

September 23, 2015

Ms. Melissa O'Neal
WV Water Research Institute

RE: Project: WWRI
Pace Project No.: 30159329

Dear Ms. O'Neal:

Enclosed are the analytical results for sample(s) received by the laboratory on September 16, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Timothy Reed
timothy.reed@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: WVWRI
Pace Project No.: 30159329

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235

Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: WVWRI
Pace Project No.: 30159329

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30159329001	M-23	Water	09/14/15 11:00	09/16/15 13:45
30159329002	YO	Water	09/14/15 13:00	09/16/15 13:45
30159329003	M-61	Water	09/14/15 13:50	09/16/15 13:45
30159329004	TM	Water	09/14/15 14:15	09/16/15 13:45
30159329005	M-82	Water	09/14/15 15:00	09/16/15 13:45
30159329006	WH	Water	09/14/15 15:30	09/16/15 13:45
30159329007	DU	Water	09/14/15 16:00	09/16/15 13:45
30159329008	CH	Water	09/14/15 16:30	09/16/15 13:45
30159329009	M-89	Water	09/14/15 17:00	09/16/15 13:45
30159329010	DE	Water	09/15/15 12:30	09/16/15 13:45
30159329011	M-102	Water	09/15/15 13:00	09/16/15 13:45
30159329012	WF	Water	09/15/15 14:00	09/16/15 13:45
30159329013	TV	Water	09/15/15 14:30	09/16/15 13:45
30159329014	IN	Water	09/15/15 15:00	09/16/15 13:45
30159329015	FM	Water	09/15/15 15:30	09/16/15 13:45

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SAMPLE ANALYTE COUNT

Project: WVWRI
Pace Project No.: 30159329

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30159329001	M-23	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329002	YO	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329003	M-61	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329004	TM	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329005	M-82	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329006	WH	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329007	DU	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329008	CH	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329009	M-89	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329010	DE	EPA 6010B	KAS	8	PASI-PA

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SAMPLE ANALYTE COUNT

Project: WVWRI
Pace Project No.: 30159329

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30159329011	M-102	SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
		EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
30159329012	WF	SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
		EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
30159329013	TV	EPA 300.0	BMS	3	PASI-PA
		EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
30159329014	IN	EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
		EPA 6010B	KAS	8	PASI-PA
30159329015	FM	SM 2320B	LEP	1	PASI-PA
		SM 2540C	DEH	1	PASI-PA
		EPA 300.0	BMS	3	PASI-PA
		EPA 6010B	KAS	8	PASI-PA
		SM 2320B	LEP	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: WVWRI
Pace Project No.: 30159329

Method: EPA 6010B
Description: 6010 MET ICP,Dissolved
Client: WV Water Research Institute
Date: September 23, 2015

General Information:

15 samples were analyzed for EPA 6010B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3005A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/16457

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30159329002,30159329008

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 954647)
 - Calcium, Dissolved
 - Sodium, Dissolved

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: WVWRI
Pace Project No.: 30159329

Method: SM 2320B
Description: 2320B Alkalinity
Client: WV Water Research Institute
Date: September 23, 2015

General Information:

15 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WET/30105

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30159457001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 954715)
 - Alkalinity, Total as CaCO₃
- MSD (Lab ID: 954716)
 - Alkalinity, Total as CaCO₃

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: WVWRI
Pace Project No.: 30159329

Method: SM 2540C
Description: 2540C Total Dissolved Solids
Client: WV Water Research Institute
Date: September 23, 2015

General Information:

15 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: WVWRI
Pace Project No.: 30159329

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: WV Water Research Institute
Date: September 23, 2015

General Information:

15 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: WETA/21274

B: Analyte was detected in the associated method blank.

- BLANK for HBN 195217 [WETA/212 (Lab ID: 954990)
- Chloride

QC Batch: WETA/21275

B: Analyte was detected in the associated method blank.

