

January 14, 2014

Aurora Airport Water Control District  
c/o Bruce Bennett  
22785 Airport Road NE  
Aurora, Oregon 97002

RE: ARSENIC LEVELS IN AIRPORT DRINKING WATER

Businesses at Aurora State Airport are finding significant problems with hazardous arsenic in their potable well water. Some of the wells are having tests significantly over the Environmental Protection Agency's standard of 0.010 mg/l. Other wells are currently somewhat below that standard but may be rising and going above the standard in the future. There are also differences in opinion about what safe levels are, with at least one standard being 0.005 mg/l which would result in more of the wells being out of compliance.

It is recommended that the airport businesses be allowed to connect to the City of Aurora water system, which has arsenic filters and will ensure that safe drinking water is available for all airport businesses in the future. There is not extensive data on arsenic levels in the various airport wells, but an email was sent out to airport businesses with a request for well data on arsenic and the following data was received:

The attached well test data shows that there is a variety of arsenic contamination levels in seven of the wells for which data could be received. It is noted that arsenic levels vary by season or use, and thus this limited data is likely not the worst case for each well.

Water test data is as follows:

1. Aurora Jet Center well, 14357 Keil Road NE, Aurora; May 22, 2013; Test Result 0.0124 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 24% above EPA health hazard limit.
2. Aurora Jet Center well, 14357 Keil Road NE, Aurora; March 30, 2011; Test Result 0.0136 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 36% above EPA health hazard limit.
3. Whiskey Hangar well, 14399 Keil Road NE, Aurora; May 22, 2013; Test Result 0.0082 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 18% below EPA health hazard limit.
4. Van's Aircraft well, 14401 Keil Road NE, Aurora; message from Shiloh Water Systems; Test Result 0.015 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 50% above EPA health hazard limit.
5. Columbia Helicopters well, 14452 Arndt Road NE, Aurora; November 12, 2013; message from Dan Riches at Columbia Helicopters; Test Result 0.008 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 20% below EPA health hazard limit.
6. Wylee Condominium Hangars, 23055 Airport Rd NE, Aurora; November 8, 2013; Test Result 0.0067 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 33% below EPA health hazard limit.
7. Oregon Department of Aviation well, Airport Rd NE, Aurora; November 8, 2013; Test Result 0.002 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 80% below EPA health hazard limit.
8. Aurora Airport Condo Association well, 14338 Stenbock Way, Aurora; September 21, 2012; Test Result 0.0017 mg/l arsenic; EPA limit 0.010 mg/l arsenic; 83% below EPA health hazard limit.

This data shows that there is some arsenic in all of these seven airport wells. Some are as much as 50% above the EPA health hazard limit, while others are currently below that limit. This region of Oregon is known for having arsenic in the water, and thus the City of Aurora has invested in a major decontamination system to remove the arsenic from their well water. Given that some of the airport wells are over the limit, it is wise from a health standpoint to initiate plans for safer water for all airport users. Since the City of Aurora water system already has an arsenic decontamination filter system, it will be most efficient to have the airport water in the future come from that system that is already in place.

Testing agencies have stated that the arsenic levels can change between seasons, and these tests are of single days with no significant greater history, so there can be some expectation that these test levels are not worst case tests for each well. The Aurora Jet Center well, for example, was 24% above EPA levels on May 22, 2013 but was 36% above EPA levels two years prior. This demonstrates that there can be significant variability in the arsenic levels in the well water depending on unknown factors - perhaps season or recent amount of use.

Some environmental quality departments support a more restrictive level of arsenic contamination in drinking water than EPA does. For example the State of New Jersey has adopted a health hazard limit at 0.005 mg/l which is 50% of the EPA level (see attached brochure from the New Jersey Department of Environmental Protection). At that safety level five of the seven airport wells would already be considered unacceptable.

A connection of the Aurora Airport Water Control District system to the City of Aurora water system will also allow for increased water capacity for firefighting purposes. The current airport water system has a total tank capacity of 248,000 gallons, which allows for the Oregon Fire Code minimum standard pumping rate of 1500 gallons per minute for 2 hours. The installation of that system was a great improvement over the prior complete lack of any fire protection water at the airport. Hooking up to the City of Aurora system will in the future allow for increasing this fire flow to higher levels such as 3750 gpm for 3 hours which is a more appropriate flow under the standards of the Oregon Fire Code for many of the airport hangars and businesses.

This report has been prepared at the request of the Aurora Airport Water Control District by Aron Faegre, Civil Engineer.

Respectfully submitted,

A handwritten signature in blue ink that reads "Aron Faegre". The signature is written in a cursive, flowing style.

Aron Faegre, PE

attachments: well test reports, NJDEP arsenic standards

## TEST REPORT

Shiloh Water Systems  
5942 Towne Dr NE  
Silverton, OR 97381

### SAMPLE INFORMATION

Location: Jet Center

Date Sampled: 05/22/2013

Time Sampled: 1000

Sample Type: Water

Collected by: Mike

### CASE NARRATIVE

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

### TESTING INFORMATION

Lab #: 20130522-038

Date Received: 05/22/2013

Date Started: 05/22/2013

Date Read: 05/23/2013

Date Reported: 05/28/2013

\*Chlorine Residual: N/A

Time Received: 1352

Time Started: 1615

Time Read: 1645

Received by: MH

Tech: JW

Tech: JW

Reported By: JW

Amount of Sample Used: 100 mls

Method Code: SM 20th ED 9223 P/A Colisure ®

### TOTAL COLIFORM BACTERIA RESULTS

Analysis shows Total Coliform Bacteria to be:

**ABSENT**

Absent= Acceptable

Present= Unacceptable

### E. COLI COLIFORM BACTERIA RESULTS

Analysis shows E. coli Bacteria to be:

**ABSENT**

E. coli is a sub-section of Total Coliform and its presence in water indicates that raw sewage is present in the water.

Explanation: When coliform bacteria are present in water, it is considered contaminated and therefore unsafe. Coliform organisms are found normally in discharges from the intestinal tract of man, animals or birds. Their presence in the water, therefore, must be considered as evidence of pollution. The laboratory examination determines the presence or absence of contamination at the time of sampling only. No definite conclusions should be drawn from a single bacterial examination.

\* Chlorine Footnote: Chlorine in water will kill coliform bacteria. Presence of chlorine in a water sample should invalidate the test unless the water is from a system that is continuously chlorinated every day the water is in use.

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full without written approval of Waterlab Corporation.

