

## Atlantic Richfield Company

September 27, 2019

### CERTIFIED - RETURN RECEIPT REQUESTED

Ms. Allie Archer  
U.S. Environmental Protection Agency  
Region 8 Montana Office  
Federal Office Building, Suite 3200  
10 West 15<sup>th</sup> Street  
Helena, Montana 59626

Mr. D. Henry Elsen, Esq.  
U.S. Environmental Protection Agency  
Region 8 Montana Office  
8 ORCLE\_CE/MO  
Federal Office Building  
10 West 15<sup>th</sup> Street, Ste. 3200  
Helena, Montana 59626

Mr. Daryl Reed  
MT Department of Environmental Quality  
P.O. Box 200901  
Helena, Montana 59620-0901

Mr. Jonathan Morgan, Esq.  
MT Department of Environmental Quality  
P.O. Box 200901  
Helena, Montana 59620-0901

Re: Warm Springs Ponds Operable Units of the Silver Bow Creek Area NPL Site, Docket No. CERCLA-VIII-91-25 – **August 2019 Monthly Discharge Monitoring Report**

Dear Allie, Daryl, Jonathan, and Henry:

On behalf of Atlantic Richfield Company and pursuant to the above referenced order, enclosed you will find the monthly discharge monitoring report for August 2019.

In accordance with the ongoing *Warm Springs Ponds (WSP) Lime Rate Optimization Pilot Study Work Plan*, reduced liming rates continued to be implemented throughout August 2019.

If you have any questions regarding this report, please contact me at (406) 723-1820, or via email at [dave.griffis@bp.com](mailto:dave.griffis@bp.com).

Sincerely,



Dave Griffis  
Operations Project Manager  
Remediation Management Services Company  
An affiliate of Atlantic Richfield Company



cc: Ron Halsey – Atlantic Richfield Company (email)  
Lindy Hanson – Atlantic Richfield Company (email)  
Loren Burmeister – Atlantic Richfield Company (email)  
James Chatham – Atlantic Richfield Company (email)  
Jenni Harris – Atlantic Richfield Company (email)  
Jean Martin – Atlantic Richfield Company (email)  
Josh Bryson – Atlantic Richfield Company (email)  
John Davis, Esq. – PR&R (email)  
Don Booth – Booth Consulting (email)  
Dave McCarthy – Copper Environmental Consulting (email)  
Brian Park – Copper Environmental Consulting (email)  
Brad Archibald – Pioneer (email)  
Casey Briggs – Pioneer (email)  
Shawn Bisch – Pioneer (email)  
John DeArment – CFC (email)  
Ian Magruder – Kirk Engineering (email)  
Karen Nelson – USF&W (email)

file: 71.01.110.1.1 (w/certs)  
MiningSharePoint@bp.com

## **PROGRESS**

### **Operations**

Operation highlights included:

- No lime addition took place in August.

### **Maintenance**

Maintenance highlights included:

- Big Sky Reclamation was onsite to mow weeds on 8-1-19.
- NorthWestern Energy was onsite to perform gas line work on 8-1-19 and from 8-5-19 to 8-9-19.
- Jordan Contracting Inc. (JCI) was onsite to remove sand from the Milwaukee Trail on 8-16-19 and from 8-20-19 to 8-22-19.
- JCI was onsite to perform annual equipment maintenance on 8-23-19 and 8-29-19.
- Colbert's Electric was onsite to replace the pH probe in sampling station (SS)-5 on 8-28-19.

### **Monitoring**

**Attached are four separate documents that verify August monitoring activities:**

Attachment 1 – August 2019 Discharge Monitoring Report

- There were 9 arsenic exceedances during August at the SS-5 discharge. The arsenic exceedances occurred on August 1, 5, 8, 12, 15, 19, 22, 26, and 29, 2019. The highest measured arsenic value was 0.0380 milligrams per Liter (mg/L), which exceeded the Final Discharge Standard of 0.0200 mg/L by 0.0180 mg/L.
- There were 9 instances during August where the pH value was above 9.5 at the SS-5 discharge. The pH exceedances occurred on August 1, 5, 8, 12, 15, 19, 22, 26, and 29, 2019. The highest measured pH value was 10.27 standard units (SU), which exceeded the Final Discharge Standard of 9.5 SU by 0.77 SU.

Attachment 2 - Raw Data

- Includes raw data collected for SS-1, SS-3E and the SS-5 discharge during August.
- All samples collected at the SS-5 discharge were 24-hour composite samples.

Attachment 3 - Daily Log Sheets

- Includes log sheets for daily pond operations recorded during August.
- Includes semi-weekly flow rates and pH values recorded during August.

Attachment 4 - Mill-Willow Bypass Raw Data

- Includes raw data from MWB-1, 2, and 3 sampling locations.

ATTACHMENT 1

DISCHARGE MONITORING REPORT  
August 2019

## DISCHARGE MONITORING REPORT FORM

Name:	Atlantic Richfield Company
Address:	317 Anaconda Road
	Butte, MT 59701
Facility:	Warm Springs Ponds
Location:	Anaconda, Montana

CERCLA-VIII-91-25
Docket No.

002
Discharge Number
Final Standards

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
<b>2019</b>	<b>8</b>	<b>1</b>	to	<b>2019</b>	<b>8</b>	<b>31</b>

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSES	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
ARSENIC (Total)	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.0280	0.0318	0.0380		9/9	2/7	COMP
	DISCHARGE				Report		0.0200				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	0.0200	Daily Max	mg/l			
CADMIUM *	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.00004	0.00006	0.00008		0/9	2/7	COMP
	DISCHARGE *				Report		0.00532				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	0.00140	Daily Max	mg/l			
COPPER *	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.0047	0.0053	0.0064		0/9	2/7	COMP
	DISCHARGE				Report		0.0238				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	0.0149	Daily Max	mg/l			
IRON	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.029	0.056	0.130		0/9	2/7	COMP
	DISCHARGE				Report		1.500				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	1.000	Daily Max	mg/l			
LEAD *	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.00016	0.00030	0.00062		0/9	2/7	COMP
	DISCHARGE *				Report		0.11514				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	0.00450	Daily Max	mg/l			
MERCURY	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		<0.0000039	<0.0000039	<0.0000039		0/9	2/7	COMP
	DISCHARGE				Report		0.0002000				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	0.0002000	Daily Max	mg/l			
SELENIUM	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.0003	0.0003	0.0003		N/A	1/31	COMP
	DISCHARGE				Report	Report 30	Report				
	STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Daily Min	Day Ave.	Daily Max	mg/l			
NAME/TITLE AUTHORIZED AGENT				TELEPHONE	DATE		I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
Dave Griffiths				406	723-1820	09/25/19					
Operations Project Manager				Area Code	Number	MO/DAY/YR					
COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)											

\* Standards are to be adjusted for Hardness Greater than 100 mg/l. Please see attached calculation sheet.

## DISCHARGE MONITORING REPORT FORM

Name:	Atlantic Richfield Company
Address:	317 Anaconda Road
	Butte, MT 59701
Facility:	Warm Springs Ponds
Location:	Anaconda, Montana

CERCLA-VIII-91-25
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PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSES	SAMPLE TYPE		
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS					
SILVER	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		<0.000077	<0.000077	<0.000077		N/A	1/31	COMP		
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	Report 30 Day Ave.	Report Daily Max	mg/l				Once/Month	Composite
ZINC *	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.003	0.006	0.010		0/9	2/7	COMP		
	DISCHARGE * STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	0.133	0.147 Daily Max	mg/l				Twice/Week	Composite
TOTAL FLOW	SAMPLE MEASUREMENT	25.4	27.4		XXXXXXX	XXXXXXX	XXXXXXX		N/A	2/7	INST		
	DISCHARGE STANDARD	Report 30 Day Ave.	Report Daily Max	MGD	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX				Twice/Week	Instan.
HARDNESS	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		126	131	137		N/A	2/7	COMP		
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	Report 30 Day Ave.	Report Daily Max	mg/l				Twice/Week	Composite
pH	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		10.0	XXXXXXX	10.3		9/9	2/7	GR		
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	6.5 Daily Min	XXXXXXX	9.5 Daily Max	SU				Twice/Week	Grab
TEMPERATURE	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		18.0	19.4	21.3		N/A	2/7	GR		
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	Report 30 Day Ave.	Report Daily Max	Degree C				Twice/Week	Grab
TOTAL SUSPENDED SOLIDS	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		<5.0	<5.0	<5.0		0/9	2/7	COMP		
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	30.0	45.0 Daily Max	mg/l				Twice/Week	Composite
NAME/TITLE AUTHORIZED AGENT				TELEPHONE		DATE		I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.					
Dave Griffith				406 723-1820		09/25/19							
Operations Project Manager				Area Code Number		MO/DAY/YR							
COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)													

\* Standards are to be adjusted for Hardness Greater than 100 mg/l. Please see attached calculation sheet.

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Name:	Atlantic Richfield Company
Address:	317 Anaconda Road
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PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSES	SAMPLE TYPE	
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS				
VOLATILE SUSPENDED SOLIDS	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		1.2	1.5	2.0	mg/l	N/A	2/7	COMP	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
TURBIDITY	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.5	0.7	1.2	NTU	N/A	2/7	COMP	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
SPECIFIC CONDUCTANCE	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		357	379	397	Micomhos/CM	N/A	2/7	GR	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
ALKALINITY	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		73	75	77	mg/l as CaCO3	N/A	2/7	COMP	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
SULFATE	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		62	72	85	mg/l	N/A	2/7	COMP	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
NO3+NO2-N	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.110	0.135	0.160	mg/l	N/A	2/31	COMP	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
NH3-N	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		<0.049	<0.049	<0.049	mg/l	N/A	2/31	COMP	
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX		XXXXXXX	Report Daily Min	Report 30 Day Ave.					Report Daily Max
NAME/TITLE AUTHORIZED AGENT				TELEPHONE		DATE		I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
Dave Griffis				406 723-1820		09/25/19						
Operations Project Manager				Area Code Number		MO/DAY/YR						
COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)												

## DISCHARGE MONITORING REPORT FORM

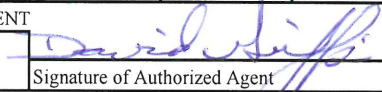
Name:	Atlantic Richfield Company
Address:	317 Anaconda Road
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Facility:	Warm Springs Ponds
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PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSES	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TKN	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		<0.370	0.593	1.000		N/A	2/31	COMP
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	Report 30 Day Ave.	Report Daily Max	mg/l		Twice/Month	Composite
TOTAL PHOSPHOROUS	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.120	0.120	0.120		N/A	2/31	COMP
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	Report 30 Day Ave.	Report Daily Max	mg/l		Twice/Month	Composite
DISSOLVED ORTHO-P	SAMPLE MEASUREMENT	XXXXXXX	XXXXXXX		0.071	0.082	0.092		N/A	2/31	COMP
	DISCHARGE STANDARD	XXXXXXX	XXXXXXX	XXXXXXX	Report Daily Min	Report 30 Day Ave.	Report Daily Max	mg/l		Twice/Month	Composite
	SAMPLE MEASUREMENT										
	DISCHARGE STANDARD										
	SAMPLE MEASUREMENT										
	DISCHARGE STANDARD										
	SAMPLE MEASUREMENT										
	DISCHARGE STANDARD										
	SAMPLE MEASUREMENT										
	DISCHARGE STANDARD										

NAME/TITLE AUTHORIZED AGENT		TELEPHONE	DATE	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
Dave Griffiths		406   723-1820	09/25/19	
Operations Project Manager	Signature of Authorized Agent	Area Code   Number	MO/DAY/YR	
COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)				

**CALCULATED "DAILY MAX" LIMITS BASED ON HARDNESS FOR SS-5 DISCHARGE.**

Date	Hardness	Cadmium			Copper			Lead			Zinc		
		Limit	Sample	Exceed Daily Limit	Limit	Sample	Exceed Daily Limit	Limit	Sample	Exceed Daily Limit	Limit	Sample	Exceed Daily Limit
8/1/2019	131	0.00532	0.00008	NO	0.0229	0.0062	NO	0.11514	0.00062	NO	0.147	0.010	NO
8/5/2019	127	0.00514	0.00007	NO	0.0222	0.0054	NO	0.11068	0.00044	NO	0.143	0.008	NO
8/8/2019	137	0.00559	0.00005	NO	0.0238	0.0064	NO	0.12189	0.00033	NO	0.153	0.006	NO
8/12/2019	126	0.00509	0.00006	NO	0.0220	0.0055	NO	0.10957	0.00029	NO	0.142	0.005	NO
8/15/2019	131	0.00532	0.00005	NO	0.0229	0.0047	NO	0.11514	0.00018	NO	0.147	0.004	NO
8/19/2019	134	0.00546	0.00005	NO	0.0234	0.0049	NO	0.11850	0.00019	NO	0.150	0.006	NO
8/22/2019	128	0.00518	0.00005	NO	0.0224	0.0047	NO	0.11179	0.00016	NO	0.144	0.004	NO
8/26/2019	136	0.00555	0.00004	NO	0.0237	0.0047	NO	0.12076	0.00017	NO	0.152	0.003	NO
8/29/2019	131	0.00532	0.00006	NO	0.0229	0.0052	NO	0.11514	0.00034	NO	0.147	0.007	NO
Daily Max Limit		0.00532			0.0238			0.11514			0.147		

The UAO states that the "Daily Max" limit for Silver is adjusted according Hardness. However, the measured value for Silver is always at or near the detection limit. Therefore, the Hardness adjustment calculations are not shown on this table. For example, the limits with Hardness values of 50, 100, and 200 mg/l would be 0.0012, 0.004, and 0.013 mg/l respectively.