- BLANK for HBN 195218 [WETA/212 (Lab ID: 954994)
- Chloride

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: M-23 Lab ID: 30159329001 Collected: 09/14/15 11:00 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:30	7429-90-5	
Barium, Dissolved	52.2	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:30	7440-39-3	
Calcium, Dissolved	40.9	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:30	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:30	7439-89-6	
Magnesium, Dissolved	12.8	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:30	7439-95-4	
Manganese, Dissolved	0.020	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:30	7439-96-5	
Sodium, Dissolved	62.1	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:30	7440-23-5	
Strontium, Dissolved	366	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:30	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	72.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	344	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.20	mg/L	0.020	0.020	1		09/22/15 12:22	24959-67-9	
Chloride	42.5	mg/L	3.1	3.1	50		09/23/15 02:18	16887-00-6	B
Sulfate	141	mg/L	3.1	3.1	50		09/23/15 02:18	14808-79-8	M6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: YO Lab ID: 30159329002 Collected: 09/14/15 13:00 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	0.069	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:17	7429-90-5	
Barium, Dissolved	41.4	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:17	7440-39-3	
Calcium, Dissolved	46.2	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:17	7440-70-2	M1
Iron, Dissolved	0.19	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:17	7439-89-6	
Magnesium, Dissolved	13.3	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:17	7439-95-4	
Manganese, Dissolved	0.063	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:17	7439-96-5	
Sodium, Dissolved	48.8	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:17	7440-23-5	M1
Strontium, Dissolved	371	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:17	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	78.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	315	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.069	mg/L	0.020	0.020	1		09/22/15 13:09	24959-67-9	
Chloride	53.6	mg/L	3.1	3.1	50		09/23/15 03:08	16887-00-6	B
Sulfate	112	mg/L	3.1	3.1	50		09/23/15 03:08	14808-79-8	

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: M-61 Lab ID: 30159329003 Collected: 09/14/15 13:50 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:32	7429-90-5	
Barium, Dissolved	53.4	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:32	7440-39-3	
Calcium, Dissolved	42.2	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:32	7440-70-2	
Iron, Dissolved	0.091	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:32	7439-89-6	
Magnesium, Dissolved	12.9	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:32	7439-95-4	
Manganese, Dissolved	0.023	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:32	7439-96-5	
Sodium, Dissolved	52.3	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:32	7440-23-5	
Strontium, Dissolved	367	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:32	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	212	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1530	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	1.5	mg/L	0.040	0.040	2		09/22/15 23:47	24959-67-9	
Chloride	273	mg/L	12.5	12.5	200		09/23/15 03:24	16887-00-6	B
Sulfate	578	mg/L	12.5	12.5	200		09/23/15 03:24	14808-79-8	

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: TM		Lab ID: 30159329004		Collected: 09/14/15 14:15	Received: 09/16/15 13:45	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP,Dissolved		Analytical Method: EPA 6010B Preparation Method: EPA 3005A								
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:35	7429-90-5		
Barium, Dissolved	79.1	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:35	7440-39-3		
Calcium, Dissolved	87.5	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:35	7440-70-2		
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:35	7439-89-6		
Magnesium, Dissolved	27.6	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:35	7439-95-4		
Manganese, Dissolved	0.22	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:35	7439-96-5		
Sodium, Dissolved	403	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:35	7440-23-5		
Strontium, Dissolved	1170	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:35	7440-24-6		
2320B Alkalinity		Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	72.0	mg/L	10.0	2.8	1		09/21/15 15:30			
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	327	mg/L	10.0	10.0	1		09/21/15 20:00			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Bromide	0.18	mg/L	0.020	0.020	1		09/22/15 13:40	24959-67-9		
Chloride	33.0	mg/L	3.1	3.1	50		09/23/15 03:41	16887-00-6	B	
Sulfate	146	mg/L	3.1	3.1	50		09/23/15 03:41	14808-79-8		

