Analytical Report for

Northwest Pipe

ASL Report #: Q3331
Project ID: 682722.GW.SB

Attn: Gretchen Gee

cc:

Beckett, Jamie/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
November 09, 2016

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Louisiana (05031)

CH2M – Applied Sciences Laboratory
1100 NE Circle Boulevard, Suite 300
Corvallis, Oregon 97330
www.ch2m.com

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
Q333101	TRIPBLANK_102516	10/25/16 08:00	10/26/16
Q333102	T4S1MW09-102516-0	10/25/16 12:02	10/26/16
Q333103	T4S1MW03S-102516-0	10/25/16 13:02	10/26/16
Q333104	T4S1MW22-102516-0	10/25/16 14:07	10/26/16
Q333105	T4S1MW23-102516-0	10/25/16 15:23	10/26/16

1100 NE Circle Blvd., Suite 300
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Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GC/MS VOLATILES ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

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Method(s):
SW8260C: SW5030

CH2M ASL

Client Information

Client Sample ID: **TRIPBLANK_102516**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 08:00
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333101**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
cis-1,2-Dichloroethene	156-59-2	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	113	70-130	
1,2-Dichloroethane-d4	116	70-130	
Toluene-d8	103	70-130	
4-Bromofluorobenzene	90	70-130	

U=Not detected and reported as less than detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
*=See case narrative

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW09-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 12:02
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333102**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
cis-1,2-Dichloroethene	156-59-2	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	112	70-130	
1,2-Dichloroethane-d4	116	70-130	
Toluene-d8	102	70-130	
4-Bromofluorobenzene	87	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW03S-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 13:02
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333103**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
cis-1,2-Dichloroethene	156-59-2	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	113	70-130	
1,2-Dichloroethane-d4	115	70-130	
Toluene-d8	101	70-130	
4-Bromofluorobenzene	88	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW22-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 14:07
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333104**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
cis-1,2-Dichloroethene	156-59-2	0.15	0.50	2.77		ug/L	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	0.15	0.50	4.60		ug/L	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	117	70-130	
1,2-Dichloroethane-d4	120	70-130	
Toluene-d8	102	70-130	
4-Bromofluorobenzene	90	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW23-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 15:23
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333105**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
cis-1,2-Dichloroethene	156-59-2	0.15	0.50	0.70		ug/L	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	112	70-130	
1,2-Dichloroethane-d4	116	70-130	
Toluene-d8	99	70-130	
4-Bromofluorobenzene	85	70-130	

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Client Information

Client Sample ID: **WB1-1027**

Project Name: Northwest Pipe
Sample Date: N/A
Sample Time: N/A
Type: QC
Matrix: Water

Lab Information

Lab Sample ID: **WB1-1027**

Date Received: N/A
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
cis-1,2-Dichloroethene	156-59-2	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	0.15	0.50	0.15	U	ug/L	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	112	70-130	
1,2-Dichloroethane-d4	115	70-130	
Toluene-d8	102	70-130	
4-Bromofluorobenzene	91	70-130	

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Client Information

Project Name: Northwest Pipe
Type: QC
Matrix: Water

Lab Information

LCS ID: BS1W1027

Report Revision No.: 0
Dilution Factor: 1

Analyte	CAS#	Spike Amount	Sample Result	Units	%Recovery	Analysis Method	Date Analyzed
GC/MS Volatiles							
cis-1,2-Dichloroethene	156-59-2	20.0	17.2	ug/L	86	SW8260C	10/27/16
Trichloroethene (TCE)	79-01-6	20.0	18.5	ug/L	93	SW8260C	10/27/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	101	70-130	
1,2-Dichloroethane-d4	99	70-130	
Toluene-d8	94	70-130	
4-Bromofluorobenzene	96	70-130	

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CASE NARRATIVE
GC/MS VOLATILES ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
SW8260C-SIM: SW5030