**CALCULATED "MONTHLY AVERAGE" LIMITS BASED ON HARDNESS FOR SS-5 DISCHARGE.**

Date	Hardness	Cadmium			Copper			Lead			Zinc		
		Limit	Sample	Exceed Monthly Limit	Limit	Sample	Exceed Monthly Limit	Limit	Sample	Exceed Monthly Limit	Limit	Sample	Exceed Monthly Limit
8/1/2019	131	0.00140	0.00008		0.0149	0.0062		0.00449	0.00062		0.133	0.010	
8/5/2019	127	0.00137	0.00007		0.0145	0.0054		0.00431	0.00044		0.130	0.008	
8/8/2019	137	0.00145	0.00005		0.0155	0.0064		0.00475	0.00033		0.138	0.006	
8/12/2019	126	0.00136	0.00006		0.0144	0.0055		0.00427	0.00029		0.129	0.005	
8/15/2019	131	0.00140	0.00005		0.0149	0.0047		0.00449	0.00018		0.133	0.004	
8/19/2019	134	0.00143	0.00005		0.0152	0.0049		0.00462	0.00019		0.136	0.006	
8/22/2019	128	0.00138	0.00005		0.0146	0.0047		0.00436	0.00016		0.131	0.004	
8/26/2019	136	0.00144	0.00004		0.0154	0.0047		0.00471	0.00017		0.138	0.003	
8/29/2019	131	0.00140	0.00006		0.0149	0.0052		0.00449	0.00034		0.133	0.007	
Monthly AVG. Monthly AVG. Limit	131	0.00140	0.00006	NO	0.0149	0.0053	NO	0.00450	0.00030	NO	0.133	0.006	NO

SUMMARY OF ANALYTICAL RESULTS FOR SS-5.				
MONTH OF: August, 2019				
	LOW	AVG	HIGH	EXCURSIONS
ARSENIC (mg/l)	0.0280	0.0318	0.0380	9 out of 9
CADMIUM (mg/l)	0.00004	0.00006	0.00008	0 out of 9
COPPER (mg/l)	0.0047	0.0053	0.0064	0 out of 9
IRON (mg/l)	0.029	0.056	0.130	0 out of 9
LEAD (mg/l)	0.00016	0.00030	0.00062	0 out of 9
MERCURY (mg/l)	<0.0000039	<0.0000039	<0.0000039	0 out of 9
SELENIUM (mg/l)	0.00025	0.00025	0.00025	n/a
SILVER (mg/l)	<0.000077	<0.000077	<0.000077	n/a
ZINC (mg/l)	0.003	0.006	0.010	0 out of 9
TOTAL FLOW (MGD)	XXXXXXXX	25.4	27.4	n/a
HARDNESS (mg/l)	126	131	137	n/a
pH (SU)	10.0	XXXXXXXX	10.3	9 out of 9
TEMPERATURE ( C )	18.0	19.4	21.3	n/a
TSS (mg/l)	<5.0	<5.0	<5.0	0 out of 9
VSS (mg/l)	1.2	1.5	2.0	n/a
TURBIDITY (NTU)	0.5	0.7	1.2	n/a
SPECIFIC CONDUCT. (Micromhos/CM)	357	379	397	n/a
ALKALINITY (mg/l as CaCO3)	73	75	77	n/a
SULFATE (mg/l)	62	72	85	n/a
NO3/NO2-N (mg/l)	0.11	0.14	0.16	n/a
NH3-N (mg/l)	<0.049	<0.049	<0.049	n/a
TKN (mg/l)	<0.370	0.593	1.000	n/a
TOTAL PHOS. (mg/l)	0.120	0.120	0.120	n/a
DISSOLVED O P (mg/l)	0.071	0.082	0.092	n/a

ATTACHMENT 2

RAW DATA

August 27, 2019

Shawn Bisch  
Pioneer Technical  
307 E. Park Ave  
Suite 421  
Anaconda, MT 59711

RE: Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

Dear Shawn Bisch:

Enclosed are the analytical results for sample(s) received by the laboratory on August 06, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

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

Sincerely,



Jennifer Anderson  
jennifer.anderson@pacelabs.com  
(612)607-6436  
Project Manager

Enclosures

cc: Steve Lubick, Pioneer Technical Services



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485  
 A2LA Certification #: 2926.01  
 Alabama Certification #: 40770  
 Alaska Contaminated Sites Certification #: 17-009  
 Alaska DW Certification #: MN00064  
 Arizona Certification #: AZ0014  
 Arkansas DW Certification #: MN00064  
 Arkansas WW Certification #: 88-0680  
 California Certification #: 2929  
 CNMI Saipan Certification #: MP0003  
 Colorado Certification #: MN00064  
 Connecticut Certification #: PH-0256  
 EPA Region 8+Wyoming DW Certification #: via MN 027-053-137  
 Florida Certification #: E87605  
 Georgia Certification #: 959  
 Guam EPA Certification #: MN00064  
 Hawaii Certification #: MN00064  
 Idaho Certification #: MN00064  
 Illinois Certification #: 200011  
 Indiana Certification #: C-MN-01  
 Iowa Certification #: 368  
 Kansas Certification #: E-10167  
 Kentucky DW Certification #: 90062  
 Kentucky WW Certification #: 90062  
 Louisiana DEQ Certification #: 03086  
 Louisiana DW Certification #: MN00064  
 Maine Certification #: MN00064  
 Maryland Certification #: 322  
 Massachusetts Certification #: M-MN064  
 Michigan Certification #: 9909  
 Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137  
 Minnesota Petrofund Certification #: 1240  
 Mississippi Certification #: MN00064  
 Missouri Certification #: 10100  
 Montana Certification #: CERT0092  
 Nebraska Certification #: NE-OS-18-06  
 Nevada Certification #: MN00064  
 New Hampshire Certification #: 2081  
 New Jersey Certification #: MN002  
 New York Certification #: 11647  
 North Carolina DW Certification #: 27700  
 North Carolina WW Certification #: 530  
 North Dakota Certification #: R-036  
 Ohio DW Certification #: 41244  
 Ohio VAP Certification #: CL101  
 Oklahoma Certification #: 9507  
 Oregon Primary Certification #: MN300001  
 Oregon Secondary Certification #: MN200001  
 Pennsylvania Certification #: 68-00563  
 Puerto Rico Certification #: MN00064  
 South Carolina Certification #: 74003001  
 Tennessee Certification #: TN02818  
 Texas Certification #: T104704192  
 Utah Certification #: MN00064  
 Vermont Certification #: VT-027053137  
 Virginia Certification #: 460163  
 Washington Certification #: C486  
 West Virginia DEP Certification #: 382  
 West Virginia DW Certification #: 9952 C  
 Wisconsin Certification #: 999407970  
 Wyoming UST Certification #: via A2LA 2926.01

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
 Missouri Inorganic Drinking Water Certification #: 10090  
 Arkansas Drinking Water  
 Arkansas Certification #: 19-016-0  
 Arkansas Drinking Water  
 Illinois Certification #: 004455  
 Iowa Certification #: 118  
 Kansas/NELAP Certification #: E-10116  
 Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
 Oklahoma Certification #: 9205/9935  
 Florida: Cert E871149 SEKS WET  
 Texas Certification #: T104704407-18-11  
 Utah Certification #: KS000212018-8  
 Illinois Certification #: 004592  
 Kansas Field Laboratory Accreditation: # E-92587  
 Missouri SEKS Micro Certification: 10070

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10486047001	WSP-SS-1-080119	Water	08/01/19 08:45	08/06/19 08:45
10486047002	WSP-SS-3E-080119	Water	08/01/19 09:05	08/06/19 08:45
10486047003	WSP-SS-5-080119	Water	08/01/19 10:00	08/06/19 08:45
10486047004	WSP-SS-1-080519	Water	08/05/19 12:00	08/06/19 08:45
10486047005	WSP-SS-3E-080519	Water	08/05/19 11:30	08/06/19 08:45
10486047006	WSP-SS-5-080519	Water	08/05/19 11:00	08/06/19 08:45

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10486047001	WSP-SS-1-080119	EPA 200.8	PW1	7	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	JFP	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10486047002	WSP-SS-3E-080119	EPA 200.8	PW1	7	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	JFP	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10486047003	WSP-SS-5-080119	EPA 200.8	PW1	7	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	JFP	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10486047004	WSP-SS-1-080519	EPA 200.8	PW1	9	PASI-M
		EPA 200.8	PW1	5	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	JFP	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	JFP	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
SM 4500-P F	KEO	1	PASI-M		
10486047005	WSP-SS-3E-080519	EPA 200.8	PW1	9	PASI-M

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	PW1	5	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	JFP	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	JFP	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	KEO	1	PASI-M
<b>10486047006</b>	<b>WSP-SS-5-080519</b>	EPA 200.8	PW1	9	PASI-M
		EPA 200.8	PW1	5	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	JFP	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	JFP	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	KEO	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

6 samples were analyzed for EPA 200.8. 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 200.8 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.

**Internal Standards:**

All internal standards were within QC limits 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: 624976

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10486047001,10486073001

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

- MS (Lab ID: 3372996)
  - Sodium
- MS (Lab ID: 3372997)
  - Sodium
- MSD (Lab ID: 3372998)
  - Sodium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

Analyte Comments:

QC Batch: 624976

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3372996)
  - Sodium
- MS (Lab ID: 3372997)
  - Sodium
- MSD (Lab ID: 3372998)
  - Sodium

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS, Dissolved

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

### General Information:

3 samples were analyzed for EPA 200.8. 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 200.8 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.

### Internal Standards:

All internal standards were within QC limits 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: 625015

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10486047004

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

- MS (Lab ID: 3373150)
  - Calcium, Dissolved
- MSD (Lab ID: 3373151)
  - Calcium, Dissolved
  - Magnesium, Dissolved

### Additional Comments:

Analyte Comments:

QC Batch: 625015

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3373150)
  - Calcium, Dissolved

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS, Dissolved

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

Analyte Comments:

QC Batch: 625015

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MSD (Lab ID: 3373151)
- Calcium, Dissolved

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** EPA 245.1

**Description:** 245.1 Mercury, LL

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

6 samples were analyzed for EPA 245.1. 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 245.1 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** EPA 160.4

**Description:** 160.4 Total Volatile Suspended

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

6 samples were analyzed for EPA 160.4. 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: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** EPA 180.1

**Description:** 180.1 Turbidity

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

### General Information:

6 samples were analyzed for EPA 180.1. 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.

H3: Sample was received or analysis requested beyond the recognized method holding time.

- WSP-SS-1-080119 (Lab ID: 10486047001)
- WSP-SS-3E-080119 (Lab ID: 10486047002)
- WSP-SS-5-080119 (Lab ID: 10486047003)

### 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: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

6 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.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** SM 2540D

**Description:** 2540D Total Suspended Solids

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

6 samples were analyzed for SM 2540D. 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.

QC Batch: 624910

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 3372539)
- Total Suspended Solids

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** EPA 350.1

**Description:** 350.1 Ammonia

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for EPA 350.1. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** EPA 351.2

**Description:** 351.2 Total Kjeldahl Nitrogen

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for EPA 351.2. 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 351.2 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: 602664

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60311016001

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

- MS (Lab ID: 2464975)
- Nitrogen, Kjeldahl, Total

**Duplicate Sample:**

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

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** SM 4500-NO3 H

**Description:** SM4500NO3-H, NO2 + NO3 pres.

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for SM 4500-NO3 H. 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.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** SM 4500-P G

**Description:** Phosphate, Ortho Low Level

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for SM 4500-P G. 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.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** SM 5310C

**Description:** 5310C Dissolved Organic Carbon

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for SM 5310C. 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: 603638

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10485857003

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

- MS (Lab ID: 2468225)
- Dissolved Organic Carbon

**Duplicate Sample:**

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

**Additional Comments:**

Analyte Comments:

QC Batch: 603638

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2468225)
- Dissolved Organic Carbon

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** ASTM D516

**Description:** ASTM D516 Sulfate Water

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

6 samples were analyzed for ASTM D516. 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: 624817

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10486047002,10486070007

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

- MS (Lab ID: 3372022)
  - Sulfate
- MS (Lab ID: 3372024)
  - Sulfate
- MSD (Lab ID: 3372025)
  - Sulfate

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

---

**Method:** SM 4500-CI E

**Description:** SM4500CI-E Chloride

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for SM 4500-CI E. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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**Method:** SM 4500-P F

**Description:** SM4500P-F, Total Phosphorus

**Client:** BPAR-PIONEER-MT

**Date:** August 27, 2019

**General Information:**

3 samples were analyzed for SM 4500-P F. 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 SM 4500-P B 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: 626406

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10485857018, 10485857021

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

- MS (Lab ID: 3379678)
  - Phosphorus
- MS (Lab ID: 3379680)
  - Phosphorus
- MSD (Lab ID: 3379679)
  - Phosphorus
- MSD (Lab ID: 3379681)
  - Phosphorus

**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: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: WSP-SS-1-080119      Lab ID: 10486047001      Collected: 08/01/19 08:45      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0083</b>	mg/L	0.00050	0.00014	1	08/14/19 09:47	08/22/19 19:13	7440-38-2	
Cadmium	<b>0.00036</b>	mg/L	0.000080	0.000030	1	08/14/19 09:47	08/22/19 19:13	7440-43-9	
Copper	<b>0.019</b>	mg/L	0.0010	0.00043	1	08/14/19 09:47	08/22/19 19:13	7440-50-8	
Iron	<b>0.27</b>	mg/L	0.050	0.012	1	08/14/19 09:47	08/22/19 19:13	7439-89-6	
Lead	<b>0.0013</b>	mg/L	0.00010	0.000046	1	08/14/19 09:47	08/22/19 19:13	7439-92-1	
Total Hardness by 2340B	<b>204</b>	mg/L	2.8	1.3	20	08/14/19 09:47	08/22/19 19:16		
Zinc	<b>0.064</b>	mg/L	0.0050	0.0024	1	08/14/19 09:47	08/22/19 19:13	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.0000050</b> J	mg/L	0.000010	0.000003 9	1	08/14/19 11:30	08/15/19 15:20	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.8</b>	mg/L	2.0	1.0	1		08/08/19 13:31		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.1</b>	NTU	0.60	0.11	1		08/07/19 10:39		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>142</b>	mg/L	5.0	2.0	1		08/08/19 14:24		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>9.0J</b>	mg/L	10.0	5.0	1		08/08/19 08:39		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>91.5</b>	mg/L	25.0	6.7	10		08/06/19 15:44	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-3E-080119</b> Lab ID: <b>10486047002</b> Collected: 08/01/19 09:05      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.018</b>	mg/L	0.00050	0.00014	1	08/14/19 09:47	08/22/19 19:22	7440-38-2	
Cadmium	<b>0.00050</b>	mg/L	0.000080	0.000030	1	08/14/19 09:47	08/22/19 19:22	7440-43-9	
Copper	<b>0.021</b>	mg/L	0.0010	0.00043	1	08/14/19 09:47	08/22/19 19:22	7440-50-8	
Iron	<b>0.15</b>	mg/L	0.050	0.012	1	08/14/19 09:47	08/22/19 19:22	7439-89-6	
Lead	<b>0.00092</b>	mg/L	0.00010	0.000046	1	08/14/19 09:47	08/22/19 19:22	7439-92-1	
Total Hardness by 2340B	<b>145</b>	mg/L	2.8	1.3	20	08/14/19 09:47	08/22/19 19:25		
Zinc	<b>0.035</b>	mg/L	0.0050	0.0024	1	08/14/19 09:47	08/22/19 19:22	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	08/14/19 11:30	08/15/19 15:24	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	ND	mg/L	2.0	1.0	1		08/08/19 13:31		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.1</b>	NTU	0.60	0.11	1		08/07/19 10:35		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>98.6</b>	mg/L	5.0	2.0	1		08/08/19 14:28		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/08/19 08:39		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>75.6</b>	mg/L	12.5	3.4	5		08/07/19 17:31	14808-79-8	M1