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: M-82 Lab ID: 30159329005 Collected: 09/14/15 15:00 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:37	7429-90-5	
Barium, Dissolved	52.7	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:37	7440-39-3	
Calcium, Dissolved	46.2	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:37	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:37	7439-89-6	
Magnesium, Dissolved	14.8	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:37	7439-95-4	
Manganese, Dissolved	0.052	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:37	7439-96-5	
Sodium, Dissolved	67.0	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:37	7440-23-5	
Strontium, Dissolved	411	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:37	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO ₃	62.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	360	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.13	mg/L	0.020	0.020	1		09/22/15 13:56	24959-67-9	
Chloride	32.2	mg/L	3.1	3.1	50		09/23/15 03:57	16887-00-6	B
Sulfate	181	mg/L	3.1	3.1	50		09/23/15 03:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: WH		Lab ID: 30159329006		Collected: 09/14/15 15:30	Received: 09/16/15 13:45	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP,Dissolved		Analytical Method: EPA 6010B Preparation Method: EPA 3005A								
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:49	7429-90-5		
Barium, Dissolved	48.4	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:49	7440-39-3		
Calcium, Dissolved	63.3	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:49	7440-70-2		
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:49	7439-89-6		
Magnesium, Dissolved	46.4	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:49	7439-95-4		
Manganese, Dissolved	0.030	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:49	7439-96-5		
Sodium, Dissolved	1240	mg/L	10.0	3.1	10	09/21/15 11:17	09/21/15 20:25	7440-23-5		
Strontium, Dissolved	2100	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:49	7440-24-6		
2320B Alkalinity		Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	586	mg/L	10.0	2.8	1		09/21/15 15:30			
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	3900	mg/L	10.0	10.0	1		09/21/15 20:00			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Bromide	6.0	mg/L	0.20	0.20	10		09/23/15 00:03	24959-67-9		
Chloride	644	mg/L	31.2	31.2	500		09/23/15 04:14	16887-00-6	B	
Sulfate	1360	mg/L	31.2	31.2	500		09/23/15 04:14	14808-79-8		

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: DU Lab ID: 30159329007 Collected: 09/14/15 16:00 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	0.26	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:47	7429-90-5	
Barium, Dissolved	34.2	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:47	7440-39-3	
Calcium, Dissolved	78.3	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:47	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:47	7439-89-6	
Magnesium, Dissolved	27.2	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:47	7439-95-4	
Manganese, Dissolved	0.094	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:47	7439-96-5	
Sodium, Dissolved	168	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:47	7440-23-5	
Strontium, Dissolved	726	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:47	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	127	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	871	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.37	mg/L	0.020	0.020	1		09/22/15 14:27	24959-67-9	
Chloride	63.8	mg/L	6.2	6.2	100		09/23/15 04:31	16887-00-6	B
Sulfate	361	mg/L	6.2	6.2	100		09/23/15 04:31	14808-79-8	

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: CH Lab ID: 30159329008 Collected: 09/14/15 16:30 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:57	7429-90-5	
Barium, Dissolved	41.0	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:57	7440-39-3	
Calcium, Dissolved	16.8	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:57	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:57	7439-89-6	
Magnesium, Dissolved	3.8	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:57	7439-95-4	
Manganese, Dissolved	0.077	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:57	7439-96-5	
Sodium, Dissolved	5.4	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:57	7440-23-5	
Strontium, Dissolved	66.3	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:57	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	22.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	44.0	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	0.020	0.020	1		09/22/15 14:42	24959-67-9	
Chloride	3.8	mg/L	0.31	0.31	5		09/23/15 04:47	16887-00-6	B
Sulfate	31.9	mg/L	0.31	0.31	5		09/23/15 04:47	14808-79-8	

