

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

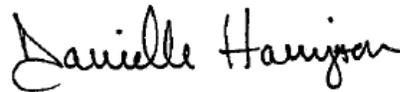
ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-113409-1
Client Project/Site: Purge Wellhead

For:
Pioneer Natural Resources USA, Inc.
5205 N. OConnor
Suite 200
Irving, Texas 75039

Attn: LaCretia White



Authorized for release by:
9/13/2018 9:51:01 AM

Danielle Harrington, Project Manager II
(303)736-0176
danielle.harrington@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

GC/MS Semi VOA

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Job ID: 280-113409-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: Pioneer Natural Resources USA, Inc.

Project: Purge Wellhead

Report Number: 280-113409-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) less than TestAmerica's standard reporting limit. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

Receipt

The samples were received on 8/21/2018; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3° C.

GC/MS Volatiles, Method 8260B

Surrogate Dibromofluoromethane for method 8260B was recovered above the QC limits in sample TRIP BLANK. This is an indicator that data may be biased high. As the sample does not contain any detectable concentrations for constituents associated with this surrogate, corrective action is deemed unnecessary.

The Method 8260B MS/MSD was performed on sample from another client and/or lot and was within control limits.

No other anomalies were observed.

GC/MS Semivolatiles, SW 846 8270D

The method 8270D required MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

The LCS/LCSD for method 8270D exhibited RPD data outside the QC limits for Hexachloroethane. The individual LCS and LCSD recoveries were acceptable; however the LCS was recovered at the low end of the recovery limit range and the LCSD was recovered at the high end of the recovery limit range, causing the RPD to be out of control. The acceptable LCS/LCSD analyte recoveries indicate that the laboratory performed the method within acceptable guidelines; therefore, corrective action is deemed unnecessary.

The prep analyst notated that the sample COLORADO 34-16 PIT SW formed emulsions during the prep phase of the analysis.

No other anomalies were observed.

GC Volatiles, SW 846 8015D

The method 8015D required MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

The analyst notated that the sample COLORADO 34-16 PIT SW contained sediment in the vials.

Case Narrative

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Job ID: 280-113409-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

The following volatile sample was analyzed with significant headspace in the sample container(s): COLORADO 34-16 PIT SW. Significant headspace is defined as a bubble greater than 6 mm in diameter.

No other anomalies were observed.

GC Semivolatiles, SW 846 8015B

The Method 8015B MS/MSD was performed on sample from another client and/or lot and was within control limits.

No other anomalies were observed.

Total Metals, MCAWW 200.7

The accuracy and precision of the Iron MS/MSD performed on a laboratory generated sample could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The Method 200.7 Total Recoverable Iron MS/MSD was performed on sample from another client and/or lot and was within control limits.

No other anomalies were observed.

General Chemistry, Various Methods

Due to analytes present above the linear calibration curve or matrix interferences, sample COLORADO 34-16 PIT SW was analyzed at a dilution for various analyses. The reporting limits have been adjusted relative to the dilution required.

The method 1664A HEM required MS/MSD could not be performed, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data.

All other MS/MSDs performed on sample from another client and/or lot was within control limits.

The Specific Gravity Sample Duplicates performed on sample COLORADO 34-16 PIT SW was within control limits.

All other Sample Duplicates performed on sample from another client and/or lot was within control limits.

No other anomalies were observed.

Detection Summary

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: COLORADO 34-16 PIT SW

Lab Sample ID: 280-113409-1

Analyte	Result	Qualifier	NONE	NONE	Unit	Dil Fac	D	Method	Prep Type
Field pH	9.51				SU	1		Field Sampling	Total/NA
Field Conductivity	2771				umhos/cm	1		Field Sampling	Total/NA
Field Temperature	16.9				Degrees C	1		Field Sampling	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	36		0.050		mg/L	1		200.7 Rev 4.4	Total Recoverable
Boron	0.39		0.050		mg/L	1		200.7	Total/NA
Calcium	20		0.10		mg/L	1		200.7	Total/NA
Chromium	0.038		0.010		mg/L	1		200.7	Total/NA
Copper	0.19		0.010		mg/L	1		200.7	Total/NA
Iron	33		0.050		mg/L	1		200.7	Total/NA
Potassium	14		5.0		mg/L	1		200.7	Total/NA
Magnesium	9.0		0.10		mg/L	1		200.7	Total/NA
Manganese	1.2		0.010		mg/L	1		200.7	Total/NA
Sodium	720		2.0		mg/L	1		200.7	Total/NA
Bromide	5.5		4.0		mg/L	20		300.0	Total/NA
Chloride	370		60		mg/L	20		300.0	Total/NA
Sulfate	170		100		mg/L	20		300.0	Total/NA
Total Alkalinity	760		5.0		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	560		5.0		mg/L	1		SM 2320B	Total/NA
Carbonate Alkalinity as CaCO3	200		5.0		mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids	3200		20		mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	90		4.0		mg/L	1		SM 2540D	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Specific Gravity	1.0027				No Unit	1		D1429-03	Total/NA
Specific Conductance	3000		1.0		umhos/cm	1		SM 2510B	Total/NA
pH	9.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 280-113409-2