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

Sample: <b>WSP-SS-5-080119</b> Lab ID: <b>10486047003</b> Collected: 08/01/19 10:00      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.031</b>	mg/L	0.00050	0.00014	1	08/14/19 09:47	08/22/19 19:28	7440-38-2	
Cadmium	<b>0.000083</b>	mg/L	0.000080	0.000030	1	08/14/19 09:47	08/22/19 19:28	7440-43-9	
Copper	<b>0.0062</b>	mg/L	0.0010	0.00043	1	08/14/19 09:47	08/22/19 19:28	7440-50-8	
Iron	<b>0.13</b>	mg/L	0.050	0.012	1	08/14/19 09:47	08/22/19 19:28	7439-89-6	
Lead	<b>0.00062</b>	mg/L	0.00010	0.000046	1	08/14/19 09:47	08/22/19 19:28	7439-92-1	
Total Hardness by 2340B	<b>131</b>	mg/L	2.8	1.3	20	08/14/19 09:47	08/22/19 19:31		
Zinc	<b>0.010</b>	mg/L	0.0050	0.0024	1	08/14/19 09:47	08/22/19 19:28	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	08/14/19 11:30	08/15/19 15:33	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.6J</b>	mg/L	2.0	1.0	1		08/08/19 13:31		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.54J</b>	NTU	0.60	0.11	1		08/07/19 10:37		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>76.8</b>	mg/L	5.0	2.0	1		08/08/19 14:32		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/08/19 08:39		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>75.8</b>	mg/L	12.5	3.4	5		08/07/19 17:32	14808-79-8	

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-1-080519</b> Lab ID: <b>10486047004</b> Collected: 08/05/19 12:00 Received: 08/06/19 08:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	<b>0.0086</b>	mg/L	0.00050	0.00014	1	08/14/19 09:47	08/22/19 19:40	7440-38-2	
Cadmium	<b>0.00031</b>	mg/L	0.000080	0.000030	1	08/14/19 09:47	08/22/19 19:40	7440-43-9	
Copper	<b>0.018</b>	mg/L	0.0010	0.00043	1	08/14/19 09:47	08/22/19 19:40	7440-50-8	
Iron	<b>0.23</b>	mg/L	0.050	0.012	1	08/14/19 09:47	08/22/19 19:40	7439-89-6	
Lead	<b>0.0010</b>	mg/L	0.00010	0.000046	1	08/14/19 09:47	08/22/19 19:40	7439-92-1	
Potassium	<b>5.5</b>	mg/L	0.10	0.018	1	08/14/19 09:47	08/22/19 19:40	7440-09-7	
Sodium	<b>33.5</b>	mg/L	1.0	0.49	20	08/14/19 09:47	08/22/19 19:43	7440-23-5	
Total Hardness by 2340B	<b>189</b>	mg/L	2.8	1.3	20	08/14/19 09:47	08/22/19 19:43		
Zinc	<b>0.061</b>	mg/L	0.0050	0.0024	1	08/14/19 09:47	08/22/19 19:40	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Calcium, Dissolved	<b>55.0</b>	mg/L	0.80	0.37	20	08/14/19 05:46	08/21/19 10:40	7440-70-2	M1
Copper, Dissolved	<b>0.011</b>	mg/L	0.0010	0.00043	1	08/14/19 05:46	08/21/19 10:25	7440-50-8	
Iron, Dissolved	<b>0.022J</b>	mg/L	0.050	0.012	1	08/14/19 05:46	08/21/19 10:25	7439-89-6	
Magnesium, Dissolved	<b>12.8</b>	mg/L	0.010	0.0041	1	08/14/19 05:46	08/21/19 10:25	7439-95-4	M1
Manganese, Dissolved	<b>0.017</b>	mg/L	0.00050	0.00023	1	08/14/19 05:46	08/21/19 10:25	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	<b>0.0000040</b> J	mg/L	0.000010	0.000003 9	1	08/14/19 11:30	08/15/19 15:36	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.6</b>	mg/L	2.0	1.0	1		08/08/19 13:31		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>2.7</b>	NTU	0.60	0.11	1		08/07/19 10:31		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>114</b>	mg/L	5.0	2.0	1		08/08/19 14:38		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>8.0J</b>	mg/L	10.0	5.0	1		08/08/19 09:29		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		08/13/19 15:29	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2 Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	<b>0.55</b>	mg/L	0.50	0.37	1	08/13/19 17:17	08/14/19 14:27	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	<b>0.55</b>	mg/L	0.20	0.095	1		08/12/19 10:07		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.079</b>	mg/L	0.010	0.0047	1		08/06/19 15:52		

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-1-080519</b> Lab ID: <b>10486047004</b> Collected: 08/05/19 12:00      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>3.8</b>	mg/L	1.0	0.29	1		08/17/19 18:26		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>108</b>	mg/L	12.5	3.4	5		08/07/19 17:33	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>33.4</b>	mg/L	2.0	0.82	1		08/09/19 16:39	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.15</b>	mg/L	0.10	0.043	1	08/15/19 10:02	08/16/19 09:47	7723-14-0	

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-3E-080519</b> Lab ID: <b>10486047005</b> Collected: 08/05/19 11:30      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.019</b>	mg/L	0.00050	0.00014	1	08/14/19 09:47	08/22/19 19:46	7440-38-2	
Cadmium	<b>0.00046</b>	mg/L	0.000080	0.000030	1	08/14/19 09:47	08/22/19 19:46	7440-43-9	
Copper	<b>0.020</b>	mg/L	0.0010	0.00043	1	08/14/19 09:47	08/22/19 19:46	7440-50-8	
Iron	<b>0.14</b>	mg/L	0.050	0.012	1	08/14/19 09:47	08/22/19 19:46	7439-89-6	
Lead	<b>0.00088</b>	mg/L	0.00010	0.000046	1	08/14/19 09:47	08/22/19 19:46	7439-92-1	
Potassium	<b>3.6</b>	mg/L	0.10	0.018	1	08/14/19 09:47	08/22/19 19:46	7440-09-7	
Sodium	<b>21.7</b>	mg/L	0.050	0.024	1	08/14/19 09:47	08/22/19 19:46	7440-23-5	
Total Hardness by 2340B	<b>149</b>	mg/L	2.8	1.3	20	08/14/19 09:47	08/22/19 19:49		
Zinc	<b>0.035</b>	mg/L	0.0050	0.0024	1	08/14/19 09:47	08/22/19 19:46	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Calcium, Dissolved	<b>42.1</b>	mg/L	0.80	0.37	20	08/14/19 05:46	08/21/19 10:58	7440-70-2	
Copper, Dissolved	<b>0.013</b>	mg/L	0.0010	0.00043	1	08/14/19 05:46	08/21/19 10:55	7440-50-8	
Iron, Dissolved	<b>0.012J</b>	mg/L	0.050	0.012	1	08/14/19 05:46	08/21/19 10:55	7439-89-6	
Magnesium, Dissolved	<b>10.6</b>	mg/L	0.010	0.0041	1	08/14/19 05:46	08/21/19 10:55	7439-95-4	
Manganese, Dissolved	<b>0.014</b>	mg/L	0.00050	0.00023	1	08/14/19 05:46	08/21/19 10:55	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	08/14/19 11:30	08/15/19 15:46	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.8J</b>	mg/L	2.0	1.0	1		08/08/19 13:31		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.3</b>	NTU	0.60	0.11	1		08/07/19 10:23		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>97.3</b>	mg/L	5.0	2.0	1		08/08/19 14:41		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/09/19 09:10		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		08/13/19 15:30	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2      Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	ND	mg/L	0.50	0.37	1	08/13/19 17:17	08/14/19 14:26	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	<b>0.098J</b>	mg/L	0.20	0.095	1		08/12/19 10:10		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.10</b>	mg/L	0.010	0.0047	1		08/06/19 15:50		

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-3E-080519</b> Lab ID: <b>10486047005</b> Collected: 08/05/19 11:30      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>5.5</b>	mg/L	1.0	0.29	1		08/17/19 18:13		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>76.3</b>	mg/L	12.5	3.4	5		08/07/19 17:33	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>20.4</b>	mg/L	2.0	0.82	1		08/09/19 16:39	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.14</b>	mg/L	0.10	0.043	1	08/15/19 10:02	08/16/19 09:47	7723-14-0	

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-5-080519</b> Lab ID: <b>10486047006</b> Collected: 08/05/19 11:00 Received: 08/06/19 08:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	<b>0.033</b>	mg/L	0.00050	0.00014	1	08/14/19 09:47	08/22/19 19:52	7440-38-2	
Cadmium	<b>0.000071J</b>	mg/L	0.000080	0.000030	1	08/14/19 09:47	08/22/19 19:52	7440-43-9	
Copper	<b>0.0054</b>	mg/L	0.0010	0.00043	1	08/14/19 09:47	08/22/19 19:52	7440-50-8	
Iron	<b>0.083</b>	mg/L	0.050	0.012	1	08/14/19 09:47	08/22/19 19:52	7439-89-6	
Lead	<b>0.00044</b>	mg/L	0.00010	0.000046	1	08/14/19 09:47	08/22/19 19:52	7439-92-1	
Potassium	<b>2.5</b>	mg/L	0.10	0.018	1	08/14/19 09:47	08/22/19 19:52	7440-09-7	
Sodium	<b>20.5</b>	mg/L	0.050	0.024	1	08/14/19 09:47	08/22/19 19:52	7440-23-5	
Total Hardness by 2340B	<b>127</b>	mg/L	2.8	1.3	20	08/14/19 09:47	08/22/19 19:55		
Zinc	<b>0.0084</b>	mg/L	0.0050	0.0024	1	08/14/19 09:47	08/22/19 19:52	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Calcium, Dissolved	<b>34.8</b>	mg/L	0.80	0.37	20	08/14/19 05:46	08/21/19 11:05	7440-70-2	
Copper, Dissolved	<b>0.0046</b>	mg/L	0.0010	0.00043	1	08/14/19 05:46	08/21/19 11:02	7440-50-8	
Iron, Dissolved	<b>0.016J</b>	mg/L	0.050	0.012	1	08/14/19 05:46	08/21/19 11:02	7439-89-6	
Magnesium, Dissolved	<b>9.6</b>	mg/L	0.010	0.0041	1	08/14/19 05:46	08/21/19 11:02	7439-95-4	
Manganese, Dissolved	<b>0.011</b>	mg/L	0.00050	0.00023	1	08/14/19 05:46	08/21/19 11:02	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	08/14/19 11:30	08/15/19 15:49	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.6J</b>	mg/L	2.0	1.0	1		08/08/19 13:31		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.79</b>	NTU	0.60	0.11	1		08/07/19 10:20		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>74.7</b>	mg/L	5.0	2.0	1		08/08/19 14:46		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/09/19 09:10		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		08/13/19 15:32	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2 Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	<b>1.0</b>	mg/L	0.50	0.37	1	08/13/19 17:17	08/14/19 14:23	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	<b>0.16J</b>	mg/L	0.20	0.095	1		08/12/19 10:10		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.092</b>	mg/L	0.010	0.0047	1		08/06/19 15:48		

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Sample: <b>WSP-SS-5-080519</b> Lab ID: <b>10486047006</b> Collected: 08/05/19 11:00      Received: 08/06/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>7.1</b>	mg/L	1.0	0.29	1		08/17/19 18:01		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>72.1</b>	mg/L	12.5	3.4	5		08/07/19 17:34	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>18.2</b>	mg/L	2.0	0.82	1		08/09/19 16:40	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.12</b>	mg/L	0.10	0.043	1	08/15/19 10:02	08/16/19 09:48	7723-14-0	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 624984 Analysis Method: EPA 245.1  
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury, LL  
Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

METHOD BLANK: 3373025 Matrix: Water  
Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.000010	0.0000039	08/15/19 15:14	

LABORATORY CONTROL SAMPLE: 3373026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0001	0.000091	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3373027 3373028

Parameter	Units	10486047002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0001	0.0001	0.000097	0.00010	95	100	70-130	5	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 624976 Analysis Method: EPA 200.8  
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET  
 Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

METHOD BLANK: 3372994 Matrix: Water  
 Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.00050	0.00014	08/22/19 19:06	
Cadmium	mg/L	ND	0.000080	0.000030	08/22/19 19:06	
Copper	mg/L	ND	0.0010	0.00043	08/22/19 19:06	
Iron	mg/L	ND	0.050	0.012	08/22/19 19:06	
Lead	mg/L	ND	0.00010	0.000046	08/22/19 19:06	
Potassium	mg/L	ND	0.10	0.018	08/22/19 19:06	
Sodium	mg/L	ND	0.050	0.024	08/22/19 19:06	
Zinc	mg/L	ND	0.0050	0.0024	08/22/19 19:06	

LABORATORY CONTROL SAMPLE: 3372995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.099	99	85-115	
Cadmium	mg/L	0.1	0.10	104	85-115	
Copper	mg/L	0.1	0.099	99	85-115	
Iron	mg/L	2	2.1	106	85-115	
Lead	mg/L	0.1	0.10	105	85-115	
Potassium	mg/L	2	2.0	102	85-115	
Sodium	mg/L	2	2.0	101	85-115	
Zinc	mg/L	0.1	0.10	105	85-115	

MATRIX SPIKE SAMPLE: 3372996

Parameter	Units	10486047001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.0083	0.1	0.11	102	70-130	
Cadmium	mg/L	0.00036	0.1	0.10	103	70-130	
Copper	mg/L	0.019	0.1	0.12	98	70-130	
Iron	mg/L	0.27	2	2.4	107	70-130	
Lead	mg/L	0.0013	0.1	0.10	101	70-130	
Potassium	mg/L	5.6	2	7.7	103	70-130	
Sodium	mg/L	35.7	2	33.8	-95	70-130 E,M1	
Zinc	mg/L	0.064	0.1	0.16	101	70-130	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Parameter	Units	3372997		3372998		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10486073001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Arsenic	mg/L	0.0043	0.1	0.1	0.11	0.11	102	104	70-130	2	20		
Cadmium	mg/L	0.00021	0.1	0.1	0.10	0.10	102	103	70-130	1	20		
Copper	mg/L	0.013	0.1	0.1	0.11	0.11	95	97	70-130	2	20		
Iron	mg/L	0.029J	2	2	2.1	2.1	104	106	70-130	2	20		
Lead	mg/L	0.00030	0.1	0.1	0.098	0.10	98	101	70-130	3	20		
Potassium	mg/L	8090 ug/L	2	2	10.3	10.5	109	119	70-130	2	20		
Sodium	mg/L	65000 ug/L	2	2	56.9	57.2	-407	-393	70-130	1	20	E,M1	
Zinc	mg/L	0.060	0.1	0.1	0.16	0.16	98	101	70-130	2	20		