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: M-89 Lab ID: 30159329009 Collected: 09/14/15 17:00 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:52	7429-90-5	
Barium, Dissolved	56.0	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:52	7440-39-3	
Calcium, Dissolved	48.8	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:52	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:52	7439-89-6	
Magnesium, Dissolved	15.0	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:52	7439-95-4	
Manganese, Dissolved	0.054	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:52	7439-96-5	
Sodium, Dissolved	49.4	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:52	7440-23-5	
Strontium, Dissolved	433	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:52	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	70.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	335	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.096	mg/L	0.020	0.020	1		09/22/15 14:58	24959-67-9	
Chloride	17.6	mg/L	0.62	0.62	10		09/23/15 05:04	16887-00-6	B
Sulfate	167	mg/L	3.1	3.1	50		09/23/15 05:20	14808-79-8	

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: DE		Lab ID: 30159329010		Collected: 09/15/15 12:30	Received: 09/16/15 13:45	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP,Dissolved		Analytical Method: EPA 6010B Preparation Method: EPA 3005A								
Aluminum, Dissolved	0.052	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:54	7429-90-5		
Barium, Dissolved	106	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:54	7440-39-3		
Calcium, Dissolved	123	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:54	7440-70-2		
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:54	7439-89-6		
Magnesium, Dissolved	21.7	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:54	7439-95-4		
Manganese, Dissolved	0.042	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:54	7439-96-5		
Sodium, Dissolved	20.8	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:54	7440-23-5		
Strontium, Dissolved	409	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:54	7440-24-6		
2320B Alkalinity		Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	48.0	mg/L	10.0	2.8	1		09/21/15 15:30			
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	576	mg/L	10.0	10.0	1		09/21/15 20:00			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Bromide	0.060	mg/L	0.020	0.020	1		09/22/15 15:14	24959-67-9		
Chloride	21.3	mg/L	0.62	0.62	10		09/23/15 06:27	16887-00-6	B	
Sulfate	289	mg/L	6.2	6.2	100		09/23/15 06:43	14808-79-8		

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: M-102		Lab ID: 30159329011		Collected: 09/15/15 13:00	Received: 09/16/15 13:45	Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved		Analytical Method: EPA 6010B Preparation Method: EPA 3005A							
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 19:45	7429-90-5	
Barium, Dissolved	45.2	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 19:45	7440-39-3	
Calcium, Dissolved	39.5	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 19:45	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 19:45	7439-89-6	
Magnesium, Dissolved	10.5	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 19:45	7439-95-4	
Manganese, Dissolved	0.023	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 19:45	7439-96-5	
Sodium, Dissolved	30.5	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 19:45	7440-23-5	
Strontium, Dissolved	317	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 19:45	7440-24-6	
2320B Alkalinity		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	62.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	229	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Bromide	0.051	mg/L	0.020	0.020	1		09/22/15 16:16	24959-67-9	
Chloride	10.0	mg/L	0.12	0.12	2		09/23/15 07:00	16887-00-6	
Sulfate	125	mg/L	3.1	3.1	50		09/23/15 07:49	14808-79-8	M6

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: WF Lab ID: 30159329012 Collected: 09/15/15 14:00 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 20:04	7429-90-5	
Barium, Dissolved	45.5	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 20:04	7440-39-3	
Calcium, Dissolved	81.8	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 20:04	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 20:04	7439-89-6	
Magnesium, Dissolved	22.8	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 20:04	7439-95-4	
Manganese, Dissolved	0.054	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 20:04	7439-96-5	
Sodium, Dissolved	43.6	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 20:04	7440-23-5	
Strontium, Dissolved	725	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 20:04	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	108	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	470	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.064	mg/L	0.020	0.020	1		09/22/15 17:02	24959-67-9	
Chloride	18.8	mg/L	0.62	0.62	10		09/23/15 08:39	16887-00-6	B
Sulfate	226	mg/L	3.1	3.1	50		09/23/15 08:56	14808-79-8	

