 < 0.0010 mg/L <=0.002 MAC

# samples:	1	min:	< 0.0010 mg/L
# detects:	0	max:	< 0.0010 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		

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

05/23/2018 10:30 < 0.0040 mg/L <=5 AO

# samples:	1	min:	< 0.0040 mg/L
# detects:	0	max:	< 0.0040 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		

**Facility:** Distribution System  
**Sampling Point:** S-Carson Pit (7-16-MR, 35D91)

**Copper (total)** **Criteria**

05/23/2018 15:00 0.00072 mg/L <=1.0 AO

# samples:	1	min:	0.00072 mg/L
# detects:	1	max:	0.00072 mg/L
# non-detects:	0	avg:	0.00072 mg/L (based on 1 numerical results)
# of Exceedences:	0		

**Iron (total)** **Criteria**

05/23/2018 15:00 < 0.010 mg/L <=0.3 AO

# samples:	1	min:	< 0.010 mg/L
# detects:	0	max:	< 0.010 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		

**Lead (total)** **Criteria**

05/23/2018 15:00 < 0.00020 mg/L <=0.005 MAC

# samples:	1	min:	< 0.00020 mg/L
# detects:	0	max:	< 0.00020 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		



**Manganese (total)** **Criteria**

\* 05/23/2018 15:00      0.0763 mg/L      <=0.05      AO

# samples:	1	min:	0.0763 mg/L
# detects:	1	max:	0.0763 mg/L
# non-detects:	0	avg:	0.0763 mg/L (based on 1 numerical results)
# of Exceedences:	1		

**Vinyl chloride** **Criteria**

05/23/2018 15:00      < 0.0010 mg/L      <=0.002      MAC

# samples:	1	min:	< 0.0010 mg/L
# detects:	0	max:	< 0.0010 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		

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

05/23/2018 15:00      < 0.0040 mg/L      <=5      AO

# samples:	1	min:	< 0.0040 mg/L
# detects:	0	max:	< 0.0040 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, OR=over-range, OG=overgrown, Y=yes, N=no,  
 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



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

**Copper (total)** **Criteria**  
 11/07/2018 10:50 0.00608 mg/L <=1.0 AO

**# samples:** 1 **min:** 0.00608 mg/L  
**# detects:** 1 **max:** 0.00608 mg/L  
**# non-detects:** 0 **avg:** 0.00608 mg/L (based on 1 numerical results)  
**# of Exceedences:** 0

**Iron (total)** **Criteria**  
 11/07/2018 10:50 < 0.010 mg/L <=0.3 AO

**# samples:** 1 **min:** < 0.010 mg/L  
**# detects:** 0 **max:** < 0.010 mg/L  
**# non-detects:** 1 **avg:** n/a (based on 0 numerical results)  
**# of Exceedences:** 0

**Lead (total)** **Criteria**  
 11/07/2018 10:50 0.00024 mg/L <=0.005 MAC

**# samples:** 1 **min:** 0.00024 mg/L  
**# detects:** 1 **max:** 0.00024 mg/L  
**# non-detects:** 0 **avg:** 0.00024 mg/L (based on 1 numerical results)  
**# of Exceedences:** 0

**Manganese (total)** **Criteria**  
 11/07/2018 10:50 0.00233 mg/L <=0.05 AO

**# samples:** 1 **min:** 0.00233 mg/L  
**# detects:** 1 **max:** 0.00233 mg/L  
**# non-detects:** 0 **avg:** 0.00233 mg/L (based on 1 numerical results)  
**# of Exceedences:** 0

**Vinyl chloride** **Criteria**  
 11/07/2018 10:50 < 0.0010 mg/L <=0.002 MAC

**# samples:** 1 **min:** < 0.0010 mg/L  
**# detects:** 0 **max:** < 0.0010 mg/L  
**# non-detects:** 1 **avg:** n/a (based on 0 numerical results)  
**# of Exceedences:** 0



**Zinc (total) Criteria**

11/07/2018 10:50 < 0.0040 mg/L <=5 AO

# samples:	1	min:	< 0.0040 mg/L
# detects:	0	max:	< 0.0040 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		

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

**Copper (total) Criteria**

11/07/2018 14:20 0.00559 mg/L <=1.0 AO

# samples:	1	min:	0.00559 mg/L
# detects:	1	max:	0.00559 mg/L
# non-detects:	0	avg:	0.00559 mg/L (based on 1 numerical results)
# of Exceedences:	0		