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 625015 Analysis Method: EPA 200.8  
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved  
 Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 3373148 Matrix: Water

Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium, Dissolved	mg/L	ND	0.040	0.018	08/21/19 10:19	
Copper, Dissolved	mg/L	ND	0.0010	0.00043	08/21/19 10:19	
Iron, Dissolved	mg/L	ND	0.050	0.012	08/21/19 10:19	
Magnesium, Dissolved	mg/L	ND	0.010	0.0041	08/21/19 10:19	
Manganese, Dissolved	mg/L	ND	0.00050	0.00023	08/21/19 10:19	

LABORATORY CONTROL SAMPLE: 3373149

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	mg/L	2	2.2	108	85-115	
Copper, Dissolved	mg/L	0.1	0.10	104	85-115	
Iron, Dissolved	mg/L	2	2.1	103	85-115	
Magnesium, Dissolved	mg/L	2	2.0	98	85-115	
Manganese, Dissolved	mg/L	0.1	0.10	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3373150 3373151

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10486047004 Result	Spike Conc.	Spike Conc.	Result							Result
Calcium, Dissolved	mg/L	55.0	2	2	54.7	53.5	-14	-74	70-130	2	20	E,M1
Copper, Dissolved	mg/L	0.011	0.1	0.1	0.11	0.11	101	98	70-130	3	20	
Iron, Dissolved	mg/L	0.022J	2	2	2.1	2.0	104	101	70-130	3	20	
Magnesium, Dissolved	mg/L	12.8	2	2	14.2	13.7	71	46	70-130	4	20	M1
Manganese, Dissolved	mg/L	0.017	0.1	0.1	0.12	0.12	102	99	70-130	3	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 624913 Analysis Method: EPA 160.4  
 QC Batch Method: EPA 160.4 Analysis Description: 160.4 Total Volatile Suspended Solids  
 Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

METHOD BLANK: 3372550 Matrix: Water  
 Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Volatile Suspended Solids	mg/L	ND	2.0	1.0	08/08/19 13:31	

SAMPLE DUPLICATE: 3372551

Parameter	Units	10486047001 Result	Dup Result	RPD	Max RPD	Qualifiers
Volatile Suspended Solids	mg/L	2.8	3.0	7	20	

SAMPLE DUPLICATE: 3372552

Parameter	Units	10486047002 Result	Dup Result	RPD	Max RPD	Qualifiers
Volatile Suspended Solids	mg/L	ND	5.5		20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 624775

Analysis Method: EPA 180.1

QC Batch Method: EPA 180.1

Analysis Description: 180.1 Turbidity

Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

METHOD BLANK: 3371878

Matrix: Water

Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Turbidity	NTU	ND	0.60	0.11	08/07/19 10:18	

LABORATORY CONTROL SAMPLE: 3371879

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Turbidity	NTU	10.1	9.9	98	90-110	

SAMPLE DUPLICATE: 3371880

Parameter	Units	10486047004 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	2.7	2.6	2	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 625152 Analysis Method: SM 2320B  
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

METHOD BLANK: 3373523 Matrix: Water  
Associated Lab Samples: 10486047001, 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	2.0	08/08/19 13:09	

LABORATORY CONTROL SAMPLE & LCSD: 3373524 3373525

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	42.0	42.0	105	105	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3373526 3373527

Parameter	Units	10485765016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	202	40	40	240	240	95	97	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3373528 3373529

Parameter	Units	10486067003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	46.6	40	40	86.1	90.0	99	109	80-120	4	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 624910

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 10486047001, 10486047002, 10486047003

METHOD BLANK: 3372537

Matrix: Water

Associated Lab Samples: 10486047001, 10486047002, 10486047003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/08/19 08:39	

LABORATORY CONTROL SAMPLE: 3372538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	98.0	98	80-120	

SAMPLE DUPLICATE: 3372539

Parameter	Units	10485534001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	50.0	53.0	6	5	D6

SAMPLE DUPLICATE: 3372540

Parameter	Units	10485645001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	7.0J		5	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 624912

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 10486047004

METHOD BLANK: 3372543

Matrix: Water

Associated Lab Samples: 10486047004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/08/19 09:29	

LABORATORY CONTROL SAMPLE: 3372544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	98.0	98	80-120	

SAMPLE DUPLICATE: 3372545

Parameter	Units	10485805001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

SAMPLE DUPLICATE: 3372547

Parameter	Units	10485937003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	18.0	18.0	0	5	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch: 625243

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 10486047005, 10486047006

METHOD BLANK: 3374028

Matrix: Water

Associated Lab Samples: 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/09/19 09:10	

LABORATORY CONTROL SAMPLE: 3374029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	98.0	98	80-120	

SAMPLE DUPLICATE: 3374030

Parameter	Units	10486047005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

SAMPLE DUPLICATE: 3374031

Parameter	Units	10486088001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	8.0J		5	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 625982 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 3377563 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	0.049	08/13/19 15:12	

LABORATORY CONTROL SAMPLE: 3377564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2.5	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3377565 3377566

Parameter	Units	10486304001 Result	MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Nitrogen, Ammonia	mg/L	ND	2.5	2.5	2.5	2.4	99	97	90-110	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3377567 3377568

Parameter	Units	10486067003 Result	MS		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Nitrogen, Ammonia	mg/L	ND	2.5	2.5	2.3	2.5	93	99	90-110	7	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 602664 Analysis Method: EPA 351.2  
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 2464973 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	0.37	08/14/19 13:56	

LABORATORY CONTROL SAMPLE: 2464974

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.3	106	90-110	

MATRIX SPIKE SAMPLE: 2464975

Parameter	Units	60311016001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5.1	5	10.8	115	90-110	M1

SAMPLE DUPLICATE: 2464976

Parameter	Units	60311020002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.87		10	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 625630 Analysis Method: SM 4500-NO3 H  
QC Batch Method: SM 4500-NO3 H Analysis Description: SM4500NO3-H, NO2 + NO3 pres.  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 3376181 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.20	0.095	08/12/19 09:55	

LABORATORY CONTROL SAMPLE: 3376182

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.3	91	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3376183 3376184

Parameter	Units	10485857048		10485857049		10485857048		10485857049		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.				
Nitrogen, NO2 plus NO3	mg/L	1.0	2.5	2.5	2.5	3.2	3.4	88	95	80-120	5	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3376185 3376186

Parameter	Units	10485857049		10485857048		10485857049		10485857048		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.				
Nitrogen, NO2 plus NO3	mg/L	1.1	2.5	2.5	2.5	3.3	3.2	89	87	80-120	2	30	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 624583 Analysis Method: SM 4500-P G  
QC Batch Method: SM 4500-P G Analysis Description: SM4500P-G, Phosphate, Ortho  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 3370844 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Orthophosphate as P	mg/L	ND	0.010	0.0047	08/06/19 15:58	FS

LABORATORY CONTROL SAMPLE: 3370845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Orthophosphate as P	mg/L	0.1	0.091	91	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3370846 3370847

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10486047004	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Orthophosphate as P	mg/L	0.079	0.1	0.1	0.18	0.18	99	99	80-120	0	30		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3370848 3370849

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10485937001	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Orthophosphate as P	mg/L	ND	0.1	0.1	0.092	0.094	92	94	80-120	2	30	FS	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 603638 Analysis Method: SM 5310C  
QC Batch Method: SM 5310C Analysis Description: 5310C Dissolved Organic Carbon  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 2468223 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	ND	1.0	0.29	08/17/19 14:09	

LABORATORY CONTROL SAMPLE: 2468224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	5	5.4	109	80-120	

MATRIX SPIKE SAMPLE: 2468225

Parameter	Units	10485857003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	10.7	10	23.4	127	80-120	E,M1

SAMPLE DUPLICATE: 2468226

Parameter	Units	10485857017 Result	Dup Result	RPD	Max RPD	Qualifiers
Dissolved Organic Carbon	mg/L	12.3	12.3	0	25	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

QC Batch:	624590	Analysis Method:	ASTM D516
QC Batch Method:	ASTM D516	Analysis Description:	ASTM D516 Sulfate Water
Associated Lab Samples:	10486047001		

METHOD BLANK: 3370870 Matrix: Water  
Associated Lab Samples: 10486047001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.5	0.67	08/06/19 15:17	

LABORATORY CONTROL SAMPLE & LCSD: 3370872 3370873

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Sulfate	mg/L	20	17.4	17.2	87	86	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3370874 3370875

Parameter	Units	10486088001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	7.9	20	20	30.9	30.4	115	113	80-120	2	30	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 624817 Analysis Method: ASTM D516  
QC Batch Method: ASTM D516 Analysis Description: ASTM D516 Sulfate Water  
Associated Lab Samples: 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

METHOD BLANK: 3372019 Matrix: Water  
Associated Lab Samples: 10486047002, 10486047003, 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.5	0.67	08/07/19 17:06	

LABORATORY CONTROL SAMPLE & LCSD: 3372020 3372021

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Sulfate	mg/L	20	18.7	18.9	94	95	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3372022 3372023

Parameter	Units	10486047002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	75.6	20	20	102	99.4	131	119	80-120	2	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3372024 3372025

Parameter	Units	10486070007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	23.2	20	20	52.8	54.3	148	156	80-120	3	30	M1

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 625442 Analysis Method: SM 4500-Cl E  
QC Batch Method: SM 4500-Cl E Analysis Description: SM4500Cl-E Chloride  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 3375041 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	2.0	0.82	08/09/19 16:31	

LABORATORY CONTROL SAMPLE: 3375042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	50.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3375043 3375044

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10486088001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	ND	50	50	52.8	52.3	103	101	80-120	1	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3375045 3375046

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10486062001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	2.2	50	50	55.2	54.6	106	105	80-120	1	20		

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10486047

QC Batch: 626406 Analysis Method: SM 4500-P F  
QC Batch Method: SM 4500-P B Analysis Description: SM4500P-F, Total Phosphorus  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

METHOD BLANK: 3379676 Matrix: Water  
Associated Lab Samples: 10486047004, 10486047005, 10486047006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.10	0.043	08/16/19 09:35	

LABORATORY CONTROL SAMPLE: 3379677

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	1	1.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3379678 3379679

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Result	Conc.	Result	Result	% Rec	% Rec				
Phosphorus	mg/L	0.43	1	1	1	0.84	0.92	40	49	80-120	9	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3379680 3379681

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Result	Conc.	Result	Result	% Rec	% Rec				
Phosphorus	mg/L	0.35	1	1	1	0.96	0.83	62	48	80-120	15	30	M1

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## QUALIFIERS

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

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### 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.

TNTC - Too Numerous To Count

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

FS The sample was filtered in the laboratory prior to analysis.

H3 Sample was received or analysis requested beyond the recognized method holding time.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10486047001	WSP-SS-1-080119	EPA 200.8	624976	EPA 200.8	627643
10486047002	WSP-SS-3E-080119	EPA 200.8	624976	EPA 200.8	627643
10486047003	WSP-SS-5-080119	EPA 200.8	624976	EPA 200.8	627643
10486047004	WSP-SS-1-080519	EPA 200.8	624976	EPA 200.8	627643
10486047005	WSP-SS-3E-080519	EPA 200.8	624976	EPA 200.8	627643
10486047006	WSP-SS-5-080519	EPA 200.8	624976	EPA 200.8	627643
10486047004	WSP-SS-1-080519	EPA 200.8	625015	EPA 200.8	626701
10486047005	WSP-SS-3E-080519	EPA 200.8	625015	EPA 200.8	626701
10486047006	WSP-SS-5-080519	EPA 200.8	625015	EPA 200.8	626701
10486047001	WSP-SS-1-080119	EPA 245.1	624984	EPA 245.1	626533
10486047002	WSP-SS-3E-080119	EPA 245.1	624984	EPA 245.1	626533
10486047003	WSP-SS-5-080119	EPA 245.1	624984	EPA 245.1	626533
10486047004	WSP-SS-1-080519	EPA 245.1	624984	EPA 245.1	626533
10486047005	WSP-SS-3E-080519	EPA 245.1	624984	EPA 245.1	626533
10486047006	WSP-SS-5-080519	EPA 245.1	624984	EPA 245.1	626533
10486047001	WSP-SS-1-080119	EPA 160.4	624913		
10486047002	WSP-SS-3E-080119	EPA 160.4	624913		
10486047003	WSP-SS-5-080119	EPA 160.4	624913		
10486047004	WSP-SS-1-080519	EPA 160.4	624913		
10486047005	WSP-SS-3E-080519	EPA 160.4	624913		
10486047006	WSP-SS-5-080519	EPA 160.4	624913		
10486047001	WSP-SS-1-080119	EPA 180.1	624775		
10486047002	WSP-SS-3E-080119	EPA 180.1	624775		
10486047003	WSP-SS-5-080119	EPA 180.1	624775		
10486047004	WSP-SS-1-080519	EPA 180.1	624775		
10486047005	WSP-SS-3E-080519	EPA 180.1	624775		
10486047006	WSP-SS-5-080519	EPA 180.1	624775		
10486047001	WSP-SS-1-080119	SM 2320B	625152		
10486047002	WSP-SS-3E-080119	SM 2320B	625152		
10486047003	WSP-SS-5-080119	SM 2320B	625152		
10486047004	WSP-SS-1-080519	SM 2320B	625152		
10486047005	WSP-SS-3E-080519	SM 2320B	625152		
10486047006	WSP-SS-5-080519	SM 2320B	625152		
10486047001	WSP-SS-1-080119	SM 2540D	624910		
10486047002	WSP-SS-3E-080119	SM 2540D	624910		
10486047003	WSP-SS-5-080119	SM 2540D	624910		
10486047004	WSP-SS-1-080519	SM 2540D	624912		
10486047005	WSP-SS-3E-080519	SM 2540D	625243		
10486047006	WSP-SS-5-080519	SM 2540D	625243		
10486047004	WSP-SS-1-080519	EPA 350.1	625982		
10486047005	WSP-SS-3E-080519	EPA 350.1	625982		
10486047006	WSP-SS-5-080519	EPA 350.1	625982		
10486047004	WSP-SS-1-080519	EPA 351.2	602664	EPA 351.2	603234
10486047005	WSP-SS-3E-080519	EPA 351.2	602664	EPA 351.2	603234