Approved by: \_\_\_\_\_



## TEST REPORT

TO: **Shiloh Water Systems**  
**5942 Towne Dr NE**  
**Silverton, OR 97381**

06/14/2013  
  
 SHIWAT

PO#:

### Collection Information

Date: 05/22/2013  
 Time: 1000  
 By: Mike  
 Lab #: 20130522-039  
 Location: Jet Center

### Lab Receipt Information

05/22/2013  
 1352  
 MH

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Method	Acc*	Results	Qual	MRL	Units	EPA Limit	Analysis Date Time	Tech
Healthy Water Package									
pH	EPA 150.1	A	7.42	H		pH units	6.5 - 8.5	05/22/2013	1557 MC
Specific Conductance	SM2510B	A	266.		1.	umhos/cm		05/22/2013	MC
Arsenic	SM3113B	A	0.0124		0.002	mg/l	0.010	05/29/2013	BEM
Chloride	EPA300.0	A	3.54		0.2	mg/l	250	05/23/2013	BEM
Copper	SM3111 B	A	ND		0.1	mg/l	1.0	06/05/2013	BEM
Fluoride	EPA300.0	A	ND		0.2	mg/l	4.0	05/23/2013	BEM
Hardness as CaCO3	SM2340C	A	ND		10.	mg/l CaCO3	250	06/04/2013	MC

ND- No Detection at @ MRL  
 SM-"Standard Methods for the Examination of Water & Wastewater", 19th ed  
 EPA- "Methods for Chemical Analysis for Water and Wastes", USEPA  
 MRL-"Method Reporting Limit"  
 \* Accreditation  
 A- Waterlab Corporation, ORELAP 100039

The results relate only to the parameters tested or to the sample as received by the laboratory.  
 This report shall not be reproduced except in full, without the written approval of Waterlab Corporation.  
 H = Analysis performed outside of method specified holding time

Approved by: \_\_\_\_\_



## TEST REPORT

LAB #: 20130522-039 (Cont) SHIWAT Page: 2

Analyte	Method	Acc Results	Qual	MRL	Units	EPA Limit	Analysis Date	Tech
Iron	SM3111B	A ND		0.1	mg/l	0.3	06/03/2013	MC
Lead	SM3113 B	A ND		0.002	mg/l	0.015	05/24/2013	BEM
Manganese	SM3111B	A ND		0.01	mg/l	0.05	06/10/2013	MC
Nitrogen, Nitrate	EPA300.0	A ND		0.2	mg/l N	10.	05/23/2013	1825 BEM
Sodium	SM3111B	A 70.6		1.0	mg/l	25.	06/11/2013	MC
Sulfate	EPA300.0	A ND		1.5	mg/l	250	06/11/2013	BEM
Zinc	SM3111 B	A ND		0.1	mg/l	5.0	06/05/2013	MC

ND- No Detection at @ MRL

SM-"Standard Methods for the Examination of Water & Wastewater", 19th ed

EPA- "Methods for Chemical Analysis for Water and Wastes", USEPA

MRL-"Method Reporting Limit"

\* Accreditation

A- Waterlab Corporation, ORELAP 100039

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H = Analysis performed outside of method specified holding time

Approved by: \_\_\_\_\_



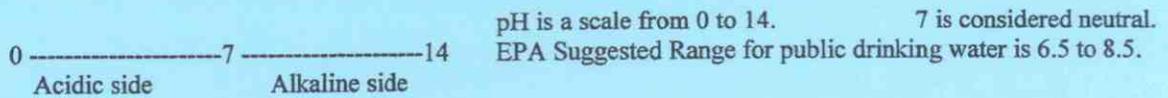
## Summary of Healthy Water Test Report

In a nutshell, here's what we found and didn't find:

Lab Report #: 20130522-37

### Your water's pH indicates:

- Average water                       Alkaline water due to hardness  
 Acidic water                               Alkaline water due to elevated sodium (salt) content



### Your water is:

- Soft water (low in dissolved minerals)  
 Average well water, dissolved solids due to \_\_\_ hardness  sodium compounds  
 High solids well water, \_\_\_ hardness \_\_\_ sodium compounds  
 Extremely high solids well water, \_\_\_ hardness \_\_\_ sodium compounds

	No Detection At Lab Reporting Limit	Measurable Amount Present	Exceeds EPA Drinking Water Standard for Salt-restricted Diets	Exceeds EPA Drinking Water Standards
<del>Arsenic</del>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Chloride	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Copper -1st run	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Copper - after run	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Fluoride	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Hardness	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Iron	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Lead - 1st run	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Lead - after run	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Manganese	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Nitrate-Nitrogen	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<del>Sodium</del>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sulfate	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Zinc - 1st run	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Zinc - after run	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

See Healthy Water Guide included here for additional information on individual tests.

## TEST REPORT

TO: Shiloh Water Systems  
5942 Towne Dr., N. E.  
Silverton, OR 97381

04/05/2011

SHIWAT

PO#:

### Collection Information

Date: 03/30/2011  
Time: 0945  
By: David  
Lab #: 20110330-041  
Location: Jet Center outsidetap

### Lab Receipt Information

03/30/2011  
1234  
RS

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Method	Acc Results	Qual	MRL	Units	EPA Limit	Analysis	
							Date	Tech
Arsenic, Nitrate								
Arsenic	SM3113B	A 0.0136		0.002	mg/l	0.010	04/05/2011	BEM
Nitrogen, Nitrate	EPA300.0	A 0.20		0.2	mg/l N	10.	03/31/2011	1252 BEM

ND- No Detection at @ MRL  
SM-"Standard Methods for the Examination of Water & Wastewater", 19th ed  
EPA- "Methods for Chemical Analysis for Water and Wastes", USEPA  
MRL-"Method Reporting Limit"  
A- Waterlab Corporation, ORELAP 100039

The results relate only to the parameters tested or to the sample as received by the laboratory.  
This report shall not be reproduced except in full, without the written approval of Waterlab Corporation.

Approved by: \_\_\_\_\_



# Shiloh Water Systems, Inc.

## Water Quality Analysis

Well #3

Date Sample Was Taken: \_\_\_\_\_

Well AT UANS

Customer Name \_\_\_\_\_

AIRCRAFT

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Water Source \_\_\_\_\_

Gallons Per Minute \_\_\_\_\_

Incoming Pipe Size \_\_\_\_\_

# of People in Family \_\_\_\_\_

Sample Clarity: \_\_\_\_\_ Clear

\_\_\_\_\_ Cloudy \_\_\_\_\_ Colored

Odor: \_\_\_\_\_ Musty

\_\_\_\_\_ Metallic \_\_\_\_\_ Rotten Eggs

Staining: \_\_\_\_\_ Red

\_\_\_\_\_ Blue/Green \_\_\_\_\_ Black/Brown

Visible Particles: \_\_\_\_\_ Sand

\_\_\_\_\_ Silt/Mud \_\_\_\_\_ Other

### Analysis Results

Hardness	4	gpg	Wastes soap, forms scale, clogs hot water heater and pipes 0-3gpg soft, 3-6gpg moderately hard, 6-9gpg hard water 9+gpg extremely hard (1 gpg = 17.1 ppm)
Iron	1.5	ppm	The E.P.A recommends under 0.3 ppm. Over 0.3 ppm may cause red staining on plumbing fixtures and clothes.
pH	7		7.0 indicates neutral water, under 7.0 is acid, over 7.0 is alkaline, 6.8 or under is corrosive to fixtures and piping.
Manganese		ppm	The E.P.A. recommends under .05 ppm. Over .05 ppm can cause brown/black stains on plumbing fixtures and clothes.
Sulphur		ppm	Rotten egg odor, corrodes pipes. Causes blackish stains on plumbing fixtures and clothes.
Total Dissolved Solids	280	ppm	Total of minerals dissolved in water.
Other	10 ppb Arsenic		

Recommendations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Shiloh Water Systems, Inc.