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL DEN
8015D	Gasoline Range Organics (GRO) (GC)	SW846	TAL DEN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL DEN
200.7	ICP Total Metals by 200.7	EPA	TAL DEN
200.7 Rev 4.4	Metals (ICP)	EPA	TAL DEN
1664A	HEM and SGT-HEM	1664A	TAL DEN
300.0	Anions by IC	EPA	TAL DEN
D1429-03	Specific Gravity	ASTM	TAL DEN
SM 2320B	Alkalinity	SM	TAL DEN
SM 2510B	Conductivity, Specific Conductance	SM	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
SM 4500 H+ B	pH	SM	TAL DEN
Field Sampling	Field Sampling	EPA	TAL DEN
1664A	HEM and SGT-HEM (SPE)	1664A	TAL DEN
200.7	Preparation, Total Metals	EPA	TAL DEN
200.7	Preparation, Total Recoverable Metals	EPA	TAL DEN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL DEN
3520C	Liquid-Liquid Extraction (Continuous)	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN

Protocol References:

1664A = EPA-821-98-002

ASTM = ASTM International

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-113409-1	COLORADO 34-16 PIT SW	Water	08/20/18 14:19	08/21/18 09:40
280-113409-2	TRIP BLANK	Water	08/20/18 00:00	08/21/18 09:40

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Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
 Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: COLORADO 34-16 PIT SW

Lab Sample ID: 280-113409-1

Date Collected: 08/20/18 14:19

Matrix: Water

Date Received: 08/21/18 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			08/27/18 03:33	1
Ethylbenzene	ND		1.0		ug/L			08/27/18 03:33	1
Toluene	ND		1.0		ug/L			08/27/18 03:33	1
Xylenes, Total	ND		2.0		ug/L			08/27/18 03:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		70 - 127		08/27/18 03:33	1
Toluene-d8 (Surr)	94		80 - 125		08/27/18 03:33	1
4-Bromofluorobenzene (Surr)	90		78 - 120		08/27/18 03:33	1
Dibromofluoromethane (Surr)	119		77 - 120		08/27/18 03:33	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,2-Dichlorobenzene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,3-Dichlorobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,2,4,5-Tetrachlorobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
bis (2-chloroisopropyl) ether	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,4,5-Trichlorophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,4,6-Trichlorophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,4-Dimethylphenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,4-Dinitrotoluene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,4-Dinitrophenol	ND		28		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,4-Dichlorophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,6-Dinitrotoluene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,6-Dichlorophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2-Chlorophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2-Chloronaphthalene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
2-Nitrophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2-Nitroaniline	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2-Methylphenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
3,3'-Dichlorobenzidine	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
3 & 4 Methylphenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
3-Nitroaniline	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4,6-Dinitro-2-methylphenol	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Bromophenyl phenyl ether	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Chloro-3-methylphenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Chloroaniline	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Chlorophenyl phenyl ether	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Methylphenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Nitrophenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
4-Nitroaniline	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Acenaphthene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Aniline	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Anthracene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Azobenzene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Acetophenone	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Acenaphthylene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1