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly + Nutrients

Pace Project No.: 10486047

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10486047006	WSP-SS-5-080519	EPA 351.2	602664	EPA 351.2	603234
10486047004	WSP-SS-1-080519	SM 4500-NO3 H	625630		
10486047005	WSP-SS-3E-080519	SM 4500-NO3 H	625630		
10486047006	WSP-SS-5-080519	SM 4500-NO3 H	625630		
10486047004	WSP-SS-1-080519	SM 4500-P G	624583		
10486047005	WSP-SS-3E-080519	SM 4500-P G	624583		
10486047006	WSP-SS-5-080519	SM 4500-P G	624583		
10486047004	WSP-SS-1-080519	SM 5310C	603638		
10486047005	WSP-SS-3E-080519	SM 5310C	603638		
10486047006	WSP-SS-5-080519	SM 5310C	603638		
10486047001	WSP-SS-1-080119	ASTM D516	624590		
10486047002	WSP-SS-3E-080119	ASTM D516	624817		
10486047003	WSP-SS-5-080119	ASTM D516	624817		
10486047004	WSP-SS-1-080519	ASTM D516	624817		
10486047005	WSP-SS-3E-080519	ASTM D516	624817		
10486047006	WSP-SS-5-080519	ASTM D516	624817		
10486047004	WSP-SS-1-080519	SM 4500-CI E	625442		
10486047005	WSP-SS-3E-080519	SM 4500-CI E	625442		
10486047006	WSP-SS-5-080519	SM 4500-CI E	625442		
10486047004	WSP-SS-1-080519	SM 4500-P B	626406	SM 4500-P F	626776
10486047005	WSP-SS-3E-080519	SM 4500-P B	626406	SM 4500-P F	626776
10486047006	WSP-SS-5-080519	SM 4500-P B	626406	SM 4500-P F	626776

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Sample Condition Upon Receipt - ESI Tech Specs

Client Name: **Pioneer - BP**

Project #: **WO# : 10486047**

PM: **JMA** Due Date: **08/19/19**  
 CLIENT: **BP-PIONEER**

Courier:  Fed Ex  UPS  USPS  Client  
 Pace  Speedee  Commercial See Exception

Tracking Number: **7475 9397 7450**

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No Biological Tissue Frozen?  Yes  No  N/A

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No

Thermometer:  T1(0461)  T2(1336)  T3(0459)  
 T4(0254)  T5(0048) Type of Ice:  Wet  Blue  None  Dry  Melted

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: **5.0** °C Average Corrected Temp See Exceptions (no temp blank only):

Correction Factor: **+0.1** Cooler Temp Corrected w/temp blank: **5.1** °C

USDA Regulated Soil: ( N/A, water sample/Other: \_\_\_\_\_) Date/initials of Person Examining Contents: **SJS 8/6/19**  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No  
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <b>CM 8/4/19</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4. <b>turbidity ooh</b>
Short Hold Time Analysis (<72 hr)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input checked="" type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Triple Volume Provided for MS/MSD (if more than 10 samples)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input checked="" type="checkbox"/> HNO <sub>3</sub> <input checked="" type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	
Exceptions: VOA, Coliform, TOC/DOD Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> See Exception
	Chlorine? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No pH Paper Lot#
	Res. Chlorine 0-6 Roll <b>203019</b> 0-6 Strip 0-14 Strip
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased):
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Field Data Required?  Yes  No

Comments/Resolution: \_\_\_\_\_

Temp Log: Temp must be maintained at <6°C during logIn, record temp every 20 mins		
Opened Time: <b>04:55</b>	Temp: <b>5.0</b>	Corrected Temp: <b>5.1</b>
Time: <b>04:55</b>	put in cooler	
Time: _____	Temp: _____	Corrected Temp: _____

Project Manager Review: **JMA**

Date: **08/06/2019**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: **CA (E)**

# Chain of Custody



Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MT

Cert. Needed:  Yes  No

Owner Received Date: 8/6/2019 Results Requested By: 8/19/2019

Workorder: 10486047 Workorder Name: WSP Weekly + Nutrients

Report To		Subcontract To				Requested Analysis											
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436		Pace Analytical Kansas 9608 Loiret Blvd Lenexa, KS 66219 Phone (913)599-5665															
						Preserved Containers					351.2 Total Kjeldahl Nitrogen	DOC by 5310					LAB USE ONLY
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	H <sub>2</sub> O <sub>2</sub> BP35	DG9S										
1	WSP-SS-1-080519	PS	8/5/2019 12:00	10486047004	Water	1	3	BP35			X	X	DG9S(3)			001	
2	WSP-SS-3E-080519	PS	8/5/2019 11:30	10486047005	Water	1	3	↓			X	X	↓			002	
3	WSP-SS-5-080519	PS	8/5/2019 11:00	10486047006	Water	1	3	↓			X	X	↓			003	
4																	
5																	
Transfers											Comments						
Released By	Date/Time	Received By	Date/Time														
<i>[Signature]</i>	8/6/19	<i>[Signature]</i>	8/7/19														
Cooler Temperature on Receipt <u>8.5</u> °C		Custody Seal <u>Y</u> or N		Received on Ice <u>Y</u> or N		Samples Intact <u>Y</u> or N											

00311091

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.



**Sample Condition Upon Receipt**

WO#: 60311091



Client Name: Pace Mining

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-307 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 2.5 Corr. Factor 0.0 Corrected 2.5

Date and initials of person examining contents: 4/2/19 A

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y  N  Field Data Required? Y  N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

September 10, 2019

Shawn Bisch  
Pioneer Technical  
307 E. Park Ave  
Suite 421  
Anaconda, MT 59711

RE: Project: WSP Weekly + MWB  
Pace Project No.: 10487020

Dear Shawn Bisch:

Enclosed are the analytical results for sample(s) received by the laboratory on August 13, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

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

Sincerely,



Jennifer Anderson  
jennifer.anderson@pacelabs.com  
(612)607-6436  
Project Manager

Enclosures

cc: Steve Lubick, Pioneer Technical Services



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485  
A2LA Certification #: 2926.01  
Alabama Certification #: 40770  
Alaska Contaminated Sites Certification #: 17-009  
Alaska DW Certification #: MN00064  
Arizona Certification #: AZ0014  
Arkansas DW Certification #: MN00064  
Arkansas WW Certification #: 88-0680  
California Certification #: 2929  
CNMI Saipan Certification #: MP0003  
Colorado Certification #: MN00064  
Connecticut Certification #: PH-0256  
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137  
Florida Certification #: E87605  
Georgia Certification #: 959  
Guam EPA Certification #: MN00064  
Hawaii Certification #: MN00064  
Idaho Certification #: MN00064  
Illinois Certification #: 200011  
Indiana Certification #: C-MN-01  
Iowa Certification #: 368  
Kansas Certification #: E-10167  
Kentucky DW Certification #: 90062  
Kentucky WW Certification #: 90062  
Louisiana DEQ Certification #: 03086  
Louisiana DW Certification #: MN00064  
Maine Certification #: MN00064  
Maryland Certification #: 322  
Massachusetts Certification #: M-MN064  
Michigan Certification #: 9909  
Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137  
Minnesota Petrofund Certification #: 1240  
Mississippi Certification #: MN00064  
Missouri Certification #: 10100  
Montana Certification #: CERT0092  
Nebraska Certification #: NE-OS-18-06  
Nevada Certification #: MN00064  
New Hampshire Certification #: 2081  
New Jersey Certification #: MN002  
New York Certification #: 11647  
North Carolina DW Certification #: 27700  
North Carolina WW Certification #: 530  
North Dakota Certification #: R-036  
Ohio DW Certification #: 41244  
Ohio VAP Certification #: CL101  
Oklahoma Certification #: 9507  
Oregon Primary Certification #: MN300001  
Oregon Secondary Certification #: MN200001  
Pennsylvania Certification #: 68-00563  
Puerto Rico Certification #: MN00064  
South Carolina Certification #: 74003001  
Tennessee Certification #: TN02818  
Texas Certification #: T104704192  
Utah Certification #: MN00064  
Vermont Certification #: VT-027053137  
Virginia Certification #: 460163  
Washington Certification #: C486  
West Virginia DEP Certification #: 382  
West Virginia DW Certification #: 9952 C  
Wisconsin Certification #: 999407970  
Wyoming UST Certification #: via A2LA 2926.01

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### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
Missouri Inorganic Drinking Water Certification #: 10090  
Arkansas Drinking Water  
Arkansas Certification #: 19-016-0  
Arkansas Drinking Water  
Illinois Certification #: 004455  
Iowa Certification #: 118  
Kansas/NELAP Certification #: E-10116  
Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
Oklahoma Certification #: 9205/9935  
Florida: Cert E871149 SEKS WET  
Texas Certification #: T104704407-18-11  
Utah Certification #: KS000212018-8  
Illinois Certification #: 004592  
Kansas Field Laboratory Accreditation: # E-92587  
Missouri SEKS Micro Certification: 10070

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10487020001	WSP-MWB-1-080819	Water	08/08/19 08:55	08/13/19 08:45
10487020002	WSP-MWB-2-080819	Water	08/08/19 09:10	08/13/19 08:45
10487020003	WSP-MWB-3-080819	Water	08/08/19 09:20	08/13/19 08:45
10487020004	WSP-SS-1-080819	Water	08/08/19 11:00	08/13/19 08:45
10487020005	WSP-SS-3E-080819	Water	08/08/19 10:15	08/13/19 08:45
10487020006	WSP-SS-5-080819	Water	08/08/19 10:00	08/13/19 08:45
10487020007	WSP-SS-1-081219	Water	08/12/19 11:15	08/13/19 08:45
10487020008	WSP-SS-3E-081219	Water	08/12/19 10:40	08/13/19 08:45
10487020009	WSP-SS-5-081219	Water	08/12/19 10:25	08/13/19 08:45

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10487020001	WSP-MWB-1-080819	EPA 200.8	RJS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
10487020002	WSP-MWB-2-080819	EPA 200.8	RJS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
10487020003	WSP-MWB-3-080819	EPA 200.8	RJS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
10487020004	WSP-SS-1-080819	EPA 200.8	RJS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		ASTM D516	AR3	1	PASI-M
		EPA 200.8	RJS	9	PASI-M
10487020005	WSP-SS-3E-080819	EPA 245.1	BTS	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		ASTM D516	AR3	1	PASI-M
		EPA 200.8	RJS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
10487020006	WSP-SS-5-080819	EPA 160.4	JER	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		ASTM D516	AR3	1	PASI-M
		EPA 200.8	RJS, WBS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	JER	1	PASI-M
10487020007	WSP-SS-1-081219	EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		EPA 200.8	RJS, WBS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
10487020008	WSP-SS-3E-081219	EPA 200.8	RJS, WBS	9	PASI-M

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
<b>10487020009</b>	<b>WSP-SS-5-081219</b>	EPA 200.8	RJS, WBS	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	JER	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JER	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

9 samples were analyzed for EPA 200.8. 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 200.8 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.

**Internal Standards:**

All internal standards were within QC limits 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: 626479

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487016001,10487201002

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

- MS (Lab ID: 3380082)
  - Sodium
- MSD (Lab ID: 3380083)
  - Sodium

**Additional Comments:**

Analyte Comments:

QC Batch: 626479

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3380082)
  - Sodium

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

Analyte Comments:

QC Batch: 626479

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MSD (Lab ID: 3380083)
  - Sodium

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

---

**Method:** EPA 245.1

**Description:** 245.1 Mercury, LL

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

9 samples were analyzed for EPA 245.1. 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 245.1 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

---

**Method:** EPA 160.4

**Description:** 160.4 Total Volatile Suspended

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

6 samples were analyzed for EPA 160.4. 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: WSP Weekly + MWB

Pace Project No.: 10487020

---

**Method:** EPA 180.1

**Description:** 180.1 Turbidity

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

### General Information:

6 samples were analyzed for EPA 180.1. 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.

H3: Sample was received or analysis requested beyond the recognized method holding time.

- WSP-SS-1-080819 (Lab ID: 10487020004)
- WSP-SS-3E-080819 (Lab ID: 10487020005)
- WSP-SS-5-080819 (Lab ID: 10487020006)

H5: Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.

- WSP-SS-1-081219 (Lab ID: 10487020007)
- WSP-SS-3E-081219 (Lab ID: 10487020008)
- WSP-SS-5-081219 (Lab ID: 10487020009)

### 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: WSP Weekly + MWB

Pace Project No.: 10487020

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**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

6 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.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

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**Method:** SM 2540D

**Description:** 2540D Total Suspended Solids

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

6 samples were analyzed for SM 2540D. 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.

QC Batch: 626135

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 3378280)
- Total Suspended Solids

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

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**Method:** SM 5310C

**Description:** 5310C Dissolved Organic Carbon

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

3 samples were analyzed for SM 5310C. 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: WSP Weekly + MWB

Pace Project No.: 10487020

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**Method:** ASTM D516

**Description:** ASTM D516 Sulfate Water

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

6 samples were analyzed for ASTM D516. 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: 626815

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487201002,10487396003

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

- MSD (Lab ID: 3381803)
- Sulfate

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

- MS (Lab ID: 3381800)
- Sulfate
- MSD (Lab ID: 3381801)
- Sulfate

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

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**Method:** SM 4500-CI E

**Description:** SM4500CI-E Chloride

**Client:** BPAR-PIONEER-MT

**Date:** September 10, 2019

**General Information:**

3 samples were analyzed for SM 4500-CI E. 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.