## Water Quality Analysis

Date Sample Was Taken: \_\_\_\_\_

Customer Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

well #7  
Jet center

Water Source \_\_\_\_\_

Gallons Per Minute \_\_\_\_\_

Incoming Pipe Size \_\_\_\_\_

# of People in Family \_\_\_\_\_

Sample Clarity: \_\_\_\_\_ Clear

\_\_\_\_\_ Cloudy \_\_\_\_\_ Colored

Odor: \_\_\_\_\_ Musty

\_\_\_\_\_ Metallic \_\_\_\_\_ Rotten Eggs

Staining: \_\_\_\_\_ Red

\_\_\_\_\_ Blue/Green \_\_\_\_\_ Black/Brown

Visible Particles: \_\_\_\_\_ Sand

\_\_\_\_\_ Silt/Mud \_\_\_\_\_ Other

### Analysis Results

Hardness 5 gpg

Wastes soap, forms scale, clogs hot water heater and pipes  
0-3gpg soft, 3-6gpg moderately hard, 6-9gpg hard water  
9+gpg extremely hard (1 gpg = 17.1 ppm)

Iron 0.5 ppm

The E.P.A recommends under 0.3 ppm. Over 0.3 ppm may cause red staining on plumbing fixtures and clothes.

pH 7

7.0 indicates neutral water, under 7.0 is acid, over 7.0 is alkaline, 6.8 or under is corrosive to fixtures and piping.

Manganese \_\_\_\_\_ ppm

The E.P.A. recommends under .05 ppm. Over .05 ppm can cause brown/black stains on plumbing fixtures and clothes.

Sulphur \_\_\_\_\_ ppm

Rotten egg odor, corrodes pipes. Causes blackish stains on plumbing fixtures and clothes.

Total Dissolved Solids 310 ppm

Total of minerals dissolved in water.

Other 10 ppb Arsenic

Recommendations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Shiloh Water Systems, Inc.**

5942 Towne Dr. NE -- Silverton, OR 97381

Phone: 503-873-3237 – Fax: 503-873-3223 – Toll Free: 1-866-873-1110

**Shiloh Water Systems, Inc.**  
**Water Quality Analysis**

Well #2

Wiskshy Hangar

Date Sample Was Taken: \_\_\_\_\_

Customer Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Water Source \_\_\_\_\_

Gallons Per Minute \_\_\_\_\_

Incoming Pipe Size \_\_\_\_\_

# of People in Family \_\_\_\_\_

Sample Clarity: \_\_\_\_\_ Clear

\_\_\_\_\_ Cloudy \_\_\_\_\_ Colored

Odor: \_\_\_\_\_ Musty

\_\_\_\_\_ Metallic \_\_\_\_\_ Rotten Eggs

Staining: \_\_\_\_\_ Red

\_\_\_\_\_ Blue/Green \_\_\_\_\_ Black/Brown

Visible Particles: \_\_\_\_\_ Sand

\_\_\_\_\_ Silt/Mud \_\_\_\_\_ Other

**Analysis Results**

Hardness 5 gpg

Wastes soap, forms scale, clogs hot water heater and pipes  
0-3gpg soft, 3-6gpg moderately hard, 6-9gpg hard water  
9+gpg extremely hard (1 gpg = 17.1 ppm)

Iron 0.5 ppm

The E.P.A recommends under 0.3 ppm. Over 0.3 ppm may cause red staining on plumbing fixtures and clothes.

pH 7

7.0 indicates neutral water, under 7.0 is acid, over 7.0 is alkaline, 6.8 or under is corrosive to fixtures and piping.

Manganese \_\_\_\_\_ ppm

The E.P.A. recommends under .05 ppm. Over .05 ppm can cause brown/black stains on plumbing fixtures and clothes.

Sulphur \_\_\_\_\_ ppm

Rotten egg odor, corrodes pipes. Causes blackish stains on plumbing fixtures and clothes.

Total Dissolved Solids 310 ppm

Total of minerals dissolved in water.

Other Arsenic Yes

Recommendations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Shiloh Water Systems, Inc.**

5942 Towne Dr. NE -- Silverton, OR 97381

Phone: 503-873-3237 - Fax: 503-873-3223 - Toll Free: 1-866-873-1110

# Shiloh Water Systems, Inc.

## Water Quality Analysis

1341

Date Sample Was Taken: \_\_\_\_\_

Customer Name Whiskey Hanger Well #2

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Water Source \_\_\_\_\_

Gallons Per Minute \_\_\_\_\_

Incoming Pipe Size \_\_\_\_\_

# of People in Family \_\_\_\_\_

Sample Clarity: \_\_\_\_\_ Clear

\_\_\_\_\_ Cloudy \_\_\_\_\_ Colored

Odor: \_\_\_\_\_ Musty

\_\_\_\_\_ Metallic \_\_\_\_\_ Rotten Eggs

Staining: \_\_\_\_\_ Red

\_\_\_\_\_ Blue/Green \_\_\_\_\_ Black/Brown

Visible Particles: \_\_\_\_\_ Sand

\_\_\_\_\_ Silt/Mud \_\_\_\_\_ Other

### Analysis Results

Hardness \_\_\_\_\_ gpg

Wastes soap, forms scale, clogs hot water heater and pipes  
0-3gpg soft, 3-6gpg moderately hard, 6-9gpg hard water  
9+gpg extremely hard (1 gpg = 17.1 ppm)

Iron \_\_\_\_\_ ppm

The E.P.A recommends under 0.3 ppm. Over 0.3 ppm may cause  
red staining on plumbing fixtures and clothes.

pH \_\_\_\_\_

7.0 indicates neutral water, under 7.0 is acid, over 7.0 is alkaline,  
6.8 or under is corrosive to fixtures and piping.

Manganese \_\_\_\_\_ ppm

The E.P.A. recommends under .05 ppm. Over .05 ppm can cause  
brown/black stains on plumbing fixtures and clothes.

Sulphur \_\_\_\_\_ ppm

Rotten egg odor, corrodes pipes. Causes blackish stains on  
plumbing fixtures and clothes.

Total Dissolved Solids \_\_\_\_\_ ppm

Total of minerals dissolved in water.

Other 10 ppb Arsenic

Recommendations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Shiloh Water Systems, Inc.

5942 Towne Dr. NE -- Silvertown, OR 97381

Phone: 503-873-3237 -- Fax: 503-873-3223 -- Toll Free: 1-866-873-1110

# Shiloh Water Systems, Inc. Water Quality Analysis

Date Sample Was Taken: \_\_\_\_\_

Customer Name vans Aircraft well #3

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Water Source \_\_\_\_\_  
Incoming Pipe Size \_\_\_\_\_

Gallons Per Minute \_\_\_\_\_  
# of People in Family \_\_\_\_\_

Sample Clarity:	_____ Clear	_____ Cloudy	_____ Colored
Odor:	_____ Musty	_____ Metallic	_____ Rotten Eggs
Staining:	_____ Red	_____ Blue/Green	_____ Black/Brown
Visible Particles:	_____ Sand	_____ Silt/Mud	_____ Other

## Analysis Results

Hardness \_\_\_\_\_ gpg Wastes soap, forms scale, clogs hot water heater and pipes  
0-3gpg soft, 3-6gpg moderately hard, 6-9gpg hard water  
9+gpg extremely hard (1 gpg = 17.1 ppm)

Iron \_\_\_\_\_ ppm The E.P.A recommends under 0.3 ppm. Over 0.3 ppm may cause  
red staining on plumbing fixtures and clothes.

pH \_\_\_\_\_ 7.0 indicates neutral water, under 7.0 is acid, over 7.0 is alkaline,  
6.8 or under is corrosive to fixtures and piping.