TestAmerica Denver

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: COLORADO 34-16 PIT SW

Lab Sample ID: 280-113409-1

Date Collected: 08/20/18 14:19

Matrix: Water

Date Received: 08/21/18 09:40

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Benzo[b]fluoranthene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Benzo[k]fluoranthene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Benzoic acid	ND		24		ug/L		08/22/18 14:02	08/28/18 19:37	1
Benzo[g,h,i]perylene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Benzo[a]pyrene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Benzyl alcohol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Bis(2-chloroethoxy)methane	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Bis(2-ethylhexyl) phthalate	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Butyl benzyl phthalate	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Bis(2-chloroethyl)ether	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Carbazole	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Chrysene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Di-n-butyl phthalate	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Di-n-octyl phthalate	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Dibenz(a,h)anthracene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Dibenzofuran	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Diethyl phthalate	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Dimethyl phthalate	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Diphenylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Fluoranthene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Fluorene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Hexachlorobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Hexachlorobutadiene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Hexachlorocyclopentadiene	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
Hexachloroethane	ND *		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Indeno[1,2,3-cd]pyrene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Isophorone	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
N-Nitrosodi-n-butylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
N-Nitrosodiethylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
N-Nitrosodi-n-propylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
N-Nitrosodiphenylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
N-Nitrosomethylethylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Pentachlorobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Pentachlorophenol	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
Phenanthrene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Phenol	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Pyrene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Pyridine	ND		19		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,4-Dichlorobenzene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Naphthalene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
2-Methylnaphthalene	ND		3.8		ug/L		08/22/18 14:02	08/28/18 19:37	1
Nitrobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
1-Chloronaphthalene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
2,3,4,6-Tetrachlorophenol	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
Dibenz[a,j]acridine	ND		19		ug/L		08/22/18 14:02	08/28/18 19:37	1
Pronamide	ND		19		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,3-Dinitrobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
1,4-Dinitrobenzene	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1

TestAmerica Denver

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: COLORADO 34-16 PIT SW

Lab Sample ID: 280-113409-1

Date Collected: 08/20/18 14:19

Matrix: Water

Date Received: 08/21/18 09:40

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzilate	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Disulfoton	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
Phorate	ND		47		ug/L		08/22/18 14:02	08/28/18 19:37	1
N-Nitrosodimethylamine	ND		9.5		ug/L		08/22/18 14:02	08/28/18 19:37	1
Dinoseb	ND		19		ug/L		08/22/18 14:02	08/28/18 19:37	1
4,4'-Methylene bis(2-chloroaniline)	ND		95		ug/L		08/22/18 14:02	08/28/18 19:37	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Cyclohexane	20	T J N	ug/L		1.66	110-82-7	08/22/18 14:02	08/28/18 19:37	1
3-Buten-2-one, 3-methyl-	6.8	T J N	ug/L		1.71	814-78-8	08/22/18 14:02	08/28/18 19:37	1
Unknown	190	T J	ug/L		1.74		08/22/18 14:02	08/28/18 19:37	1
Unknown	3.9	T J	ug/L		1.79		08/22/18 14:02	08/28/18 19:37	1
Unknown	3.8	T J	ug/L		2.63		08/22/18 14:02	08/28/18 19:37	1
Unknown	7.9	T J	ug/L		2.70		08/22/18 14:02	08/28/18 19:37	1
Unknown	5.5	T J	ug/L		2.97		08/22/18 14:02	08/28/18 19:37	1
Unknown	68	T J	ug/L		3.12		08/22/18 14:02	08/28/18 19:37	1
Unknown	6.1	T J	ug/L		4.07		08/22/18 14:02	08/28/18 19:37	1
Ethanol, 2-(2-ethoxyethoxy)-	5.6	T J N	ug/L		4.43	111-90-0	08/22/18 14:02	08/28/18 19:37	1
Unknown	6.9	T J	ug/L		7.99		08/22/18 14:02	08/28/18 19:37	1
Unknown	5.4	T J	ug/L		9.53		08/22/18 14:02	08/28/18 19:37	1
n-Hexadecanoic acid	26	T J N	ug/L		9.61	57-10-3	08/22/18 14:02	08/28/18 19:37	1
9,12,15-Octadecatrienoic acid, methyl ester, (Z,Z,Z)-	20	T J N	ug/L		10.51	301-00-8	08/22/18 14:02	08/28/18 19:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	89		48 - 120	08/22/18 14:02	08/28/18 19:37	1
2-Fluorophenol (Surr)	94		41 - 120	08/22/18 14:02	08/28/18 19:37	1
2,4,6-Tribromophenol (Surr)	90		42 - 131	08/22/18 14:02	08/28/18 19:37	1
Nitrobenzene-d5 (Surr)	91		42 - 120	08/22/18 14:02	08/28/18 19:37	1
Phenol-d5 (Surr)	99		45 - 124	08/22/18 14:02	08/28/18 19:37	1
Terphenyl-d14 (Surr)	23		20 - 130	08/22/18 14:02	08/28/18 19:37	1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		25		ug/L			08/28/18 19:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	103		82 - 110		08/28/18 19:54	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		240		ug/L		08/22/18 10:52	09/07/18 22:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	53		50 - 115	08/22/18 10:52	09/07/18 22:43	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	36		0.050		mg/L		08/22/18 14:30	08/24/18 08:57	1