**Iron (total) Criteria**

11/07/2018 14:20 < 0.010 mg/L <=0.3 AO

# samples:	1	min:	< 0.010 mg/L
# detects:	0	max:	< 0.010 mg/L
# non-detects:	1	avg:	n/a (based on 0 numerical results)
# of Exceedences:	0		

**Lead (total) Criteria**

11/07/2018 14:20 0.00022 mg/L <=0.005 MAC

# samples:	1	min:	0.00022 mg/L
# detects:	1	max:	0.00022 mg/L
# non-detects:	0	avg:	0.00022 mg/L (based on 1 numerical results)
# of Exceedences:	0		

**Manganese (total) Criteria**

11/07/2018 14:20 0.00808 mg/L <=0.05 AO

# samples:	1	min:	0.00808 mg/L
# detects:	1	max:	0.00808 mg/L
# non-detects:	0	avg:	0.00808 mg/L (based on 1 numerical results)
# of Exceedences:	0		



**Vinyl chloride** **Criteria**

11/07/2018 14:20 < 0.0010 mg/L <=0.002 MAC

<b># samples:</b>	1	<b>min:</b>	< 0.0010 mg/L
<b># detects:</b>	0	<b>max:</b>	< 0.0010 mg/L
<b># non-detects:</b>	1	<b>avg:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

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

11/07/2018 14:20 < 0.0040 mg/L <=5 AO

<b># samples:</b>	1	<b>min:</b>	< 0.0040 mg/L
<b># detects:</b>	0	<b>max:</b>	< 0.0040 mg/L
<b># non-detects:</b>	1	<b>avg:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

**Facility:** Distribution System  
**Sampling Point:** S-Carson Pit (7-16-MR, 35D91)

**Copper (total)** **Criteria**

11/07/2018 11:30 0.00359 mg/L <=1.0 AO

<b># samples:</b>	1	<b>min:</b>	0.00359 mg/L
<b># detects:</b>	1	<b>max:</b>	0.00359 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.00359 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		

**Iron (total)** **Criteria**

11/07/2018 11:30 < 0.010 mg/L <=0.3 AO

<b># samples:</b>	1	<b>min:</b>	< 0.010 mg/L
<b># detects:</b>	0	<b>max:</b>	< 0.010 mg/L
<b># non-detects:</b>	1	<b>avg:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

**Lead (total)** **Criteria**

11/07/2018 11:30 0.00058 mg/L <=0.005 MAC

<b># samples:</b>	1	<b>min:</b>	0.00058 mg/L
<b># detects:</b>	1	<b>max:</b>	0.00058 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.00058 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		



<b>Manganese (total)</b>		<b>Criteria</b>	
11/07/2018 11:30	0.0383 mg/L	<=0.05	AO

<b># samples:</b>	1	<b>min:</b>	0.0383 mg/L
<b># detects:</b>	1	<b>max:</b>	0.0383 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.0383 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		

<b>Vinyl chloride</b>		<b>Criteria</b>	
11/07/2018 11:30	< 0.0010 mg/L	<=0.002	MAC

<b># samples:</b>	1	<b>min:</b>	< 0.0010 mg/L
<b># detects:</b>	0	<b>max:</b>	< 0.0010 mg/L
<b># non-detects:</b>	1	<b>avg:</b>	n/a (based on 0 numerical results)
<b># of Exceedences:</b>	0		

<b>Zinc (total)</b>		<b>Criteria</b>	
11/07/2018 11:30	0.0140 mg/L	<=5	AO

<b># samples:</b>	1	<b>min:</b>	0.0140 mg/L
<b># detects:</b>	1	<b>max:</b>	0.0140 mg/L
<b># non-detects:</b>	0	<b>avg:</b>	0.0140 mg/L (based on 1 numerical results)
<b># of Exceedences:</b>	0		

**Result Legend:**

P=present, A=absent, PR=presumptive, ND=non-detect, OR=over-range, OG=overgrown, Y=yes, N=no,  
 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