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ANALYTICAL RESULTS

Project: WVWRI
Pace Project No.: 30159329

Sample: TV									
Lab ID: 30159329013 Collected: 09/15/15 14:30 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 20:06	7429-90-5	
Barium, Dissolved	34.1	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 20:06	7440-39-3	
Calcium, Dissolved	18.0	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 20:06	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 20:06	7439-89-6	
Magnesium, Dissolved	4.2	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 20:06	7439-95-4	
Manganese, Dissolved	0.017	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 20:06	7439-96-5	
Sodium, Dissolved	15.6	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 20:06	7440-23-5	
Strontium, Dissolved	96.4	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 20:06	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	38.0	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	60.0	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	ND	mg/L	0.020	0.020	1		09/22/15 17:18	24959-67-9	
Chloride	4.7	mg/L	0.31	0.31	5		09/23/15 09:12	16887-00-6	B
Sulfate	24.4	mg/L	0.31	0.31	5		09/23/15 09:12	14808-79-8	

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ANALYTICAL RESULTS

Project: WVVRI
Pace Project No.: 30159329

Sample: IN		Lab ID: 30159329014		Collected: 09/15/15 15:00	Received: 09/16/15 13:45	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP,Dissolved		Analytical Method: EPA 6010B Preparation Method: EPA 3005A								
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 20:14	7429-90-5		
Barium, Dissolved	17.8	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 20:14	7440-39-3		
Calcium, Dissolved	213	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 20:14	7440-70-2		
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 20:14	7439-89-6		
Magnesium, Dissolved	82.4	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 20:14	7439-95-4		
Manganese, Dissolved	0.036	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 20:14	7439-96-5		
Sodium, Dissolved	747	mg/L	1.0	0.31	1	09/21/15 11:17	09/21/15 20:14	7440-23-5		
Strontium, Dissolved	2970	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 20:14	7440-24-6		
2320B Alkalinity		Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	282	mg/L	10.0	2.8	1		09/21/15 15:30			
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	3280	mg/L	10.0	10.0	1		09/21/15 20:00			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Bromide	0.52	mg/L	0.020	0.020	1		09/22/15 17:34	24959-67-9		
Chloride	83.6	mg/L	6.2	6.2	100		09/23/15 09:29	16887-00-6	B	
Sulfate	1600	mg/L	62.5	62.5	1000		09/23/15 09:45	14808-79-8		

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ANALYTICAL RESULTS

Project: WVWRI
Pace Project No.: 30159329

Sample: FM									
Lab ID: 30159329015 Collected: 09/15/15 15:30 Received: 09/16/15 13:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP,Dissolved Analytical Method: EPA 6010B Preparation Method: EPA 3005A									
Aluminum, Dissolved	ND	mg/L	0.050	0.0080	1	09/21/15 11:17	09/21/15 20:17	7429-90-5	
Barium, Dissolved	ND	ug/L	10.0	0.80	1	09/21/15 11:17	09/21/15 20:17	7440-39-3	
Calcium, Dissolved	388	mg/L	1.0	0.017	1	09/21/15 11:17	09/21/15 20:17	7440-70-2	
Iron, Dissolved	ND	mg/L	0.070	0.0089	1	09/21/15 11:17	09/21/15 20:17	7439-89-6	
Magnesium, Dissolved	164	mg/L	0.20	0.024	1	09/21/15 11:17	09/21/15 20:17	7439-95-4	
Manganese, Dissolved	0.15	mg/L	0.0050	0.00049	1	09/21/15 11:17	09/21/15 20:17	7439-96-5	
Sodium, Dissolved	1200	mg/L	10.0	3.1	10	09/21/15 11:17	09/21/15 20:27	7440-23-5	
Strontium, Dissolved	3890	ug/L	5.0	0.52	1	09/21/15 11:17	09/21/15 20:17	7440-24-6	
2320B Alkalinity Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	107	mg/L	10.0	2.8	1		09/21/15 15:30		
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	6000	mg/L	10.0	10.0	1		09/21/15 20:00		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Bromide	0.69	mg/L	0.020	0.020	1		09/22/15 17:49	24959-67-9	
Chloride	111	mg/L	6.2	6.2	100		09/23/15 10:02	16887-00-6	B
Sulfate	3570	mg/L	62.5	62.5	1000		09/23/15 11:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WVWRI
Pace Project No.: 30159329