CH2M ASL

Client Information

Client Sample ID: **TRIPBLANK_102516**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 08:00
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333101**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
Vinyl Chloride	75-01-4	8.00	20.0	8.00	U	ng/L	SW8260C-SI	11/03/16
Tetrachloroethene (PCE)	127-18-4	5.00	20.0	5.00	U	ng/L	SW8260C-SI	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	130	70-130	
1,2-Dichloroethane-d4	126	70-130	
Toluene-d8	97	70-130	
4-Bromofluorobenzene	105	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW09-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 12:02
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333102**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
Vinyl Chloride	75-01-4	8.00	20.0	19.7	J	ng/L	SW8260C-SI	11/03/16
Tetrachloroethene (PCE)	127-18-4	5.00	20.0	19.1	J	ng/L	SW8260C-SI	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	120	70-130	
1,2-Dichloroethane-d4	116	70-130	
Toluene-d8	87	70-130	
4-Bromofluorobenzene	93	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW03S-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 13:02
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333103**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
Vinyl Chloride	75-01-4	8.00	20.0	8.00	U	ng/L	SW8260C-SI	11/03/16
Tetrachloroethene (PCE)	127-18-4	5.00	20.0	112		ng/L	SW8260C-SI	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	119	70-130	
1,2-Dichloroethane-d4	115	70-130	
Toluene-d8	86	70-130	
4-Bromofluorobenzene	94	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW22-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 14:07
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333104**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
Vinyl Chloride	75-01-4	8.00	20.0	49.9		ng/L	SW8260C-SI	11/03/16
Tetrachloroethene (PCE)	127-18-4	5.00	20.0	1460		ng/L	SW8260C-SI	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	122	70-130	
1,2-Dichloroethane-d4	115	70-130	
Toluene-d8	86	70-130	
4-Bromofluorobenzene	94	70-130	

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CH2M ASL

Client Information

Client Sample ID: **T4S1MW23-102516-0**

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 15:23
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: **Q333105**

Date Received: 10/26/16
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
Vinyl Chloride	75-01-4	8.00	20.0	8.00	U	ng/L	SW8260C-SI	11/03/16
Tetrachloroethene (PCE)	127-18-4	5.00	20.0	1590		ng/L	SW8260C-SI	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	124	70-130	
1,2-Dichloroethane-d4	119	70-130	
Toluene-d8	89	70-130	
4-Bromofluorobenzene	96	70-130	

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E=Estimated value above calibration range
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CH2M ASL

Client Information

Client Sample ID: **WB1-1103**

Project Name: Northwest Pipe
Sample Date: N/A
Sample Time: N/A
Type: QC
Matrix: Water

Lab Information

Lab Sample ID: **WB1-1103**

Date Received: N/A
Dilution Factor: 1
Report Revision No.: 0

Analyte	CAS#	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC/MS Volatiles								
Vinyl Chloride	75-01-4	8.00	20.0	8.00	U	ng/L	SW8260C-SI	11/03/16
Tetrachloroethene (PCE)	127-18-4	5.00	20.0	5.00	U	ng/L	SW8260C-SI	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	125	70-130	
1,2-Dichloroethane-d4	123	70-130	
Toluene-d8	95	70-130	
4-Bromofluorobenzene	102	70-130	

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CH2M ASL

Client Information

Project Name: Northwest Pipe
Type: QC
Matrix: Water

Lab Information

LCS ID: BS1W1103

Report Revision No.: 0
Dilution Factor: 1

Analyte	CAS#	Spike Amount	Sample Result	Units	%Recovery	Analysis Method	Date Analyzed
GC/MS Volatiles							
Vinyl Chloride	75-01-4	500	575	ng/L	115	SW8260C-SIM	11/03/16
Tetrachloroethene (PCE)	127-18-4	500	437	ng/L	87	SW8260C-SIM	11/03/16

Surrogate	% Recovery	Control Limits	Qualifier
Dibromofluoromethane	115	70-130	
1,2-Dichloroethane-d4	111	70-130	
Toluene-d8	91	70-130	
4-Bromofluorobenzene	93	70-130	

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CASE NARRATIVE
HEADSPACE ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

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Method(s):
RSK-175

CH2M ASL

Client Information

Client Sample ID: T4S1MW09-102516-0

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 12:02
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: Q333102

Date Received: 10/26/16
Report Revision No: 0

Analyte	CAS#	Dilution Factor	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC Volatiles									
Methane	74-82-8	1	4.70	37.7	2640		ug/L	RSK-175	10/31/16
Carbon dioxide	124-38-9	1	35.9	217	49100		ug/L	RSK-175	10/31/16

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E=Estimated value above calibration range
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CH2M ASL

Client Information

Client Sample ID: T4S1MW03S-102516-0

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 13:02
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: Q333103

Date Received: 10/26/16
Report Revision No: 0

Analyte	CAS#	Dilution Factor	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC Volatiles									
Methane	74-82-8	1	4.25	34.1	29.1	J	ug/L	RSK-175	10/31/16
Carbon dioxide	124-38-9	1	34.9	211	26200		ug/L	RSK-175	10/31/16

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CH2M ASL

Client Information

Client Sample ID: T4S1MW22-102516-0

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 14:07
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: Q333104