Manganese \_\_\_\_\_ ppm The E.P.A. recommends under .05 ppm. Over .05 ppm can cause  
brown/black stains on plumbing fixtures and clothes.

Sulphur \_\_\_\_\_ ppm Rotten egg odor, corrodes pipes. Causes blackish stains on  
plumbing fixtures and clothes.

Total Dissolved Solids \_\_\_\_\_ ppm Total of minerals dissolved in water.

Other 15 ppb Arsenic

Recommendations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1346  
5

# Shiloh Water Systems, Inc. Water Quality Analysis

Date Sample Was Taken: \_\_\_\_\_

Customer Name Jet Center Well #2

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Water Source \_\_\_\_\_  
Incoming Pipe Size \_\_\_\_\_

Gallons Per Minute \_\_\_\_\_  
# of People in Family \_\_\_\_\_

Sample Clarity:	_____ Clear	_____ Cloudy	_____ Colored
Odor:	_____ Musty	_____ Metallic	_____ Rotten Eggs
Staining:	_____ Red	_____ Blue/Green	_____ Black/Brown
Visible Particles:	_____ Sand	_____ Silt/Mud	_____ Other

## Analysis Results

Hardness	_____ gpg	Wastes soap, forms scale, clogs hot water heater and pipes 0-3gpg soft, 3-6gpg moderately hard, 6-9gpg hard water 9+gpg extremely hard (1 gpg = 17.1 ppm)
Iron	_____ ppm	The E.P.A recommends under 0.3 ppm. Over 0.3 ppm may cause red staining on plumbing fixtures and clothes.
pH	_____	7.0 indicates neutral water, under 7.0 is acid, over 7.0 is alkaline, 6.8 or under is corrosive to fixtures and piping.
Manganese	_____ ppm	The E.P.A. recommends under .05 ppm. Over .05 ppm can cause brown/black stains on plumbing fixtures and clothes.
Sulphur	_____ ppm	Rotten egg odor, corrodes pipes. Causes blackish stains on plumbing fixtures and clothes.
Total Dissolved Solids	_____ ppm	Total of minerals dissolved in water.
Other	<u>10ppb Arsenic</u>	

Recommendations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## TEST REPORT

Shiloh Water Systems  
5942 Towne Dr NE  
Silverton, OR 97381

### SAMPLE INFORMATION

Location: 14399 Whiskey - Hanger outside tap  
Date Sampled: 05/22/2013 Sample Type: Water  
Time Sampled: 1100 Collected by: Mike

### CASE NARRATIVE

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

### TESTING INFORMATION

Lab #: 20130522-040  
Date Received: 05/22/2013 Time Received: 1352 Received by: MH  
Date Started: 05/22/2013 Time Started: 1615 Tech: JW  
Date Read: 05/23/2013 Time Read: 1645 Tech: JW  
Date Reported: 05/28/2013 Reported By: JW  
\*Chlorine Residual: N/A Amount of Sample Used: 100 mls  
Method Code: SM 20th ED 9223 P/A Colisure®

### TOTAL COLIFORM BACTERIA RESULTS

Analysis shows Total Coliform Bacteria to be: **ABSENT**  
Absent= Acceptable Present= Unacceptable

### E. COLI COLIFORM BACTERIA RESULTS

Analysis shows E. coli Bacteria to be: **ABSENT**  
E. coli is a sub-section of Total Coliform and its presence in water indicates that raw sewage is present in the water.

Explanation: When coliform bacteria are present in water, it is considered contaminated and therefore unsafe. Coliform organisms are found normally in discharges from the intestinal tract of man, animals or birds. Their presence in the water, therefore, must be considered as evidence of pollution. The laboratory examination determines the presence or absence of contamination at the time of sampling only. No definite conclusions should be drawn from a single bacterial examination.

\* Chlorine Footnote: Chlorine in water will kill coliform bacteria. Presence of chlorine in a water sample should invalidate the test unless the water is from a system that is continuously chlorinated every day the water is in use.

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAC unless otherwise noted. This report shall not be reproduced except in full without written approval of Waterlab Corporation.

Approved by: \_\_\_\_\_

## TEST REPORT

TO: Shiloh Water Systems  
 5942 Towne Dr NE  
 Silverton, OR 97381

06/14/2013

SHIWAT

PO#:

### Collection Information

Date: 05/22/2013  
 Time: 1100  
 By: Mike  
 Lab #: 20130522-041  
 Location: 14399 Whiskey - Hanger outside tap

### Lab Receipt Information

05/22/2013  
 1352  
 MH

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Method	Acc*	Results	Qual	MRL	Units	EPA Limit	Analysis Date Time	Tech
Healthy Water Package									
pH	EPA 150.1	A	7.50	H		pH units	6.5 - 8.5	05/22/2013	1600 MC
Specific Conductance	SM2510B	A	248.		1.	umhos/cm		05/22/2013	MC
Arsenic	SM3113B	A	0.0082		0.002	mg/l	0.010	05/29/2013	BEM
Chloride	EPA300.0	A	1.59		0.2	mg/l	250	05/23/2013	BEM
Copper	SM3111 B	A	ND		0.1	mg/l	1.0	06/05/2013	BEM
Fluoride	EPA300.0	A	ND		0.2	mg/l	4.0	05/23/2013	BEM
Hardness as CaCO3	SM2340C	A	118.		10.	mg/l CaCO3	250	06/04/2013	MC

ND- No Detection at @ MRL  
 SM-"Standard Methods for the Examination of Water & Wastewater", 19th ed  
 EPA- "Methods for Chemical Analysis for Water and Wastes", USEPA  
 MRL-"Method Reporting Limit"  
 \* Accreditation  
 A- Waterlab Corporation, ORELAP 100039

The results relate only to the parameters tested or to the sample as received by the laboratory.

This report shall not be reproduced except in full, without the written approval of Waterlab Corporation.

H = Analysis performed outside of method specified holding time

Approved by: \_\_\_\_\_



## TEST REPORT

LAB #: 20130522-041 (Cont) SHIWAT Page: 2

Analyte	Method	Acc	Results	Qual	MRL	Units	EPA Limit	Analysis Date	Tech
Iron	SM3111B	A	ND		0.1	mg/l	0.3	05/28/2013	MC
Lead	SM3113 B	A	ND		0.002	mg/l	0.015	05/24/2013	BEM
Manganese	SM3111B	A	ND		0.01	mg/l	0.05	05/31/2013	MC
Nitrogen, Nitrate	EPA300.0	A	ND		0.2	mg/l N	10.	05/23/2013	1855 BEM
Sodium	SM3111B	A	8.08		1.0	mg/l	25.	05/31/2013	MC
Sulfate	EPA300.0	A	3.63		1.5	mg/l	250	05/23/2013	BEM
Zinc	SM3111 B	A	ND		0.1	mg/l	5.0	06/05/2013	MC

ND- No Detection at @ MRL

SM- "Standard Methods for the Examination of Water & Wastewater", 19th ed

EPA- "Methods for Chemical Analysis for Water and Wastes", USEPA

MRL- "Method Reporting Limit"

\* Accreditation

A- Waterlab Corporation, ORELAP 100039

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H = Analysis performed outside of method specified holding time

Approved by: \_\_\_\_\_



## Summary of Healthy Water Test Report

In a nutshell, here's what we found and didn't find:

Lab Report #: 2013052241

### Your water's pH indicates:

- Average water                       Alkaline water due to hardness  
 Acidic water                               Alkaline water due to elevated sodium (salt) content

0 ----- 7 ----- 14                      pH is a scale from 0 to 14.                      7 is considered neutral.  
 Acidic side                      Alkaline side                      EPA Suggested Range for public drinking water is 6.5 to 8.5.