QC Batch: MPRP/16457 Analysis Method: EPA 6010B
QC Batch Method: EPA 3005A Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010, 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

METHOD BLANK: 954643 Matrix: Water
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010, 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	mg/L	ND	0.050	09/21/15 19:13	
Barium, Dissolved	ug/L	ND	10.0	09/21/15 19:13	
Calcium, Dissolved	mg/L	ND	1.0	09/21/15 19:13	
Iron, Dissolved	mg/L	ND	0.070	09/21/15 19:13	
Magnesium, Dissolved	mg/L	ND	0.20	09/21/15 19:13	
Manganese, Dissolved	mg/L	ND	0.0050	09/21/15 19:13	
Sodium, Dissolved	mg/L	ND	1.0	09/21/15 19:13	
Strontium, Dissolved	ug/L	ND	5.0	09/21/15 19:13	

LABORATORY CONTROL SAMPLE: 954644

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	mg/L	5	4.8	95	80-120	
Barium, Dissolved	ug/L	500	474	95	80-120	
Calcium, Dissolved	mg/L	5	4.8	96	80-120	
Iron, Dissolved	mg/L	5	4.9	97	80-120	
Magnesium, Dissolved	mg/L	5	4.8	96	80-120	
Manganese, Dissolved	mg/L	.5	0.48	95	80-120	
Sodium, Dissolved	mg/L	5	4.8	96	80-120	
Strontium, Dissolved	ug/L	500	484	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 954646 954647

Parameter	Units	30159329002		954647		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Spike Conc.	MSD Result						
Aluminum, Dissolved	mg/L	0.069	5	5	5.4	5.4	106	106	75-125	0	20
Barium, Dissolved	ug/L	41.4	500	500	570	560	106	104	75-125	2	20
Calcium, Dissolved	mg/L	46.2	5	5	52.0	53.1	116	137	75-125	2	20 M1
Iron, Dissolved	mg/L	0.19	5	5	5.5	5.6	107	108	75-125	1	20
Magnesium, Dissolved	mg/L	13.3	5	5	18.7	19.2	109	118	75-125	3	20
Manganese, Dissolved	mg/L	0.063	.5	.5	0.59	0.59	106	105	75-125	1	20
Sodium, Dissolved	mg/L	48.8	5	5	54.8	55.1	120	126	75-125	1	20 M1
Strontium, Dissolved	ug/L	371	500	500	911	908	108	107	75-125	0	20

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QUALITY CONTROL DATA

Project: WVWRI
Pace Project No.: 30159329

MATRIX SPIKE SAMPLE: 954649		30159329008	Spike	MS	MS	% Rec	Qualifiers
Parameter	Units	Result	Conc.	Result	% Rec	Limits	
Aluminum, Dissolved	mg/L	ND	5	5.3	105	75-125	
Barium, Dissolved	ug/L	41.0	500	566	105	75-125	
Calcium, Dissolved	mg/L	16.8	5	21.9	101	75-125	
Iron, Dissolved	mg/L	ND	5	5.4	108	75-125	
Magnesium, Dissolved	mg/L	3.8	5	9.2	108	75-125	
Manganese, Dissolved	mg/L	0.077	.5	0.61	107	75-125	
Sodium, Dissolved	mg/L	5.4	5	10.4	100	75-125	
Strontium, Dissolved	ug/L	66.3	500	600	107	75-125	