Date Received: 10/26/16
Report Revision No: 0

Analyte	CAS#	Dilution Factor	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC Volatiles									
Methane	74-82-8	1	4.44	35.6	15.9	J	ug/L	RSK-175	10/31/16
Carbon dioxide	124-38-9	1	35.3	214	48400		ug/L	RSK-175	10/31/16

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CH2M ASL

Client Information

Client Sample ID: T4S1MW23-102516-0

Project Name: Northwest Pipe
Sample Date: 10/25/16
Sample Time: 15:23
Type: Grab
Matrix: Water

Lab Information

Lab Sample ID: Q333105

Date Received: 10/26/16
Report Revision No: 0

Analyte	CAS#	Dilution Factor	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC Volatiles									
Methane	74-82-8	1	4.31	34.6	5.07	J	ug/L	RSK-175	10/31/16
Carbon dioxide	124-38-9	1	35.1	212	52900		ug/L	RSK-175	10/31/16

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CH2M ASL

Client Information

Lab Information

Method Blank ID: XB1-1031

Project Name: Northwest Pipe
Sample Date: N/A
Sample Time: N/A
Type: QC
Matrix: Water

Date Received: N/A
Report Revision No: 0

Analyte	CAS#	Dilution Factor	DL	RL	Sample Result	Qualifier	Units	Analysis Method	Date Analyzed
GC Volatiles									
Methane	74-82-8	1	14.3	114	14.3	U	ug/L	RSK-175	10/31/16
Carbon dioxide	124-38-9	1	56.6	342	56.6	U	ug/L	RSK-175	10/31/16

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CH2M ASL

Client Information

Project Name: Northwest Pipe
Type: QC
Matrix: Water

Lab Information

LCS ID: BS1X1031

Report Revision No.: 0
Dilution Factor: 1

Analyte	CAS#	Spike Amount	Sample Result	Units	%Recovery	Analysis Method	Date Analyzed
GC Volatiles							
Methane	74-82-8	593	589	ug/L	99	RSK-175	10/31/16
Carbon dioxide	124-38-9	3180	3120	ug/L	98	RSK-175	10/31/16

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CASE NARRATIVE
METALS ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

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Method(s):
E200.7: FLDFLT

CH2M ASL

Client Information

Project Name: Northwest Pipe

Date Received: 10/26/16
Type: See C.O.C.
Matrix: Water

Lab Information

Lab Batch ID: Q3331

Report Revision No.: 0

Client Sample ID	Lab Sample ID	Dilution Factor	DL	RL	Result	Qual	Units	Date Analyzed
Iron: E200.7								
Dissolved Metals								
T4S1MW09-102516-0	Q333102F	1	10.0	100	7620		ug/L	11/04/16
T4S1MW03S-102516-0	Q333103F	1	10.0	100	30.4	J	ug/L	11/04/16
T4S1MW22-102516-0	Q333104F	1	10.0	100	10.0	U	ug/L	11/04/16
T4S1MW23-102516-0	Q333105F	1	10.0	100	221		ug/L	11/04/16
Total Metals								
WB10-1102	WB10-1102	1	10.0	100	10.0	U	ug/L	11/04/16

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CH2M ASL

Client Information

Project Name: Northwest Pipe
Type: QC
Matrix: Water

Lab Information

Blank Spike ID: BS10W1102

Report Revision No: 0
Dilution Factor: 1

Analyte	Spike Amount	Result	Units	%Recovery	Analysis Method	Prep Method	Date Analyzed
Metals							
Iron	1000	1090	ug/L	109	E200.7	E200.2	11/04/16

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CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

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Method(s):
E300.0A

CH2M ASL

Client Information

Project Name: Northwest Pipe

Date Received: 10/26/16
Type: See C.O.C.
Matrix: Water

Lab Information

Lab Batch ID: Q3331

Analysis Method: E300.0A
Units: mg/L
Report Revision No.: 0

Client Sample ID	Lab Sample ID	Dilution Factor	DL	RL	Chloride Result	Qualifier	Date Analyzed
General Chemistry							
T4S1MW09-102516-0	Q333102	1	0.020	0.20	2.76		10/30/16
T4S1MW03S-102516-0	Q333103	1	0.020	0.20	5.10		10/30/16
T4S1MW22-102516-0	Q333104	1	0.020	0.20	2.80		10/31/16
T4S1MW23-102516-0	Q333105	1	0.020	0.20	3.92		10/31/16
WB1-1030	WB1-1030	1	0.020	0.20	0.020	U	10/30/16