### Your water is:

- Soft water (low in dissolved minerals)  
 Average well water, dissolved solids due to X hardness    \_\_\_ sodium compounds  
 High solids well water, \_\_\_ hardness    \_\_\_ sodium compounds  
 Extremely high solids well water, \_\_\_ hardness    \_\_\_ sodium compounds

	No Detection At Lab Reporting Limit	Measurable Amount Present	Exceeds EPA Drinking Water Standard for Salt-restricted Diets	Exceeds EPA Drinking Water Standards
<u>Arsenic</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Chloride	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Copper -1st run	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Copper - after run	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Fluoride	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Hardness	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Iron	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Lead - 1st run	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Lead - after run	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Manganese	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Nitrate-Nitrogen	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Sodium	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sulfate	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Zinc - 1st run	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Zinc - after run	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

See Healthy Water Guide included here for additional information on individual tests.

## TEST REPORT

2603 - 12th Street, SE  
Salem, OR 97302  
Voice: (503) 363-0473  
FAX: (503) 363-8900

TO: Shiloh Water Systems  
5942 Towne Dr NE  
Silverton, OR 97381

11/20/2013

SHIWAT

PO#:

### Collection Information

Date: 11/08/2013  
Time: 1500  
By: ML  
Lab #: 20131108-014  
Location: 23055 Airport Rd NE os tap

### Lab Receipt Information

11/08/2013  
1540  
JW

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Method	Acc*	Results	Qual	MRL	Units	EPA Limit	Analysis	
								Date Time	Tech
Arsenic, Nitrate									
Arsenic	SM3113B	A	0.0057		0.002	mg/l	0.010	11/19/2013	BEM
Nitrogen, Nitrate	EPA300.0	A	0.232		0.2	mg/l N	10.	11/08/2013	1942 BEM

ND- No Detection at @ MRL

SM-"Standard Methods for the Examination of Water & Wastewater", 19th ed

EPA- "Methods for Chemical Analysis for Water and Wastes", USEPA

MRL-"Method Reporting Limit"

\* Accreditation

A- Waterlab Corporation, ORELAP 100039

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Approved by: \_\_\_\_\_



## TEST REPORT

**Shiloh Water Systems**  
**5942 Towne Dr NE**  
**Silverton, OR 97381**

### SAMPLE INFORMATION

Location: 23055 Airport Rd NE outside tap  
Date Sampled: 11/08/2013      Sample Type: Water  
Time Sampled: 1500      Collected by: ML

### CASE NARRATIVE

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

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### TESTING INFORMATION

Lab #: 20131108-013

Date Received: 11/08/2013	Time Received: 1540	Received by: JW
Date Started: 11/08/2013	Time Started: 1620	Tech: JW
Date Read: 11/09/2013	Time Read: 1730	Tech: BEM
Date Reported: 11/13/2013		Reported By: MH

\*Chlorine Residual: N/A

Amount of Sample Used: 100 mls

Method Code: SM 20th ED 9223 P/A Colisure ®

### TOTAL COLIFORM BACTERIA RESULTS

Analysis shows Total Coliform Bacteria to be:	<b>ABSENT</b>
Absent= Acceptable	Present= Unacceptable

### E. COLI COLIFORM BACTERIA RESULTS

Analysis shows E. coli Bacteria to be:	<b>ABSENT</b>
E. coli is a sub-section of Total Coliform and its presence in water indicates that raw sewage is present in the water.	

Explanation: When coliform bacteria are present in water, it is considered contaminated and therefore unsafe. Coliform organisms are found normally in discharges from the intestinal tract of man, animals or birds. Their presence in the water, therefore, must be considered as evidence of pollution. The laboratory examination determines the presence or absence of contamination at the time of sampling only. No definite conclusions should be drawn from a single bacterial examination.

\* Chlorine Footnote: Chlorine in water will kill coliform bacteria. Presence of chlorine in a water sample should invalidate the test unless the water is from a system that is continuously chlorinated every day the water is in use.

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Approved by: \_\_\_\_\_

## TEST REPORT



2603 - 12th Street, SE  
Salem, OR 97302  
Voice: (503) 363-0473  
FAX: (503) 363-8900

PWS ID#: 4190191      Source ID: EP-A      Source Name: EP for WELL

Oregon Department of Aviation  
3040 25th St. SE  
Salem, OR 97310

Copy Sent to:  
DHS - Drinking Water Program

### Sample Identification

Sampled at: 1A      Sampled by: John  
Date Collected: 11/08/2013      Time Collected: 0957  
Date Received: 11/08/2013      Time Received: 1525

Sample Composition:

Lab Sample ID#: 20131108-010

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Code	MCL mg/l	Analysis mg/l	MRL	Method	Analyst	Date Analyzed	ORELAP ID#
Inorganics-Arsenic,Nitrate								
Arsenic	A	0.010	0.0020	0.002	SM3113B	BEM	11/21/13	OR100039
Nitrogen, Nitrate	A	10.	ND	0.2	EPA300.0	BEM	11/08/13 1740	OR100039

ND-No Detection @ MRL

MCL-Maximum Contaminant Level

SM-"Standard Methods for the Examination of Water and Wastewater", 19th ed

EPA-"Methods for Chemical Analysis for Water and Wastes", USEPA

MRL-"Method Reporting Limit"

A - Waterlab Corporation, ORELAP 100039

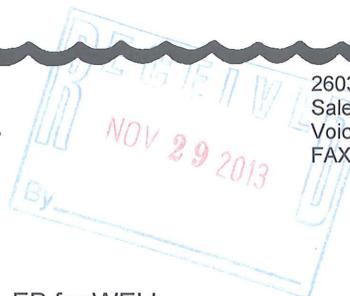
The results relate only to the parameters tested or to the sample as received by the laboratory. This report shall not be reproduced except in full, without the written approval of Waterlab Corporation.