SAMPLE DUPLICATE: 954645		30159329002	Dup	RPD	Max	Qualifiers
Parameter	Units	Result	Result	RPD	RPD	
Aluminum, Dissolved	mg/L	0.069	0.059	14	20	
Barium, Dissolved	ug/L	41.4	41.4	0	20	
Calcium, Dissolved	mg/L	46.2	46.8	1	20	
Iron, Dissolved	mg/L	0.19	0.19	2	20	
Magnesium, Dissolved	mg/L	13.3	13.4	1	20	
Manganese, Dissolved	mg/L	0.063	0.063	0	20	
Sodium, Dissolved	mg/L	48.8	49.3	1	20	
Strontium, Dissolved	ug/L	371	373	1	20	

SAMPLE DUPLICATE: 954648		30159329008	Dup	RPD	Max	Qualifiers
Parameter	Units	Result	Result	RPD	RPD	
Aluminum, Dissolved	mg/L	ND	ND		20	
Barium, Dissolved	ug/L	41.0	41.4	1	20	
Calcium, Dissolved	mg/L	16.8	16.9	1	20	
Iron, Dissolved	mg/L	ND	.028J		20	
Magnesium, Dissolved	mg/L	3.8	3.8	1	20	
Manganese, Dissolved	mg/L	0.077	0.079	2	20	
Sodium, Dissolved	mg/L	5.4	5.4	1	20	
Strontium, Dissolved	ug/L	66.3	66.3	0	20	

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QUALITY CONTROL DATA

Project: WVVRI
Pace Project No.: 30159329

QC Batch: WET/30105 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010, 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

METHOD BLANK: 954699 Matrix: Water
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010, 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	10.0	09/21/15 15:30	

LABORATORY CONTROL SAMPLE: 954700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	20	20.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 954715 954716

Parameter	Units	30159457001		30159457002		30159457003		% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Alkalinity, Total as CaCO3	mg/L	194	100	100	243	245	49	51	85-115	1	20	M1

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QUALITY CONTROL DATA

Project: WVWRI
Pace Project No.: 30159329

QC Batch: WET/30088 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010, 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

METHOD BLANK: 953879 Matrix: Water
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010, 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	09/21/15 20:00	

LABORATORY CONTROL SAMPLE: 953880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	85-115	

SAMPLE DUPLICATE: 953881

Parameter	Units	30159329010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	576	563	2	5	

SAMPLE DUPLICATE: 953882

Parameter	Units	30159457001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	177	172	3	5	

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QUALITY CONTROL DATA

Project: WVVRI
Pace Project No.: 30159329

QC Batch: WETA/21274 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions 28day
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010

METHOD BLANK: 954990 Matrix: Water
Associated Lab Samples: 30159329001, 30159329002, 30159329003, 30159329004, 30159329005, 30159329006, 30159329007, 30159329008, 30159329009, 30159329010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	0.020	09/22/15 12:07	
Chloride	mg/L	0.28	0.062	09/23/15 02:02	
Sulfate	mg/L	ND	0.062	09/23/15 02:02	

LABORATORY CONTROL SAMPLE: 954991

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	.5	0.51	101	90-110	
Chloride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	2	2.1	107	90-110	

MATRIX SPIKE SAMPLE: 954992

Parameter	Units	30159329001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.20	.5	0.69	96	90-110	
Chloride	mg/L	42.5	100	133	90	90-110	
Sulfate	mg/L	141	100	260	119	90-110 M6	

SAMPLE DUPLICATE: 954993

Parameter	Units	30159329001 Result	Dup Result	RPD	Max RPD	Qualifiers
Bromide	mg/L	0.20	0.20		20	
Chloride	mg/L	42.5	45.2	6	20	
Sulfate	mg/L	141	140	1	20	

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QUALITY CONTROL DATA

Project: WVVRI
Pace Project No.: 30159329

QC Batch: WETA/21275 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions 28day
Associated Lab Samples: 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

METHOD BLANK: 954994 Matrix: Water
Associated Lab Samples: 30159329011, 30159329012, 30159329013, 30159329014, 30159329015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	0.020	09/22/15 16:00	
Chloride	mg/L	0.32	0.062	09/23/15 06:10	
Sulfate	mg/L	ND	0.062	09/23/15 06:10	