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CH2M ASL

Client Information

Project Name: Northwest Pipe

Date Received: 10/26/16
Type: See C.O.C.
Matrix: Water

Lab Information

Lab Batch ID: Q3331

Analysis Method: E300.0A
Units: mg/L
Report Revision No.: 0

Client Sample ID	Lab Sample ID	Dilution Factor	DL	RL	Sulfate Result	Qualifier	Date Analyzed
General Chemistry							
T4S1MW09-102516-0	Q333102	1	0.023	0.20	5.97		10/30/16
T4S1MW03S-102516-0	Q333103	2	0.045	0.40	24.7		11/03/16
T4S1MW22-102516-0	Q333104	1	0.023	0.20	5.49		10/31/16
T4S1MW23-102516-0	Q333105	1	0.023	0.20	7.67		10/31/16
WB1-1030	WB1-1030	1	0.023	0.20	0.023	U	10/30/16
WB1-1103	WB1-1103	1	0.023	0.20	0.042	J	11/03/16

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CH2M ASL

Client Information

Lab Information

Lab Batch ID: Q3331

Project Name: Northwest Pipe
Type: QC
Matrix: Water

Report Revision No.: 0

LCS ID	Analyte	Spike Amount	Sample Result	Units	% Recovery	Analysis Method	Date Analyzed
General Chemistry							
BS1W1030	Chloride	5.00	5.14	mg/L	103	E300.0A	10/30/16
BS1W1030	Sulfate	5.00	5.22	mg/L	104	E300.0A	10/30/16
BS1W1103	Sulfate	5.00	4.88	mg/L	98	E300.0A	11/03/16

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CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

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Method(s):
E353.2

CH2M ASL

Client Information

Project Name: Northwest Pipe

Date Received: 10/26/16
Type: See C.O.C.
Matrix: Water

Lab Information

Lab Batch ID: Q3331

Analysis Method: E353.2
Units: mg/L
Report Revision No.: 0

Client Sample ID	Lab Sample ID	Dilution Factor	DL	RL	Nitrate-N Result	Qualifier	Date Analyzed
General Chemistry							
T4S1MW09-102516-0	Q333102	10	0.028	0.10	1.23		10/26/16 17:28
T4S1MW03S-102516-0	Q333103	10	0.028	0.10	5.19		10/26/16 17:29
T4S1MW22-102516-0	Q333104	1	0.0028	0.010	0.095		10/26/16 17:30
T4S1MW23-102516-0	Q333105	1	0.0028	0.010	0.27		10/26/16 17:34
WB1-102616	WB1-102616	1	0.0028	0.010	0.0028	U	10/26/16

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CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M ASL **ASL SDG#:** Q3331

Project: Northwest Pipe **Project #:** 682722.GW.SB

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All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

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Method(s):
SM5310B

CH2M ASL

Client Information

Project Name: Northwest Pipe

Date Received: 10/26/16
Type: See C.O.C.
Matrix: Water

Lab Information

Lab Batch ID: Q3331

Analysis Method: SM5310B
Units: mg/L
Report Revision No.: 0

Client Sample ID	Lab Sample ID	Dilution Factor	DL	Total Organic Carbon RL	Result	Qualifier	Date Analyzed
General Chemistry							
T4S1MW09-102516-0	Q333102	1	0.20	0.50	1.09		10/31/16
T4S1MW03S-102516-0	Q333103	1	0.20	0.50	0.85		10/31/16
T4S1MW22-102516-0	Q333104	1	0.20	0.50	1.19		10/31/16
T4S1MW23-102516-0	Q333105	1	0.20	0.50	0.65		10/31/16
WB1-1031	WB1-1031	1	0.20	0.50	0.20	U	10/31/16

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CH2M ASL

Client Information

Lab Information

Lab Batch ID: Q3331

Project Name: Northwest Pipe
Type: QC
Matrix: Water

Report Revision No.: 0

LCS ID	Analyte	Spike Amount	Sample Result	Units	% Recovery	Analysis Method	Date Analyzed
General Chemistry							
BS1W1031	Total Organic Carbon	5.00	4.88	mg/L	98	SM5310B	10/31/16

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CH2MHILL Applied Sciences Laboratory
CHAIN OF CUSTODY RECORD
AND AGREEMENT TO PERFORM SERVICES

Chain of Custody Record

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(541) 768-3120

Client Contact

Project Name: Northwest Pipe
Project # or PO #: 682722.GW.RP
Company Name: CH2M
Address: 2020 SW 4th Ave
City/State/Zip: Portland, OR 97
Project Manager: Gretchen Gee
Phone #:
Report to email: Gretchen Gee

Analysis Turnaround Time

TAT is Calander days

TAT if different from below _____

☐ 21 days (STD)