DATE REPORTED: 11/25/2013

Approved by: \_\_\_\_\_

## TEST REPORT

2603 - 12th Street, SE  
Salem, OR 97302  
Voice: (503) 363-0473  
FAX: (503) 363-8900



PWS ID#: 4190191      Source ID: EP-A      Source Name: EP for WELL

Oregon Department of Aviation  
3040 25th St. SE  
Salem, OR 97310

Copy Sent to:  
DHS - Drinking Water Program

### Sample Identification

Sampled at: 2 B      Sampled by: John  
Date Collected: 11/08/2013      Time Collected: 0952  
Date Received: 11/08/2013      Time Received: 1525

Sample Composition:

Lab Sample ID#: 20131108-011

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Code	MCL mg/l	Analysis mg/l	MRL	Method	Analyst	Date Analyzed	ORELAP ID#
Inorganics-Arsenic,Nitrate								OR100039
Arsenic	A	0.010	ND	0.002	SM3113B	BEM	11/21/13	OR100039
Nitrogen, Nitrate	A	10.	ND	0.2	EPA300.0	BEM	11/08/13 1811	OR100039

ND-No Detection @ MRL

MCL-Maximum Contaminant Level

SM-"Standard Methods for the Examination of Water and Wastewater", 19th ed

EPA-"Methods for Chemical Analysis for Water and Wastes", USEPA

MRL-"Method Reporting Limit"

A - Waterlab Corporation, ORELAP 100039

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DATE REPORTED: 11/25/2013

Approved by: 

## TEST REPORT

2603 - 12th Street, SE  
Salem, OR 97302  
Voice: (503) 363-0473  
FAX: (503) 363-8900

PWS ID#: 4190191      Source ID: EP-A      Source Name: EP for WELL

Oregon Department of Aviation  
3040 25th St. SE  
Salem, OR 97310

Copy Sent to:  
DHS - Drinking Water Program

### Sample Identification

Sampled at: 3 B      Sampled by: John  
Date Collected: 11/08/2013      Time Collected: 0949  
Date Received: 11/08/2013      Time Received: 1525

Sample Composition:

Lab Sample ID#: 20131108-012

### Case Narrative

The analyses were performed according to the guidelines in the WATERLAB Corp Quality Assurance Program. This report contains analytical results for the sample(s) as received by the laboratory.

WATERLAB Corp certifies that this report is in compliance with the requirements of NELAC. No unusual difficulties were experienced during analysis of this batch except as noted below or qualified with data flags on the reports.

Analyte	Code	MCL mg/l	Analysis mg/l	MRL	Method	Analyst	Date Analyzed	ORELAP ID#
Inorganics-Arsenic,Nitrate								OR100039
Arsenic	A	0.010	0.0021	0.002	SM3113B	BEM	11/25/13	OR100039
Nitrogen, Nitrate	A	10.	ND	0.2	EPA300.0	BEM	11/08/13 1911	OR100039

ND-No Detection @ MRL

MCL-Maximum Contaminant Level

SM-"Standard Methods for the Examination of Water and Wastewater", 19th ed

EPA-"Methods for Chemical Analysis for Water and Wastes", USEPA

MRL-"Method Reporting Limit"

A - Waterlab Corporation, ORELAP 100039

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DATE REPORTED: 11/25/2013

Approved by: \_\_\_\_\_





YOUR LAB OF CHOICE

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

September 29, 2012

Tom Newman  
AddyLab, LLC  
2517 East Evergreen Blvd.  
Vancouver, WA 98661

ESC Sample # : L596672-01

Date Received : September 21, 2012  
Description : Aurora Airport Condo  
Sample ID : AURORA AIRPORT CONDO ASSCC  
Collected By :  
Collection Date : 09/19/12 13:30

Site ID :  
Project : 12AL1378

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
Arsenic	0.0017	0.0010	mg/l	0.010	200.8	09/28/12 1731	LAT	1

BDL - Below Detection Limit  
Det. Limit - Estimated Quantitation Limit (EQL)  
Limit - Maximum Contaminant Level as established by the US EPA  
Note:

The reported analytical results relate only to the sample submitted.  
This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 09/29/12 22:21 Printed: 09/29/12 22:21

ADDY LAB

Addy Lab, LLC, 2517 E. Evergreen Blvd.  
Vancouver, WA 98675-0055

COLIFORM BACTERIA ANALYSIS

Send results to: (Print full name, address and zip code or Email Address)

OOH Form 2231-001 (Rev 04-12)

Date Sample Collected: 9/18/2012 Time Sample Collected: 1:30 PM County: WALLA WALLA

Type of Water System (check only one box):  
 Group A  
 Group B  
 Other

Group A and Group B Systems - Provide from Water Facilities Inventory (WFI):  
 DF# \_\_\_\_\_ System Name: \_\_\_\_\_

Contact Person: DM A CORN  
 Cell Phone: 5097707199  
 Fax: \_\_\_\_\_

Sample collected by (name): \_\_\_\_\_  
 Specific location where sample collected (address or site): BUROIA AVE PARK  
CORDS

Special instructions or comments:  
reanalyze

Type of Sample (must check only one box of #1 through #4 listed below)

1.  Routine Distribution Sample  
 Chlorinated: Yes \_\_\_\_\_ No \_\_\_\_\_  
 Chlorine Residual: Total \_\_\_\_\_ Free \_\_\_\_\_

2. Repeat Sample (after unsat. routine)  
 Distribution System  
 Source Groundwater Rule (GWR) (Population of 1,000 or less)  
 Unsatisfactory/routine lab number: \_\_\_\_\_  
 Unsatisfactory/routine collect date: \_\_\_\_\_  
 Chlorinated: Yes \_\_\_\_\_ No \_\_\_\_\_  
 Chlorine Residual: Total \_\_\_\_\_ Free \_\_\_\_\_

3. Raw Water Source Sample:  
 E. coli - GWR source sample  
 Fecal - Surface, GWR, some springs  
 Other \_\_\_\_\_  
 Chlorinated: Yes \_\_\_\_\_ No \_\_\_\_\_  
 Chlorine Residual: Total \_\_\_\_\_ Free \_\_\_\_\_

4. Sample Collected for Information Only  
 BUSE ONLY DRINKING WATER RESULTS  
 INVESTIGATIVE Construction/Repairs  
 OTHER

Unsatisfactory, Total Coliform Present and  
 E. coli present:  E. coli absent  
 Fecal coliform present:  Fecal coliform absent

Rapid confirm Sample Required:  
 Sample too old (>30 hours)  TNTC  \_\_\_\_\_  
 Improper Container  Turbid culture

Bacterial Density Results: Plate Count \_\_\_\_\_ /ml, E. coli \_\_\_\_\_ /100ml  
 Total Coliform \_\_\_\_\_ /100ml, Fecal Coliform \_\_\_\_\_ /100ml

Method Code: \_\_\_\_\_  
 MCR: \_\_\_\_\_  
 Date Analyzed: 9/19/12 1630 QD Date Reported: 9/20/12  
 Sample Number (DO NOT FILL IN THIS SPACE): 14406553 Lab Use Only: 0/0  0/0   
12-AL1358 1006127

LABORATORY 12-AL1358

2517 E. Evergreen Blvd.  
Vancouver, WA. 98661



Phone: 360-750-0055  
Fax: 360-750-0057  
Email: info@addylab.com

# CHAIN OF CUSTODY REPORT

REF# 12AL1378

CLIENT / SYSTEM NAME: Aurora Airport Condo Assoc. INVOICE TO:

REPORT TO: ADDRESS OR EMAIL  
William Corbett, Dr. Vancouver, W.P. 98064  
3011 SE Lister  
PHONE: 360-895-5014 FAX:

COUNTY: Multnomah PO NUMBER:  
PROJECT NAME: Aurora Airport Condo  
PROJECT NUMBER: 12AL1378

SAMPLED BY:

CLIENT SAMPLE IDENTIFICATION

SAMPLING DATE/TIME

1. Aurora Airport 9/19/12 1330

2. Condo Assoc

3.