**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: WSP Weekly + MWB

Pace Project No.: 10487020

**Sample: WSP-MWB-1-080819**      **Lab ID: 10487020001**      Collected: 08/08/19 08:55      Received: 08/13/19 08:45      Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>200.8 MET ICPMS</b>									
Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.025</b>	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:48	7440-38-2	
Cadmium	<b>0.000089</b>	mg/L	0.000080	0.000030	1	08/23/19 04:53	09/06/19 20:48	7440-43-9	
Copper	<b>0.0046</b>	mg/L	0.0010	0.00043	1	08/23/19 04:53	09/06/19 20:48	7440-50-8	
Iron	<b>0.18</b>	mg/L	0.050	0.012	1	08/23/19 04:53	09/06/19 20:48	7439-89-6	
Lead	<b>0.00080</b>	mg/L	0.00010	0.000046	1	08/23/19 04:53	09/06/19 20:48	7439-92-1	
Selenium	ND	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:48	7782-49-2	
Silver	ND	mg/L	0.00050	0.000077	1	08/23/19 04:53	09/06/19 20:48	7440-22-4	
Total Hardness by 2340B	<b>104</b>	mg/L	2.8	1.3	20	08/23/19 04:53	08/28/19 21:16		
Zinc	<b>0.0055</b>	mg/L	0.0050	0.0024	1	08/23/19 04:53	09/06/19 20:48	7440-66-6	
<b>245.1 Mercury, LL</b>									
Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.0000039	1	08/23/19 06:22	08/23/19 10:35	7439-97-6	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

**Sample: WSP-MWB-2-080819**      **Lab ID: 10487020002**      Collected: 08/08/19 09:10      Received: 08/13/19 08:45      Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>200.8 MET ICPMS</b>									
Analytical Method: EPA 200.8    Preparation Method: EPA 200.8									
Arsenic	<b>0.024</b>	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:50	7440-38-2	
Cadmium	<b>0.000052J</b>	mg/L	0.000080	0.000030	1	08/23/19 04:53	09/06/19 20:50	7440-43-9	
Copper	<b>0.0030</b>	mg/L	0.0010	0.00043	1	08/23/19 04:53	09/06/19 20:50	7440-50-8	
Iron	<b>0.13</b>	mg/L	0.050	0.012	1	08/23/19 04:53	09/06/19 20:50	7439-89-6	
Lead	<b>0.00040</b>	mg/L	0.00010	0.000046	1	08/23/19 04:53	09/06/19 20:50	7439-92-1	
Selenium	ND	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:50	7782-49-2	
Silver	ND	mg/L	0.00050	0.000077	1	08/23/19 04:53	09/06/19 20:50	7440-22-4	
Total Hardness by 2340B	<b>203</b>	mg/L	2.8	1.3	20	08/23/19 04:53	08/28/19 21:23		
Zinc	<b>0.0049J</b>	mg/L	0.0050	0.0024	1	08/23/19 04:53	09/06/19 20:50	7440-66-6	
<b>245.1 Mercury, LL</b>									
Analytical Method: EPA 245.1    Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003	1	08/23/19 06:22	08/23/19 10:38	7439-97-6	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

**Sample: WSP-MWB-3-080819**      **Lab ID: 10487020003**      Collected: 08/08/19 09:20      Received: 08/13/19 08:45      Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>200.8 MET ICPMS</b>									
Analytical Method: EPA 200.8    Preparation Method: EPA 200.8									
Arsenic	<b>0.025</b>	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:53	7440-38-2	
Cadmium	<b>0.000057J</b>	mg/L	0.000080	0.000030	1	08/23/19 04:53	09/06/19 20:53	7440-43-9	
Copper	<b>0.0032</b>	mg/L	0.0010	0.00043	1	08/23/19 04:53	09/06/19 20:53	7440-50-8	
Iron	<b>0.14</b>	mg/L	0.050	0.012	1	08/23/19 04:53	09/06/19 20:53	7439-89-6	
Lead	<b>0.00043</b>	mg/L	0.00010	0.000046	1	08/23/19 04:53	09/06/19 20:53	7439-92-1	
Selenium	ND	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:53	7782-49-2	
Silver	ND	mg/L	0.00050	0.000077	1	08/23/19 04:53	09/06/19 20:53	7440-22-4	
Total Hardness by 2340B	<b>200</b>	mg/L	2.8	1.3	20	08/23/19 04:53	08/28/19 21:36		
Zinc	<b>0.0045J</b>	mg/L	0.0050	0.0024	1	08/23/19 04:53	09/06/19 20:53	7440-66-6	
<b>245.1 Mercury, LL</b>									
Analytical Method: EPA 245.1    Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003	1	08/23/19 06:22	08/23/19 10:41	7439-97-6	

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### ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

**Sample: WSP-SS-1-080819**      **Lab ID: 10487020004**      Collected: 08/08/19 11:00      Received: 08/13/19 08:45      Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0084</b>	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:56	7440-38-2	
Cadmium	<b>0.00029</b>	mg/L	0.000080	0.000030	1	08/23/19 04:53	09/06/19 20:56	7440-43-9	
Copper	<b>0.017</b>	mg/L	0.0010	0.00043	1	08/23/19 04:53	09/06/19 20:56	7440-50-8	
Iron	<b>0.20</b>	mg/L	0.050	0.012	1	08/23/19 04:53	09/06/19 20:56	7439-89-6	
Lead	<b>0.00089</b>	mg/L	0.00010	0.000046	1	08/23/19 04:53	09/06/19 20:56	7439-92-1	
Selenium	<b>0.00033J</b>	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 20:56	7782-49-2	
Silver	ND	mg/L	0.00050	0.000077	1	08/23/19 04:53	09/06/19 20:56	7440-22-4	
Total Hardness by 2340B	<b>197</b>	mg/L	2.8	1.3	20	08/23/19 04:53	08/28/19 21:42		
Zinc	<b>0.054</b>	mg/L	0.0050	0.0024	1	08/23/19 04:53	09/06/19 20:56	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.000060J</b>	mg/L	0.000010	0.0000039	1	08/23/19 06:22	08/23/19 10:57	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.2</b>	mg/L	2.0	1.0	1		08/15/19 16:24		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.5</b>	NTU	0.60	0.11	1		08/26/19 16:28		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>116</b>	mg/L	5.0	2.0	1		08/16/19 10:09		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>5.0J</b>	mg/L	10.0	5.0	1		08/14/19 09:23		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>109</b>	mg/L	12.5	3.4	5		08/16/19 13:42	14808-79-8	

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## ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Sample: <b>WSP-SS-3E-080819</b> Lab ID: <b>10487020005</b> Collected: 08/08/19 10:15      Received: 08/13/19 08:45      Matrix: Water											
Parameters	Results	Units	Report Limit			MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8											
Arsenic	<b>0.019</b>	mg/L	0.00050	0.00014	1		08/23/19 04:53	09/06/19 20:59	7440-38-2		
Cadmium	<b>0.00045</b>	mg/L	0.00080	0.00030	1		08/23/19 04:53	09/06/19 20:59	7440-43-9		
Copper	<b>0.021</b>	mg/L	0.0010	0.00043	1		08/23/19 04:53	09/06/19 20:59	7440-50-8		
Iron	<b>0.10</b>	mg/L	0.050	0.012	1		08/23/19 04:53	09/06/19 20:59	7439-89-6		
Lead	<b>0.00075</b>	mg/L	0.00010	0.000046	1		08/23/19 04:53	09/06/19 20:59	7439-92-1		
Selenium	<b>0.00032J</b>	mg/L	0.00050	0.00014	1		08/23/19 04:53	09/06/19 20:59	7782-49-2		
Silver	ND	mg/L	0.00050	0.00077	1		08/23/19 04:53	09/06/19 20:59	7440-22-4		
Total Hardness by 2340B	<b>157</b>	mg/L	2.8	1.3	20		08/23/19 04:53	08/28/19 21:49			
Zinc	<b>0.025</b>	mg/L	0.0050	0.0024	1		08/23/19 04:53	09/06/19 20:59	7440-66-6		
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1											
Mercury	ND	mg/L	0.000010	0.000003	1		08/23/19 06:22	08/23/19 11:01	7439-97-6		
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4											
Volatile Suspended Solids	<b>1.2J</b>	mg/L	2.0	1.0	1			08/15/19 16:24			
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1											
Turbidity	<b>0.86</b>	NTU	0.60	0.11	1			08/26/19 16:25		H3	
<b>2320B Alkalinity</b> Analytical Method: SM 2320B											
Alkalinity, Total as CaCO <sub>3</sub>	<b>95.0</b>	mg/L	5.0	2.0	1			08/16/19 10:13			
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D											
Total Suspended Solids	ND	mg/L	10.0	5.0	1			08/14/19 09:23			
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516											
Sulfate	<b>73.8</b>	mg/L	12.5	3.4	5			08/16/19 13:42	14808-79-8		

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## ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Sample: WSP-SS-5-080819      Lab ID: 10487020006      Collected: 08/08/19 10:00      Received: 08/13/19 08:45      Matrix: Water										
Parameters	Results	Units	Report Limit		MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8										
Arsenic	0.034	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 21:02	7440-38-2		
Cadmium	0.000049J	mg/L	0.000080	0.000030	1	08/23/19 04:53	09/06/19 21:02	7440-43-9		
Copper	0.0064	mg/L	0.0010	0.00043	1	08/23/19 04:53	09/06/19 21:02	7440-50-8		
Iron	0.057	mg/L	0.050	0.012	1	08/23/19 04:53	09/06/19 21:02	7439-89-6		
Lead	0.00033	mg/L	0.00010	0.000046	1	08/23/19 04:53	09/06/19 21:02	7439-92-1		
Selenium	0.00025J	mg/L	0.00050	0.00014	1	08/23/19 04:53	09/06/19 21:02	7782-49-2		
Silver	ND	mg/L	0.00050	0.000077	1	08/23/19 04:53	09/06/19 21:02	7440-22-4		
Total Hardness by 2340B	137	mg/L	2.8	1.3	20	08/23/19 04:53	08/28/19 21:55			
Zinc	0.0057	mg/L	0.0050	0.0024	1	08/23/19 04:53	09/06/19 21:02	7440-66-6		
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1										
Mercury	ND	mg/L	0.000010	0.0000039	1	08/23/19 06:22	08/23/19 11:04	7439-97-6		
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4										
Volatile Suspended Solids	1.2J	mg/L	2.0	1.0	1		08/15/19 16:24			
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1										
Turbidity	0.79	NTU	0.60	0.11	1		08/26/19 16:23		H3	
<b>2320B Alkalinity</b> Analytical Method: SM 2320B										
Alkalinity, Total as CaCO3	74.2	mg/L	5.0	2.0	1		08/16/19 10:18			
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D										
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/14/19 09:23			
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516										
Sulfate	71.5	mg/L	12.5	3.4	5		08/16/19 13:43	14808-79-8		

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## ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Sample: WSP-SS-1-081219      Lab ID: 10487020007      Collected: 08/12/19 11:15      Received: 08/13/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	0.0096	mg/L	0.00050	0.00014	1	08/23/19 04:53	08/29/19 15:44	7440-38-2	
Cadmium	0.00087	mg/L	0.000080	0.000030	1	08/23/19 04:53	08/29/19 15:44	7440-43-9	
Copper	0.056	mg/L	0.0010	0.00043	1	08/23/19 04:53	08/29/19 15:44	7440-50-8	
Iron	1.7	mg/L	0.050	0.012	1	08/23/19 04:53	08/29/19 15:44	7439-89-6	
Lead	0.0089	mg/L	0.00010	0.000046	1	08/23/19 04:53	08/29/19 15:44	7439-92-1	
Potassium	5.1	mg/L	0.10	0.018	1	08/23/19 04:53	08/29/19 15:44	7440-09-7	
Sodium	24.6	mg/L	1.0	0.49	20	08/23/19 04:53	08/28/19 22:01	7440-23-5	
Total Hardness by 2340B	171	mg/L	2.8	1.3	20	08/23/19 04:53	08/28/19 22:01		
Zinc	0.20	mg/L	0.0050	0.0024	1	08/23/19 04:53	08/29/19 15:44	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	0.000047	mg/L	0.000010	0.0000039	1	08/23/19 06:22	08/23/19 11:07	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	12.8	mg/L	2.0	1.0	1		08/15/19 16:24		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	21.5	NTU	0.60	0.11	1		08/26/19 16:37		H5
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	98.7	mg/L	5.0	2.0	1		08/16/19 10:51		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	51.0	mg/L	10.0	5.0	1		08/15/19 14:34		
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	4.1	mg/L	1.0	0.29	1		08/21/19 20:38		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	85.9	mg/L	12.5	3.4	5		08/16/19 13:43	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	27.1	mg/L	2.0	0.82	1		08/21/19 11:21	16887-00-6	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Sample: WSP-SS-3E-081219      Lab ID: 10487020008      Collected: 08/12/19 10:40      Received: 08/13/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	0.022	mg/L	0.00050	0.00014	1	08/23/19 04:53	08/28/19 22:11	7440-38-2	
Cadmium	0.00064	mg/L	0.000080	0.000030	1	08/23/19 04:53	08/28/19 22:11	7440-43-9	
Copper	0.027	mg/L	0.0010	0.00043	1	08/23/19 04:53	08/28/19 22:11	7440-50-8	
Iron	0.20	mg/L	0.050	0.012	1	08/23/19 04:53	08/28/19 22:11	7439-89-6	
Lead	0.0015	mg/L	0.00010	0.000046	1	08/23/19 04:53	08/28/19 22:11	7439-92-1	
Potassium	3.0	mg/L	0.10	0.018	1	08/23/19 04:53	08/28/19 22:11	7440-09-7	
Sodium	19.7	mg/L	0.050	0.024	1	08/23/19 04:53	08/28/19 22:11	7440-23-5	
Total Hardness by 2340B	130	mg/L	1.4	0.63	10	08/23/19 04:53	08/29/19 15:47		
Zinc	0.049	mg/L	0.0050	0.0024	1	08/23/19 04:53	08/28/19 22:11	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.0000039	1	08/23/19 06:22	08/23/19 11:10	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	1.8J	mg/L	2.0	1.0	1		08/15/19 16:24		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	2.1	NTU	0.60	0.11	1		08/26/19 16:31		H5
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	96.0	mg/L	5.0	2.0	1		08/16/19 10:59		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/15/19 14:34		
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	7.8	mg/L	1.0	0.29	1		08/21/19 19:59		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	70.4	mg/L	12.5	3.4	5		08/16/19 13:44	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	21.1	mg/L	2.0	0.82	1		08/21/19 11:22	16887-00-6	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Sample: WSP-SS-5-081219      Lab ID: 10487020009      Collected: 08/12/19 10:25      Received: 08/13/19 08:45      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	0.038	mg/L	0.00050	0.00014	1	08/23/19 04:53	08/28/19 22:17	7440-38-2	
Cadmium	0.000057J	mg/L	0.000080	0.000030	1	08/23/19 04:53	08/28/19 22:17	7440-43-9	
Copper	0.0055	mg/L	0.0010	0.00043	1	08/23/19 04:53	08/28/19 22:17	7440-50-8	
Iron	0.045J	mg/L	0.050	0.012	1	08/23/19 04:53	08/28/19 22:17	7439-89-6	
Lead	0.00029	mg/L	0.00010	0.000046	1	08/23/19 04:53	08/28/19 22:17	7439-92-1	
Potassium	2.3	mg/L	0.10	0.018	1	08/23/19 04:53	08/28/19 22:17	7440-09-7	
Sodium	18.9	mg/L	0.050	0.024	1	08/23/19 04:53	08/28/19 22:17	7440-23-5	
Total Hardness by 2340B	126	mg/L	1.4	0.63	10	08/23/19 04:53	08/29/19 15:50		
Zinc	0.0054	mg/L	0.0050	0.0024	1	08/23/19 04:53	08/28/19 22:17	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.0000039	1	08/23/19 06:22	08/23/19 11:13	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	1.2J	mg/L	2.0	1.0	1		08/15/19 16:24		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	0.62	NTU	0.60	0.11	1		08/26/19 16:29		H5
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	73.8	mg/L	5.0	2.0	1		08/16/19 11:23		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/15/19 14:34		
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	6.4	mg/L	1.0	0.29	1		08/21/19 19:46		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	71.6	mg/L	12.5	3.4	5		08/16/19 13:45	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	18.5	mg/L	2.0	0.82	1		08/21/19 11:23	16887-00-6	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 628015