☐ 14 days * ☐ 3 day *

☐ 7 days * ☐ 2 days *

☐ 5 days * ☐ 1 day *

* (Surcharges will apply)

Preservation Used

Analysis Requested

Sample Identification (Limit of 20 characters)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Water, Soil, Air)	Total # of Cont.	VOC - 8260C	VOC - 8260 SIM MEE RSK-175 CO2	Dissolved Fe	TOC	Nitrate, Sulfate Chloride				Sample Specific Notes:	Lab ID:
TRIPBLANK-102516	10/25	0800	G	W	6	X	X								1
T4S1MW09-102516-0		1202	G	W	12	X	X	X	X	X	X				2
T4S1MW03S-102516-0		1302	G	W	12	X	X	X	X	X	X				3
T4S1MW22-102516-0		1407	G	W	12	X	X	X	X	X	X				4
T4S1MW23-102516-0		1523	G	W	12	X	X	X	X	X	X				5

For Lab Use Only:

SDG: Q3331
Custody Seals intact? ☐ Yes ☒ No
Hand delivered? ☒ Yes ☐ No
Cooler Temp 8.1 °C 7.8c corrected
Therm ID No. 173 Therm Exp. 1/17
Packing Material: Circle Below
(Ice) Blue Ice Box Bubble Wrap
Radiological Screen? ☐ Yes ☒ No

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:

Are samples hazardous? ☐ Yes ☒ No

If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

If YES or NO is not checked above, samples will be assumed hazardous and hazardous disposal fees will be applied.

Sample Disposal (A fee may be added if samples are retained longer than 30 day per client request, samples are returned to client, or classified as hazardous.)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ months

Sampled By: [signature] Date/Time: 10/25/16 1530

Received by: Date/Time:

Received in Laboratory by: [signature] Date/Time: 10/26/16 0930

Relinquished by: [signature] Date/Time: 10/25/16 1800

Relinquished by: Date/Time:

Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☐ Other Tracking #:

Special Instructions/QC Requirements

CH2M Applied Sciences Laboratory

Sample Receipt Record

SDG ID: Q3331 Date Received: 10/26/2016

Client/Project: Northwest Pipe Received by: TW

Were custody seals intact and on the outside of the cooler?	☐ Yes	☐ No	☑ N/A
Shipping Record:	☑ Hand Delivered	☐ On File	☐ COC
Radiological Screening for DoD	☐ Yes	☐ No	☑ N/A
Packing Material:	☑ Hand Delivered	☑ Ice ☐ Blue Ice	☐ Box
Temp OK? (<6C) Therm ID: TH173 Exp. 1/17	7.8 °C	☐ Yes ☐ No	☑ N/A
Was a Chain of Custody (CoC) Provided?	☑ Yes	☐ No	☐ N/A
Was the CoC correctly filled out (If No, document below)	☑ Yes	☐ No	☐ N/A
Did sample labels agree with COC? (If No, document below)	☑ Yes	☐ No	☐ N/A
Did the CoC list a correct bottle count and the preservative types (No=Correct on CoC)	☑ Yes	☐ No	☐ N/A
Were the sample containers in good condition (not broken or leaking)?	☑ Yes	☐ No	☐ N/A
Was enough sample volume provided for analysis? (If No, document below)	☑ Yes	☐ No	☐ N/A
Containers supplied by ASL?	☑ Yes	☐ No	☐ N/A
Any sample with < 1/2 holding time remaining? If so contact LPM and document below.	☐ Yes	☑ No	☐ N/A
Samples have multi-phase? If yes, document on SRER	☐ Yes	☑ No	☐ N/A
All water VOCs free of air bubbles? No, document on SRER	☑ Yes	☐ No	☐ N/A
pH of all samples met criteria on receipt? If "No", preserve and document below.	☑ Yes	☐ No	☐ N/A
Dissolved/Soluble metals filtered in the field?	☑ Yes	☐ No	☐ N/A
Dissolved/Soluble metals have sediment in bottom of container? If so document below.	☐ Yes	☑ No	☐ N/A

Preservation Adjustment

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials/Date-Time	24 hour pH check Initials/Time

Did pH of all metals samples preserved upon receipt meet criteria 24 hours after preservation? ☐ Yes ☐ No

Sample Exception Report (The following exceptions were noted)

1) COC requestes MEE, CO2. Work plan requests CO2/Methane
2) COC requests Fe. Work plan requests Fe and Mn

Client was notified on: 10/27/16 Client contact: Gretchen Gee, Jamie Becket

Resolution to Exception:
1) log in for CO2/Methane only
2) Per Jamie only report Fe.