4.

5.

6.

7.

8.

9.

10.

Aspic  
But

X

X

TURNAROUND REQUEST in Business Days\*  
Organic & Inorganic Analyses  
Petroleum Hydrocarbon Analyses  
STD. 10 7 5 4 3 2 1 <1  
STD. 5 4 3 2 1 <1  
OTHER: Please Specify

\*Turnaround Request less than standard may incur Rush Charge.

MATRIX # OF SAMPLE LOCATION / COMMENTS  
(W.S.O) CONT.

DW Aurora Airport

Condo Assoc

Group (WA Only): A B

DOH Source / Source ID #:

Well Field Spring Purchased

After Treatment No Treatment

Before Treatment

RECEIVED BY

DATE

COMPANY

DATE

COMPANY

DATE

COMPANY

DATE

RELINQUISHED BY  
William Corbett  
Condo Assoc AL

DATE 9/19/12

TIME 1430

TEMP: 50C

PAGE 1 OF 1

60027  
COC REV 12/11

AddyLab, LLC  
2517 E. Evergreen Blvd.  
Vancouver, WA. 98661



Phone: 360-750-0055  
Fax: 360-750-0057  
Email: reports@addylab.com

October 2, 2012

William Corn  
8211 S.E. Lieser Pt. Dr.  
Vancouver, WA 98664

Dear Mr. Corn:

Enclosed is the laboratory report for the Aurora Airport Condo Assoc. water sample analyzed for arsenic. Arsenic was detected at 0.0017 mg/L which is the same as 1.7 parts per billion (ppb). As such, the result is less than the EPA limit for arsenic of 10 ppb in drinking water. All results are intended to be considered in their entirety and AddyLab, LLC is not responsible for use of less than the complete report. Results apply only to the samples submitted to the laboratory for analysis.

If you have any questions, please call me. The reference number for this analysis is 12AL1378. Quality control data is available upon request. Thank you for your business.

Sincerely,

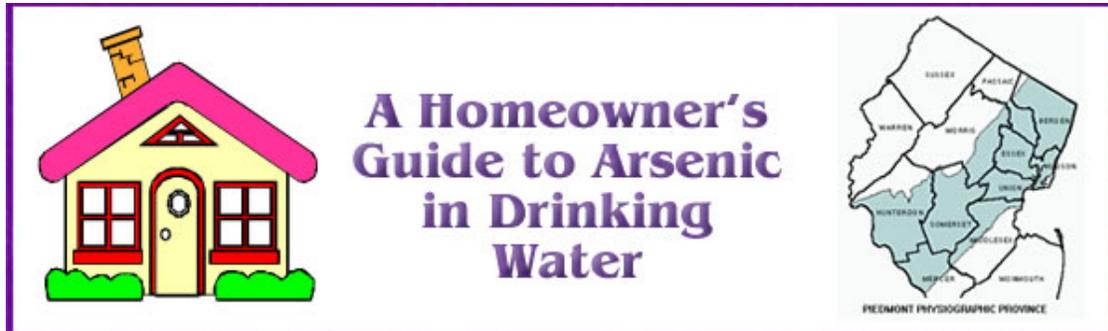
A handwritten signature in cursive script that reads "Thomas A. Newman".

Thomas Newman  
Quality Manager



## Office of Science

Office of Science Home



Prepared by the Division of Science, Research and Technology and the Bureau of Safe Drinking Water

- [What is Arsenic?](#)
- [How Does Arsenic Get into Ground Water?](#)
- [What are the health risks associated with ingesting arsenic in drinking water?](#)
- [What is the drinking water standard for arsenic?](#)
- [Who should test?](#)
- [How can I find out if arsenic is in my drinking water?](#)
- [Should I continue to use my water if arsenic is found?](#)
  - For drinking
  - For bathing and other uses
- [How can I reduce arsenic levels in my water?](#)
- [Where can I go for more information?](#)

### What is Arsenic?

Arsenic (As) is a naturally-occurring element in the earth's crust, and traces of arsenic can be found throughout the environment. Arsenic in soil may originate naturally, and past human activities may have added to these levels in some areas. Historically, the heaviest use of arsenic in this country has been as a pesticide. The current predominant use of arsenic is as a wood preservative. In ground water, arsenic occurs primarily in two forms, As+3 (arsenite) and As+5 (arsenate). Organic arsenicals are not known to occur at significant levels in ground water. Arsenic may change chemical form in the environment, but it does not degrade.

### How Does Arsenic Get into Ground Water?

Inorganic arsenic exists naturally at various levels in all geologic formations in the state. In some of these formations, arsenic is relatively immobile despite being present at high concentrations. In other formations, the chemical and physical properties of the geologic material may enable the arsenic to become mobile. Such conditions exist in rocks formed from organic-rich, ancient lake beds in a group of geologic formations in the Piedmont Physiographic Province of the state, shown as the shaded area on the map. Results from testing conducted by the New Jersey Geological Survey indicate that elevated levels of arsenic exist in some aquifers of the Piedmont Province where arsenic has been detected at levels above 5 parts per billion (ppb), or µg/L (micrograms per liter). Levels as high as 60-80 ppb have been detected in drinking water in this area.

Further, private well testing conducted by the South Branch Watershed Association with the Raritan and Readington Township Environmental Commissions and NJDEP in Hunterdon County show arsenic levels above 5 ppb in 49 out of 238 wells, or 20%, with the highest concentration being 35 ppb. Beginning in September 2002, all private wells were required to test for arsenic if they were located in the 10 counties located in the Piedmont Region of the state. Of the 1,928 wells

sampled for arsenic between September 2002 and March 2003, 72 wells (3.7%) exceeded the federal drinking water standard of 10 ppb with the highest level reported at 216 ppb (data on levels above 5 ppb, the NJ arsenic MCL, have not been publicly reported). Arsenic may reach ground water from human activities. The primary use of arsenic, historically, has been as an ingredient in pesticides. Before synthetic organic pesticides were available, arsenic-based pesticides were widely used throughout the state to combat insects on a variety of crops. Lead and calcium arsenates were the forms used most commonly, although there were additional types of arsenical pesticides, including organic arsenicals. Although arsenic is not considered to be highly mobile, certain factors, such as the use of fertilizers, can mobilize it and enable it to reach ground water. Thus, arsenic present in an aquifer may be due to natural formations, past use of arsenical pesticides or both.

#### What are the health risks associated with ingesting arsenic in drinking water?

Arsenic is one of a relatively small number of chemicals that has been classified by USEPA as a known human carcinogen, based on human epidemiological data. The carcinogenicity (or cancer-causing characteristics) of arsenic is difficult to study because it does not consistently induce cancer in laboratory animals, yet it is a known human carcinogen. Unlike most other carcinogens of environmental concern, arsenic does not induce cancer in the animal models in which it has been tested, perhaps due to differences in metabolism between the test animals and humans. Quantitative estimates of risks of arsenic in drinking water come from human epidemiological studies, rather than studies in laboratory animals. The exposures to arsenic in these individuals are not controlled, as in laboratory studies, but must be estimated from information on drinking water arsenic levels and water consumption data in the populations of interest.