TestAmerica Denver

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: COLORADO 34-16 PIT SW

Lab Sample ID: 280-113409-1

Date Collected: 08/20/18 14:19

Matrix: Water

Date Received: 08/21/18 09:40

Method: 200.7 - ICP Total Metals by 200.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050		mg/L		08/22/18 08:15	08/22/18 17:44	1
Boron	0.39		0.050		mg/L		08/22/18 08:15	08/22/18 17:44	1
Calcium	20		0.10		mg/L		08/22/18 08:15	08/22/18 17:44	1
Chromium	0.038		0.010		mg/L		08/22/18 08:15	08/22/18 17:44	1
Copper	0.19		0.010		mg/L		08/22/18 08:15	08/22/18 17:44	1
Iron	33		0.050		mg/L		08/22/18 08:15	08/22/18 17:44	1
Potassium	14		5.0		mg/L		08/22/18 08:15	08/22/18 17:44	1
Magnesium	9.0		0.10		mg/L		08/22/18 08:15	08/22/18 17:44	1
Manganese	1.2		0.010		mg/L		08/22/18 08:15	08/22/18 17:44	1
Sodium	720		2.0		mg/L		08/22/18 08:15	08/22/18 17:44	1
Selenium	ND		0.015		mg/L		08/22/18 08:15	08/22/18 17:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		4.8		mg/L		09/05/18 07:30	09/06/18 05:45	1
Bromide	5.5		4.0		mg/L			08/22/18 04:08	20
Chloride	370		60		mg/L			08/22/18 04:08	20
Sulfate	170		100		mg/L			08/22/18 04:08	20
Total Alkalinity	760		5.0		mg/L			08/22/18 21:02	1
Bicarbonate Alkalinity as CaCO3	560		5.0		mg/L			08/22/18 21:02	1
Carbonate Alkalinity as CaCO3	200		5.0		mg/L			08/22/18 21:02	1
Hydroxide Alkalinity	ND		5.0		mg/L			08/22/18 21:02	1
Total Dissolved Solids	3200		20		mg/L			08/22/18 13:49	1
Total Suspended Solids	90		4.0		mg/L			08/22/18 18:15	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Gravity	1.0027				No Unit			08/21/18 22:26	1
Specific Conductance	3000		1.0		umhos/cm			08/24/18 17:07	1
pH	9.4	HF	0.1		SU			08/22/18 20:58	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	9.51				SU			08/20/18 14:19	1
Field Conductivity	2771				umhos/cm			08/20/18 14:19	1
Field Temperature	16.9				Degrees C			08/20/18 14:19	1

Client Sample Results

Client: Pioneer Natural Resources USA, Inc.
 Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 280-113409-2

Date Collected: 08/20/18 00:00

Matrix: Water

Date Received: 08/21/18 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			08/27/18 03:54	1
Ethylbenzene	ND		1.0		ug/L			08/27/18 03:54	1
Toluene	ND		1.0		ug/L			08/27/18 03:54	1
Xylenes, Total	ND		2.0		ug/L			08/27/18 03:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		70 - 127		08/27/18 03:54	1
Toluene-d8 (Surr)	100		80 - 125		08/27/18 03:54	1
4-Bromofluorobenzene (Surr)	92		78 - 120		08/27/18 03:54	1
Dibromofluoromethane (Surr)	122	X	77 - 120		08/27/18 03:54	1

Surrogate Summary

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (70-127)	TOL (80-125)	BFB (78-120)	DBFM (77-120)
280-113409-1	COLORADO 34-16 PIT SW	120	94	90	119
280-113409-2	TRIP BLANK	123	100	92	122 X
280-113460-K-2 MS	Matrix Spike	114	98	88	119
280-113460-K-2 MSD	Matrix Spike Duplicate	113	99	87	116
LCS 280-427576/4	Lab Control Sample	112	96	88	117
MB 280-427576/8	Method Blank	113	97	89	116