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury, LL

Associated Lab Samples: 10487020001, 10487020002, 10487020003, 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

METHOD BLANK: 3388562

Matrix: Water

Associated Lab Samples: 10487020001, 10487020002, 10487020003, 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.000010	0.0000039	08/23/19 10:25	

LABORATORY CONTROL SAMPLE: 3388563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0001	0.000096	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3388564 3388565

Parameter	Units	10487020003 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Mercury	mg/L	ND	0.0001	0.00010	0.00010	0.00010	104	104	70-130	0	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch:	626479	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	10487020001, 10487020002, 10487020003, 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009		

METHOD BLANK:	3380079	Matrix:	Water
Associated Lab Samples:	10487020001, 10487020002, 10487020003, 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.00050	0.00014	09/06/19 20:39	
Cadmium	mg/L	ND	0.000080	0.000030	09/06/19 20:39	
Copper	mg/L	ND	0.0010	0.00043	09/06/19 20:39	
Iron	mg/L	ND	0.050	0.012	09/06/19 20:39	
Lead	mg/L	ND	0.00010	0.000046	09/06/19 20:39	
Potassium	mg/L	ND	0.10	0.018	09/06/19 20:39	
Selenium	mg/L	ND	0.00050	0.00014	09/06/19 20:39	
Silver	mg/L	ND	0.00050	0.000077	09/06/19 20:39	
Sodium	mg/L	ND	0.050	0.024	09/06/19 20:39	
Zinc	mg/L	ND	0.0050	0.0024	09/06/19 20:39	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.095	95	85-115	
Cadmium	mg/L	0.1	0.098	98	85-115	
Copper	mg/L	0.1	0.10	103	85-115	
Iron	mg/L	2	1.9	97	85-115	
Lead	mg/L	0.1	0.10	102	85-115	
Potassium	mg/L	2	2.0	98	85-115	
Selenium	mg/L	0.1	0.099	99	85-115	
Silver	mg/L	0.05	0.052	104	85-115	
Sodium	mg/L	2	2.0	99	85-115	
Zinc	mg/L	0.1	0.096	96	85-115	

Parameter	Units	10487016001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.0074	0.1	0.10	92	70-130	
Cadmium	mg/L	0.000082	0.1	0.096	96	70-130	
Copper	mg/L	0.017	0.1	0.11	98	70-130	
Iron	mg/L	0.29	2	2.2	94	70-130	
Lead	mg/L	0.0019	0.1	0.10	98	70-130	
Potassium	mg/L	1.4	2	3.3	93	70-130	
Selenium	mg/L	ND	0.1	0.095	95	70-130	
Silver	mg/L	ND	0.05	0.052	104	70-130	
Sodium	mg/L	2.9	2	4.7	91	70-130	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + MWB

Pace Project No.: 10487020

MATRIX SPIKE SAMPLE:		3380081		10487016001	Spike	MS	MS	% Rec		
Parameter	Units	Result	Conc.	Result	% Rec	Result	% Rec	Limits	Qualifiers	
Zinc	mg/L	0.0088	0.1	0.097	89			70-130		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		3380082		3380083								
Parameter	Units	10487201002	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		
		Result	Spike	Spike	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Arsenic	mg/L	0.0039	0.1	0.1	0.094	0.093	90	89	70-130	1	20	
Cadmium	mg/L	0.00021	0.1	0.1	0.094	0.094	94	94	70-130	0	20	
Copper	mg/L	0.014	0.1	0.1	0.11	0.11	96	94	70-130	2	20	
Iron	mg/L	0.034J	2	2	1.9	1.8	92	91	70-130	2	20	
Lead	mg/L	0.00040	0.1	0.1	0.095	0.094	94	94	70-130	0	20	
Potassium	mg/L	7260 ug/L	2	2	9.1	9.0	94	88	70-130	1	20	
Selenium	mg/L	0.24J ug/L	0.1	0.1	0.096	0.097	96	97	70-130	1	20	
Silver	mg/L	ND	0.05	0.05	0.050	0.049	100	98	70-130	1	20	
Sodium	mg/L	45800 ug/L	2	2	51.4	50.9	284	255	70-130	1	20	E,M1
Zinc	mg/L	0.064	0.1	0.1	0.15	0.15	88	84	70-130	3	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 626446

Analysis Method: EPA 160.4

QC Batch Method: EPA 160.4

Analysis Description: 160.4 Total Volatile Suspended Solids

Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

METHOD BLANK: 3379954

Matrix: Water

Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Volatile Suspended Solids	mg/L	ND	2.0	1.0	08/15/19 16:24	

SAMPLE DUPLICATE: 3379955

Parameter	Units	10487020004 Result	Dup Result	RPD	Max RPD	Qualifiers
Volatile Suspended Solids	mg/L	2.2	2.2	2	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB  
Pace Project No.: 10487020

QC Batch: 626098 Analysis Method: EPA 180.1  
QC Batch Method: EPA 180.1 Analysis Description: 180.1 Turbidity  
Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

METHOD BLANK: 3377999 Matrix: Water  
Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Turbidity	NTU	ND	0.60	0.11	08/26/19 16:22	

LABORATORY CONTROL SAMPLE: 3378000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Turbidity	NTU	10.1	10.0	99	90-110	

SAMPLE DUPLICATE: 3378001

Parameter	Units	10487020007 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	21.5	18.2	17	20	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 626523 Analysis Method: SM 2320B  
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
 Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

METHOD BLANK: 3380223 Matrix: Water  
 Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	2.0	08/16/19 08:33	

LABORATORY CONTROL SAMPLE & LCSD: 3380224 3380225

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	42.6	42.5	106	106	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3380226 3380227

Parameter	Units	10486868005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	67.9	40	40	103	105	88	93	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3380228 3380229

Parameter	Units	10487020006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	74.2	40	40	116	117	105	106	80-120	0	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 626135

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 10487020004, 10487020005, 10487020006

METHOD BLANK: 3378277

Matrix: Water

Associated Lab Samples: 10487020004, 10487020005, 10487020006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/14/19 09:23	

LABORATORY CONTROL SAMPLE: 3378278

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	88.0	88	80-120	

SAMPLE DUPLICATE: 3378279

Parameter	Units	10486763001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	44.0	44.0	0	5	

SAMPLE DUPLICATE: 3378280

Parameter	Units	10486763004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	76.0	83.0	9	5	D6

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 626591

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 10487020007, 10487020008, 10487020009

METHOD BLANK: 3380508

Matrix: Water

Associated Lab Samples: 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/15/19 14:34	

LABORATORY CONTROL SAMPLE: 3380509

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	100	100	80-120	

SAMPLE DUPLICATE: 3380510

Parameter	Units	10487201002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

SAMPLE DUPLICATE: 3380511

Parameter	Units	10487201006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + MWB  
Pace Project No.: 10487020

QC Batch: 604547 Analysis Method: SM 5310C  
QC Batch Method: SM 5310C Analysis Description: 5310C Dissolved Organic Carbon  
Associated Lab Samples: 10487020008, 10487020009

METHOD BLANK: 2471412 Matrix: Water  
Associated Lab Samples: 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	ND	1.0	0.29	08/21/19 13:59	

LABORATORY CONTROL SAMPLE: 2471413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	5	5.4	107	80-120	

MATRIX SPIKE SAMPLE: 2471414

Parameter	Units	10486811003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	9.8	5	14.2	87	80-120	

SAMPLE DUPLICATE: 2471415

Parameter	Units	10486811002 Result	Dup Result	RPD	Max RPD	Qualifiers
Dissolved Organic Carbon	mg/L	9.3	9.3	0	25	

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 604549

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C Dissolved Organic Carbon

Associated Lab Samples: 10487020007

METHOD BLANK: 2471416

Matrix: Water

Associated Lab Samples: 10487020007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	ND	1.0	0.29	08/21/19 20:12	

LABORATORY CONTROL SAMPLE: 2471417

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	5	5.4	108	80-120	

MATRIX SPIKE SAMPLE: 2471418

Parameter	Units	10487020007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	4.1	5	8.9	96	80-120	

SAMPLE DUPLICATE: 2471419

Parameter	Units	10487339002 Result	Dup Result	RPD	Max RPD	Qualifiers
Dissolved Organic Carbon	mg/L	9.7	10.0	3	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 626815 Analysis Method: ASTM D516  
 QC Batch Method: ASTM D516 Analysis Description: ASTM D516 Sulfate Water  
 Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

METHOD BLANK: 3381797 Matrix: Water  
 Associated Lab Samples: 10487020004, 10487020005, 10487020006, 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.5	0.67	08/16/19 13:17	

LABORATORY CONTROL SAMPLE & LCSD: 3381798 3381799

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Sulfate	mg/L	20	18.1	18.6	91	93	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3381800 3381801

Parameter	Units	10487201002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	362	20	20	346	334	-79	-140	80-120	4	30	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3381802 3381803

Parameter	Units	10487396003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	81200 ug/L	20	20	101	94.5	99	67	80-120	7	30	M1

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### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: WSP Weekly + MWB

Pace Project No.: 10487020

QC Batch: 627554 Analysis Method: SM 4500-Cl E  
 QC Batch Method: SM 4500-Cl E Analysis Description: SM4500Cl-E Chloride  
 Associated Lab Samples: 10487020007, 10487020008, 10487020009

METHOD BLANK: 3386409 Matrix: Water  
 Associated Lab Samples: 10487020007, 10487020008, 10487020009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	2.0	0.82	08/21/19 11:19	

LABORATORY CONTROL SAMPLE: 3386410

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	50.3	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3386411 3386412

Parameter	Units	3386411		3386412		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10487020008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Chloride	mg/L	21.1	50	50	70.9	70.3	100	98	80-120	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3386413 3386414

Parameter	Units	3386413		3386414		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10487130010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Chloride	mg/L	109	50	50	154	156	91	95	80-120	1	20

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**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: WSP Weekly + MWB

Pace Project No.: 10487020

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### 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.

TNTC - Too Numerous To Count

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

H3 Sample was received or analysis requested beyond the recognized method holding time.

H5 Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.

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: WSP Weekly + MWB

Pace Project No.: 10487020

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10487020001	WSP-MWB-1-080819	EPA 200.8	626479	EPA 200.8	629011
10487020002	WSP-MWB-2-080819	EPA 200.8	626479	EPA 200.8	629011
10487020003	WSP-MWB-3-080819	EPA 200.8	626479	EPA 200.8	629011
10487020004	WSP-SS-1-080819	EPA 200.8	626479	EPA 200.8	629011
10487020005	WSP-SS-3E-080819	EPA 200.8	626479	EPA 200.8	629011
10487020006	WSP-SS-5-080819	EPA 200.8	626479	EPA 200.8	629011
10487020007	WSP-SS-1-081219	EPA 200.8	626479	EPA 200.8	629011
10487020008	WSP-SS-3E-081219	EPA 200.8	626479	EPA 200.8	629011
10487020009	WSP-SS-5-081219	EPA 200.8	626479	EPA 200.8	629011
10487020001	WSP-MWB-1-080819	EPA 245.1	628015	EPA 245.1	628114
10487020002	WSP-MWB-2-080819	EPA 245.1	628015	EPA 245.1	628114
10487020003	WSP-MWB-3-080819	EPA 245.1	628015	EPA 245.1	628114
10487020004	WSP-SS-1-080819	EPA 245.1	628015	EPA 245.1	628114
10487020005	WSP-SS-3E-080819	EPA 245.1	628015	EPA 245.1	628114
10487020006	WSP-SS-5-080819	EPA 245.1	628015	EPA 245.1	628114
10487020007	WSP-SS-1-081219	EPA 245.1	628015	EPA 245.1	628114
10487020008	WSP-SS-3E-081219	EPA 245.1	628015	EPA 245.1	628114
10487020009	WSP-SS-5-081219	EPA 245.1	628015	EPA 245.1	628114
10487020004	WSP-SS-1-080819	EPA 160.4	626446		
10487020005	WSP-SS-3E-080819	EPA 160.4	626446		
10487020006	WSP-SS-5-080819	EPA 160.4	626446		
10487020007	WSP-SS-1-081219	EPA 160.4	626446		
10487020008	WSP-SS-3E-081219	EPA 160.4	626446		
10487020009	WSP-SS-5-081219	EPA 160.4	626446		
10487020004	WSP-SS-1-080819	EPA 180.1	626098		
10487020005	WSP-SS-3E-080819	EPA 180.1	626098		
10487020006	WSP-SS-5-080819	EPA 180.1	626098		
10487020007	WSP-SS-1-081219	EPA 180.1	626098		
10487020008	WSP-SS-3E-081219	EPA 180.1	626098		
10487020009	WSP-SS-5-081219	EPA 180.1	626098		
10487020004	WSP-SS-1-080819	SM 2320B	626523		
10487020005	WSP-SS-3E-080819	SM 2320B	626523		
10487020006	WSP-SS-5-080819	SM 2320B	626523		
10487020007	WSP-SS-1-081219	SM 2320B	626523		
10487020008	WSP-SS-3E-081219	SM 2320B	626523		
10487020009	WSP-SS-5-081219	SM 2320B	626523		
10487020004	WSP-SS-1-080819	SM 2540D	626135		
10487020005	WSP-SS-3E-080819	SM 2540D	626135		
10487020006	WSP-SS-5-080819	SM 2540D	626135		
10487020007	WSP-SS-1-081219	SM 2540D	626591		
10487020008	WSP-SS-3E-081219	SM 2540D	626591		
10487020009	WSP-SS-5-081219	SM 2540D	626591		
10487020007	WSP-SS-1-081219	SM 5310C	604549		
10487020008	WSP-SS-3E-081219	SM 5310C	604547		
10487020009	WSP-SS-5-081219	SM 5310C	604547		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly + MWB