LABORATORY CONTROL SAMPLE: 954995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	.5	0.51	103	90-110	
Chloride	mg/L	2	2.0	100	90-110	
Sulfate	mg/L	2	2.1	106	90-110	

MATRIX SPIKE SAMPLE: 954996

Parameter	Units	30159329011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	0.051	.5	0.55	99	90-110	
Chloride	mg/L	10.0	4	13.8	94	90-110	
Sulfate	mg/L	125	100	237	112	90-110 M6	

SAMPLE DUPLICATE: 954997

Parameter	Units	30159329011 Result	Dup Result	RPD	Max RPD	Qualifiers
Bromide	mg/L	0.051	0.050		20	
Chloride	mg/L	10.0	9.9	2	20	
Sulfate	mg/L	125	117	7	20	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: WVWRI
Pace Project No.: 30159329

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WVWRI
Pace Project No.: 30159329

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30159329001	M-23	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329002	YO	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329003	M-61	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329004	TM	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329005	M-82	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329006	WH	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329007	DU	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329008	CH	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329009	M-89	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329010	DE	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329011	M-102	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329012	WF	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329013	TV	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329014	IN	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329015	FM	EPA 3005A	MPRP/16457	EPA 6010B	ICP/15636
30159329001	M-23	SM 2320B	WET/30105		
30159329002	YO	SM 2320B	WET/30105		
30159329003	M-61	SM 2320B	WET/30105		
30159329004	TM	SM 2320B	WET/30105		
30159329005	M-82	SM 2320B	WET/30105		
30159329006	WH	SM 2320B	WET/30105		
30159329007	DU	SM 2320B	WET/30105		
30159329008	CH	SM 2320B	WET/30105		
30159329009	M-89	SM 2320B	WET/30105		
30159329010	DE	SM 2320B	WET/30105		
30159329011	M-102	SM 2320B	WET/30105		
30159329012	WF	SM 2320B	WET/30105		
30159329013	TV	SM 2320B	WET/30105		
30159329014	IN	SM 2320B	WET/30105		
30159329015	FM	SM 2320B	WET/30105		
30159329001	M-23	SM 2540C	WET/30088		
30159329002	YO	SM 2540C	WET/30088		
30159329003	M-61	SM 2540C	WET/30088		
30159329004	TM	SM 2540C	WET/30088		
30159329005	M-82	SM 2540C	WET/30088		
30159329006	WH	SM 2540C	WET/30088		
30159329007	DU	SM 2540C	WET/30088		
30159329008	CH	SM 2540C	WET/30088		
30159329009	M-89	SM 2540C	WET/30088		
30159329010	DE	SM 2540C	WET/30088		
30159329011	M-102	SM 2540C	WET/30088		
30159329012	WF	SM 2540C	WET/30088		
30159329013	TV	SM 2540C	WET/30088		
30159329014	IN	SM 2540C	WET/30088		
30159329015	FM	SM 2540C	WET/30088		
30159329001	M-23	EPA 300.0	WETA/21274		
30159329002	YO	EPA 300.0	WETA/21274		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WVWRI
Pace Project No.: 30159329

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30159329003	M-61	EPA 300.0	WETA/21274		
30159329004	TM	EPA 300.0	WETA/21274		
30159329005	M-82	EPA 300.0	WETA/21274		
30159329006	WH	EPA 300.0	WETA/21274		
30159329007	DU	EPA 300.0	WETA/21274		
30159329008	CH	EPA 300.0	WETA/21274		
30159329009	M-89	EPA 300.0	WETA/21274		
30159329010	DE	EPA 300.0	WETA/21274		
30159329011	M-102	EPA 300.0	WETA/21275		
30159329012	WF	EPA 300.0	WETA/21275		
30159329013	TV	EPA 300.0	WETA/21275		
30159329014	IN	EPA 300.0	WETA/21275		
30159329015	FM	EPA 300.0	WETA/21275		

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