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)					
		FBP (48-120)	2FP (41-120)	TBP (42-131)	NBZ (42-120)	PHL (45-124)	TPHL (20-130)
280-113409-1	COLORADO 34-16 PIT SW	89	94	90	91	99	23
LCS 280-427139/2-A	Lab Control Sample	82	83	86	83	84	76
LCSD 280-427139/3-A	Lab Control Sample Dup	85	87	86	85	90	82
MB 280-427139/1-A	Method Blank	89	92	86	90	94	81

Surrogate Legend

FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHL = Terphenyl-d14 (Surr)

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFT1
		(82-110)
280-113409-1	COLORADO 34-16 PIT SW	103
LCS 280-427787/7	Lab Control Sample	106
LCSD 280-427787/8	Lab Control Sample Dup	102
MB 280-427787/33	Method Blank	106

Surrogate Legend

TFT = a,a,a-Trifluorotoluene

Surrogate Summary

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTPH1 (50-115)
280-113397-E-5-B MS	Matrix Spike	105
280-113397-G-5-C MSD	Matrix Spike Duplicate	104
280-113409-1	COLORADO 34-16 PIT SW	53
LCS 280-427114/2-A	Lab Control Sample	115
LCSD 280-427114/3-A	Lab Control Sample Dup	99
MB 280-427114/1-A	Method Blank	110

Surrogate Legend

OTPH = o-Terphenyl

Lab Chronicle

Client: Pioneer Natural Resources USA, Inc.
Project/Site: Purge Wellhead

TestAmerica Job ID: 280-113409-1

Client Sample ID: COLORADO 34-16 PIT SW

Lab Sample ID: 280-113409-1

Date Collected: 08/20/18 14:19

Matrix: Water

Date Received: 08/21/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	427576	08/27/18 03:33	FCN	TAL DEN
Total/NA	Prep	3520C			1055.2 mL	1 mL	427139	08/22/18 14:02	KTK	TAL DEN
Total/NA	Analysis	8270D		1			427827	08/28/18 19:37	DCK	TAL DEN
Total/NA	Analysis	8015D		1	5 mL	5 mL	427787	08/28/18 19:54	CS	TAL DEN
Total/NA	Prep	3510C			1035.4 mL	1 mL	427114	08/22/18 10:52		TAL DEN
Total/NA	Analysis	8015B		1			428863	09/07/18 22:43	CSM	TAL DEN
Total/NA	Prep	200.7			50 mL	50 mL	427039	08/22/18 08:15	THP	TAL DEN
Total/NA	Analysis	200.7		1			427231	08/22/18 17:44	TEB	TAL DEN
Total Recoverable	Prep	200.7			50 mL	50 mL	427055	08/22/18 14:30	DAL	TAL DEN
Total Recoverable	Analysis	200.7 Rev 4.4		1			427432	08/24/18 08:57	CRR	TAL DEN
Total/NA	Prep	1664A			1052 mL	1000 mL	428559	09/05/18 07:30	PAH	TAL DEN
Total/NA	Analysis	1664A		1	1000 mL	1000 mL	428674	09/06/18 05:45	PAH	TAL DEN
Total/NA	Analysis	300.0		20	5 mL	5 mL	426980	08/22/18 04:08	ARM	TAL DEN
Total/NA	Analysis	D1429-03		1			427060	08/21/18 22:26	CKB	TAL DEN
Total/NA	Analysis	SM 2320B		1			427276	08/22/18 21:02	SGB	TAL DEN
Total/NA	Analysis	SM 2510B		1			427468	08/24/18 17:07	RSM	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	427159	08/22/18 13:49	SGB	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	427200	08/22/18 18:15	BJP	TAL DEN
Total/NA	Analysis	SM 4500 H+ B		1			427288	08/22/18 20:58	SGB	TAL DEN
Total/NA	Analysis	Field Sampling		1			427208	08/20/18 14:19	S1D	TAL DEN

Client Sample ID: TRIP BLANK

Lab Sample ID: 280-113409-2

Date Collected: 08/20/18 00:00

Matrix: Water

Date Received: 08/21/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	427576	08/27/18 03:54	FCN	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