Ingestion of large amounts of inorganic arsenic is associated with increased risk of several types of cancer in humans including skin, lung, liver, kidney and urinary bladder. The evidence for cancers comes from studies in Taiwan, Bangladesh, Chile and Argentina where human populations were exposed to very high levels of naturally-occurring inorganic arsenic in drinking water.

The National Academy of Sciences (2001) has estimated, based on lung and bladder cancer data, that the additional lifetime cancer risk associated with drinking water that contains 5 µg/L of arsenic is about 2 in 1000. This means that if 1000 people were to consume two liters of this water per day for 70 years, we would expect to see no more than 2 additional cancers in the 1000 people exposed over a lifetime.

Other potential effects of ingestion of elevated arsenic include gastrointestinal ailments, such as diarrhea and cramping, thickening and/or discoloration of the skin, increased risk of diabetes and cardiovascular impacts. Only a small amount of arsenic is found in breast milk even when mothers have ingested elevated levels of arsenic in their diet.

#### What is the drinking water standard for arsenic?

The Department of Environmental Protection (NJDEP adopted a new maximum contaminant level(MCL)of 5 µg/L which becomes effective on January 23, 2006 that applies to all New Jersey drinking water supplies (private and public water supplies). New Jersey now has the most protective arsenic drinking water standard in the nation.

New Jersey requires monitoring for arsenic at more than 600 public community water systems and 900 non-transient, non-community systems, which combined serve around 85 percent of the state's population. Based on past data, NJDEP predicts approximately 34 community and 101 non-community systems may have arsenic levels exceeding the new 5 µg/L standard. In addition, the new standard also would apply to private well owners regulated under New Jersey's Private Well Testing Act, requiring notification of consumers about arsenic concentrations during a real estate transaction and when renting property.

#### Who should test?

If your drinking water comes from a public community water supply (i.e., you get a water bill), your water supplier is required by law to test it to ensure that it meets the MCL for arsenic. In this case, you do not need to test your water. You can get the most recent test results for your water system by contacting your water supplier or the NJDEP's Bureau of Safe Drinking Water at .

There are no federal or state requirements for private well owners to test their well water for arsenic, although the state does require testing for various contaminants, which may or may not include arsenic, during real estate transfers under the Private Well Testing Act ([www.state.nj.us/dep/pwta](http://www.state.nj.us/dep/pwta)). Given the elevated levels of arsenic that have been found in ground water in certain parts of the state and the lower MCL for arsenic in NJ, the NJDEP recommends that private well owners who live in the Piedmont Physiographic Province test their well water for arsenic. See the map on the first page of this guide to find out if your home is in this area. Arsenic has been found in the water from some wells in other parts of the state, but not at the frequency or concentrations found in the Piedmont. Additional study is needed in those other areas of the state. Anyone who is concerned about possible arsenic contamination of their well water should test.

#### How can I find out if arsenic is in my drinking water?

Arsenic in drinking water is odorless, tasteless and colorless. The only way to tell if arsenic is present is to test for it. If you decide to test your well, the DEP recommends that you use a laboratory that is DEP-certified to conduct low level arsenic analyses. There are a number of commercial labs in NJ and other states that can measure arsenic as low as 1-2 µg/L in drinking water samples. Additional laboratories in the state are NJDEP-certified to conduct arsenic tests using other

analytical techniques that measure arsenic from above 2 µg/L. You can call NJDEP's Office of Quality Assurance at for more information on laboratories certified to test for arsenic in drinking water. Arsenic testing in drinking water generally costs less than \$50 per sample. The laboratory will instruct you as to how to collect the water sample, or they will collect it themselves.

It is recommended that you conduct two tests to confirm the concentrations. Even if the initial test is low, it is useful to conduct the second test to confirm the results.

#### Should I continue to use my water if arsenic is found?

##### For drinking?

If arsenic is detected above the new MCL of 5 µg/L, do not use it for drinking, cooking, mixing baby formula, or in other consumptive ways. It is recommended that methods of arsenic removal be explored in these instances.

At this time, NJDEP recommends arsenic removal for residences whose well water contains arsenic above 5 µg/L. Any corrective action on water with arsenic levels at or below 5 µg/L is considered a personal decision at this time.

Do not boil your water as a method of treatment. This will result in increased arsenic concentrations in your water. Water evaporates but arsenic does not, so boiling results in a higher concentration of arsenic in your water.

##### For bathing and other uses?

Arsenic does not evaporate readily from drinking water. Therefore, even at relatively high levels, arsenic does not pose an inhalation risk from drinking water. At the arsenic levels found in NJ ground water, exposure through skin absorption and inhalation are not considered to be significant. Showering, bathing and other uses, therefore, do not need to stop if arsenic levels are elevated.

#### How can I reduce arsenic levels in my water?

If you choose to reduce the arsenic concentration in your drinking water, there are several short-term and long-term solutions. Purchasing bottled water for drinking and cooking is a viable short-term solution until a more permanent one is established.

If your arsenic levels are above 5 µg/L, connection to a public water system may be your best option, if possible. However, in many areas of the state, it is not possible or cost-effective. Well replacement may be an option, but, unless the local geology and sources of arsenic are fully understood, deepening your existing well or drilling a new one may not necessarily provide better quality water. In cases where connection to a community water system or installation of a new well are not possible, water treatment systems can be installed. There are two types that can be used for arsenic removal:

- 1) point-of-entry treatment (POET) systems treat the water for the entire household; and
- 2) point-of-use (POU) systems treat the water at the kitchen tap.

A granular ferric adsorption system is the preferred treatment technology. This system effectively removes arsenic from water, it is easy to operate and maintain, and the arsenic is not returned to the environment via regeneration.

For a family of three, with typical water use, a granular ferric POET system can operate with minimal maintenance for two to three years, depending on the arsenic concentration. Based on a NJDEP cost survey, the average cost of installing this type of system is approximately \$3,000 and the annual cost of maintaining it is estimated at to be about \$350.

Another option is a granular ferric POU cartridge system that removes arsenic from a single tap in the home, usually at the kitchen sink. The cartridges contain the same media as the whole-house system. These systems typically produce two quarts per minute and are used to provide treated water for drinking and cooking only. Cartridges are typically changed once per year. Based on a NJDEP cost survey, the average cost of installing this system is \$400 and the annual cost of maintaining it is estimated at \$120.

Other technologies to remove arsenic from water include anion exchange and reverse osmosis. Homeowners should work with their local health officers to determine which system is best for removing arsenic, given the geology, water chemistry and use of the water.

For further information on removal units, contact your local health officer and/or a water treatment company specializing in residential water treatment to determine which type works best in your area. Also, you should find out if a local health department permit is required. If you install a system, be sure to conduct another arsenic test after the water has been treated to verify that the system is working effectively to reduce arsenic to an acceptable level.

#### Where can I go for more information?

If you have any questions or wish to discuss the results of your water test with a knowledgeable professional, please

contact your local or county health department or the DEP Bureau of Safe Drinking Water at (609) 292-5550. Consult the blue pages of your phone book for the numbers of your local or county health department. You can also contact the NJ Department of Health and Senior Services, Consumer and Environmental Health Services at . For information about the Private Well Testing Program, see [www.state.nj.us/dep/pwta](http://www.state.nj.us/dep/pwta) or call .

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