Pace Project No.: 10487020

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10487020004	WSP-SS-1-080819	ASTM D516	626815		
10487020005	WSP-SS-3E-080819	ASTM D516	626815		
10487020006	WSP-SS-5-080819	ASTM D516	626815		
10487020007	WSP-SS-1-081219	ASTM D516	626815		
10487020008	WSP-SS-3E-081219	ASTM D516	626815		
10487020009	WSP-SS-5-081219	ASTM D516	626815		
10487020007	WSP-SS-1-081219	SM 4500-CI E	627554		
10487020008	WSP-SS-3E-081219	SM 4500-CI E	627554		
10487020009	WSP-SS-5-081219	SM 4500-CI E	627554		

### REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt - ESI Tech Specs	Client Name: <u>BP</u>	Project #: _____	WO#: 10487020
Courier: <input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input type="checkbox"/> Pace <input type="checkbox"/> SpeeDee <input type="checkbox"/> Commercial    See Exception			PM: JMA                      Due Date: 08/26/19 <b>CLIENT: BP-PIONEER</b>
Tracking Number: <u>7475 9397 3958</u> <input type="checkbox"/>			

Custody Seal on Cooler/Box Present?  Yes     No    Seals Intact?  Yes     No    Biological Tissue Frozen?  Yes     No     N/A  
 Packing Material:  Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_    Temp Blank?  Yes     No  
 Thermometer:  T1(0461)     T2(1336)     T3(0459)    Type of Ice:  Wet     Blue     None     Dry     Melted  
                    T4(0254)     T5(0048)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: <u>4.7</u> °C	Average Corrected Temp (no temp blank only): <input type="checkbox"/>
Correction Factor: <u>1.01</u>	Cooler Temp Corrected w/temp blank: <u>4.8</u> °C	See Exceptions: <input type="checkbox"/>

USDA Regulated Soil: (  N/A, water sample/Other: \_\_\_\_\_ )    Date/Initials of Person Examining Contents: 8/13/19 CMJ  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes     No    Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes     No  
**If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.**

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Samples 001-006 OOH for Turb JMA 8/13/19
Short Hold Time Analysis (<72 hr)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input checked="" type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. <u>8/13/19 CMJ</u>
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Triple Volume Provided for MS/MSD (if more than 10 samples)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. Sample # <u>1-9:4</u> <input type="checkbox"/> NaOH <input checked="" type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	
Exceptions: VOA, Coliform, TOC, DOC, Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No    pH Paper Lot# <input type="checkbox"/>
	Res. Chlorine    0-6 Roll <u>203619</u> 0-6 Strip    0-14 Strip
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased): _____
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

**CLIENT NOTIFICATION/RESOLUTION**    Person Contacted: \_\_\_\_\_    Date/Time: \_\_\_\_\_    Field Data Required?  Yes     No  
 Comments/Resolution: \_\_\_\_\_

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: <u>9:20</u>	Temp: <u>4.7</u>	Corrected Temp: <u>4.8</u>
Time: <u>9:30</u>	put in cooler	
Time: _____	Temp: _____	Corrected Temp: _____

Project Manager Review: [Signature]    Date: 08/13/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: CMJ (2)

# Chain of Custody



Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MT

Cert. Needed:  Yes  No

Workorder: 10487020 Workorder Name: WSP Weekly + MWB

Owner Received Date: 8/13/2019 Results Requested By: 8/26/2019

Report To		Subcontract To				Requested Analysis																															
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436		Pace Analytical Kansas 9608 Loiret Blvd Lenexa, KS 66219 Phone (913)599-5665																																			
						Preserved Containers						DOC by 5310  LAB USE ONLY  6031/1800  001 002 003																									
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	H2SO4 DG9S																															
1	WSP-SS-1-081219	PS	8/12/2019 11:15	10487020007	Water	3																															
2	WSP-SS-3E-081219	PS	8/12/2019 10:40	10487020008	Water	3																															
3	WSP-SS-5-081219	PS	8/12/2019 10:25	10487020009	Water	3																															
4																																					
5																																					
Transfers		Released By	Date/Time	Received By	Date/Time	Comments																															
1		<i>[Signature]</i>	8/13/19 1645	<i>[Signature]</i>	8/14/19 855																																
2																																					
3																																					
Cooler Temperature on Receipt		Custody Seal		Received on Ice		Samples Intact																															
05 °C		Y or N		Y or N		Y or N																															

\*\*\*In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.  
 This chain of custody is considered complete as is since this information is available in the owner laboratory.



**Sample Condition Upon Receipt**

**WO#: 60311800**  
60311800

Client Name: PCC

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: 363501992124 Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: T-507 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 0.5 Corr. Factor 0.12 Corrected 0.5

Date and initials of person examining contents: 5/14/19

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

September 18, 2019

Shawn Bisch  
Pioneer Technical  
307 E. Park Ave  
Suite 421  
Anaconda, MT 59711

RE: Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

Dear Shawn Bisch:

Enclosed are the analytical results for sample(s) received by the laboratory on August 20, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

This report was revised on September 18, 2019 to correctly report the results for metals by method 200.8 and mercury by method 245.1 due to mislabeling at sample receipt for samples WSP-SS-1-081519 (10488049-001), WSP-SS-3E-081519 (10488049-002), and WSP-SS-5-081519 (10488049-003).

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

Sincerely,



Jennifer Anderson  
jennifer.anderson@pacelabs.com  
(612)607-6436  
Project Manager

Enclosures

cc: Steve Lubick, Pioneer Technical Services



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 19-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-18-11

Utah Certification #: KS000212018-8

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10488049001	WSP-SS-1-081519	Water	08/15/19 10:50	08/20/19 08:40
10488049002	WSP-SS-3E-081519	Water	08/15/19 10:25	08/20/19 08:40
10488049003	WSP-SS-5-081519	Water	08/15/19 09:45	08/20/19 08:40
10488049004	WSP-SS-1-081919	Water	08/19/19 12:15	08/20/19 08:40
10488049005	WSP-SS-3E-081919	Water	08/19/19 11:45	08/20/19 08:40
10488049006	WSP-SS-5-081919	Water	08/19/19 11:20	08/20/19 08:40

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10488049001	WSP-SS-1-081519	EPA 200.8	PW1	7	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10488049002	WSP-SS-3E-081519	EPA 200.8	PW1	7	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10488049003	WSP-SS-5-081519	EPA 200.8	PW1	7	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10488049004	WSP-SS-1-081919	EPA 200.8	PW1	9	PASI-M
		EPA 200.8	BWB	6	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	JFP	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	DCL	1	PASI-M
10488049005	WSP-SS-3E-081919	EPA 200.8	PW1	9	PASI-M

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	BWB	6	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	JFP	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	DCL	1	PASI-M
<b>10488049006</b>	<b>WSP-SS-5-081919</b>	EPA 200.8	PW1	9	PASI-M
		EPA 200.8	BWB	6	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	JFP	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	DCL	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

### General Information:

6 samples were analyzed for EPA 200.8. 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 200.8 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.

### Internal Standards:

All internal standards were within QC limits 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: 627732

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487434001,10488043001

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

- MS (Lab ID: 3387374)
- Sodium

### Additional Comments:

Analyte Comments:

QC Batch: 627732

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3387374)
- Sodium

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS, Dissolved

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

### General Information:

3 samples were analyzed for EPA 200.8. 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 200.8 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.

### Internal Standards:

All internal standards were within QC limits 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: 627717

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487609001,10488043001

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

- MS (Lab ID: 3387269)
  - Calcium, Dissolved
- MS (Lab ID: 3387271)
  - Magnesium, Dissolved
- MSD (Lab ID: 3387270)
  - Calcium, Dissolved

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

- MS (Lab ID: 3387269)
  - Magnesium, Dissolved

### Additional Comments:

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS, Dissolved

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

Analyte Comments:

QC Batch: 627717

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3387269)
  - Calcium, Dissolved
- MSD (Lab ID: 3387270)
  - Calcium, Dissolved

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** EPA 245.1

**Description:** 245.1 Mercury, LL

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

6 samples were analyzed for EPA 245.1. 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 245.1 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** EPA 160.4

**Description:** 160.4 Total Volatile Suspended

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

6 samples were analyzed for EPA 160.4. 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: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** EPA 180.1

**Description:** 180.1 Turbidity

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

### General Information:

6 samples were analyzed for EPA 180.1. 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.

H3: Sample was received or analysis requested beyond the recognized method holding time.

- WSP-SS-1-081519 (Lab ID: 10488049001)
- WSP-SS-3E-081519 (Lab ID: 10488049002)
- WSP-SS-5-081519 (Lab ID: 10488049003)

### 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: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

6 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 2540D

**Description:** 2540D Total Suspended Solids

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

6 samples were analyzed for SM 2540D. 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: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** EPA 350.1

**Description:** 350.1 Ammonia

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

3 samples were analyzed for EPA 350.1. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** EPA 351.2

**Description:** 351.2 Total Kjeldahl Nitrogen

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

3 samples were analyzed for EPA 351.2. 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 351.2 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.

QC Batch: 606389

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2478360)
- Nitrogen, Kjeldahl, Total

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 4500-NO3 H

**Description:** SM4500NO3-H, NO2 + NO3 pres.

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

### General Information:

3 samples were analyzed for SM 4500-NO3 H. 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: 629230

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487606003,10489236002

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

- MS (Lab ID: 3394070)
  - Nitrogen, NO2 plus NO3
- MSD (Lab ID: 3394071)
  - Nitrogen, NO2 plus NO3

### Additional Comments:

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 4500-P G

**Description:** Phosphate, Ortho Low Level

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

3 samples were analyzed for SM 4500-P G. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 5310C

**Description:** 5310C Dissolved Organic Carbon

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

3 samples were analyzed for SM 5310C. 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.

QC Batch: 605956

B: Analyte was detected in the associated method blank.

- BLANK for HBN 605956 [WETA/609 (Lab ID: 2476742)
- Dissolved Organic Carbon

**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: 605956

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487578055

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

- MS (Lab ID: 2476744)
- Dissolved Organic Carbon

**Additional Comments:**

Analyte Comments:

QC Batch: 605956

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2476744)
- Dissolved Organic Carbon

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** ASTM D516

**Description:** ASTM D516 Sulfate Water

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

6 samples were analyzed for ASTM D516. 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: 628721

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10487563007,10488049001

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

- MS (Lab ID: 3391763)
  - Sulfate
- MSD (Lab ID: 3391764)
  - Sulfate

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 4500-Cl E

**Description:** SM4500Cl-E Chloride

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

3 samples were analyzed for SM 4500-Cl E. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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**Method:** SM 4500-P F

**Description:** SM4500P-F, Total Phosphorus

**Client:** BPAR-PIONEER-MT

**Date:** September 18, 2019

**General Information:**

3 samples were analyzed for SM 4500-P F. 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 SM 4500-P B 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.

**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: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-1-081519</b> Lab ID: <b>10488049001</b> Collected: 08/15/19 10:50      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0076</b>	mg/L	0.00050	0.00014	1	08/27/19 05:27	09/03/19 14:27	7440-38-2	
Cadmium	<b>0.00025</b>	mg/L	0.000080	0.000030	1	08/27/19 05:27	09/03/19 14:27	7440-43-9	
Copper	<b>0.015</b>	mg/L	0.0010	0.00043	1	08/27/19 05:27	09/03/19 14:27	7440-50-8	
Iron	<b>0.21</b>	mg/L	0.050	0.012	1	08/27/19 05:27	09/03/19 14:27	7439-89-6	
Lead	<b>0.00091</b>	mg/L	0.00010	0.000046	1	08/27/19 05:27	09/03/19 14:27	7439-92-1	
Total Hardness by 2340B	<b>195</b>	mg/L	2.8	1.3	20	08/27/19 05:27	09/03/19 14:30		
Zinc	<b>0.054</b>	mg/L	0.0050	0.0024	1	08/27/19 05:27	09/03/19 14:27	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.0000080</b> J	mg/L	0.000010	0.000003 9	1	08/30/19 06:30	09/04/19 12:38	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.4</b>	mg/L	2.0	1.0	1		08/22/19 18:28		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.6</b>	NTU	0.60	0.11	1		08/21/19 07:56		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>114</b>	mg/L	5.0	2.0	1		08/27/19 10:18		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>6.0J</b>	mg/L	10.0	5.0	1		08/22/19 16:19		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>87.0</b>	mg/L	12.5	3.4	5		08/27/19 14:27	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-3E-081519</b> Lab ID: <b>10488049002</b> Collected: 08/15/19 10:25      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.022</b>	mg/L	0.00050	0.00014	1	08/27/19 05:27	09/03/19 14:05	7440-38-2	
Cadmium	<b>0.00065</b>	mg/L	0.000080	0.000030	1	08/27/19 05:27	09/03/19 14:05	7440-43-9	
Copper	<b>0.028</b>	mg/L	0.0010	0.00043	1	08/27/19 05:27	09/03/19 14:05	7440-50-8	
Iron	<b>0.25</b>	mg/L	0.050	0.012	1	08/27/19 05:27	09/03/19 14:05	7439-89-6	
Lead	<b>0.0015</b>	mg/L	0.00010	0.000046	1	08/27/19 05:27	09/03/19 14:05	7439-92-1	
Total Hardness by 2340B	<b>160</b>	mg/L	2.8	1.3	20	08/27/19 05:27	09/03/19 14:08		
Zinc	<b>0.049</b>	mg/L	0.0050	0.0024	1	08/27/19 05:27	09/03/19 14:05	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	08/30/19 06:30	09/04/19 12:32	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.4J</b>	mg/L	2.0	1.0	1		08/22/19 18:28		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>2.4</b>	NTU	0.60	0.11	1		08/21/19 07:54		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>94.9</b>	mg/L	5.0	2.0	1		08/27/19 10:25		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/22/19 16:19		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>62.5</b>	mg/L	12.5	3.4	5		08/27/19 14:28	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-5-081519</b> Lab ID: <b>10488049003</b> Collected: 08/15/19 09:45      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.032</b>	mg/L	0.00050	0.00014	1	08/27/19 05:27	09/03/19 14:21	7440-38-2	
Cadmium	<b>0.000046J</b>	mg/L	0.000080	0.000030	1	08/27/19 05:27	09/03/19 14:21	7440-43-9	
Copper	<b>0.0047</b>	mg/L	0.0010	0.00043	1	08/27/19 05:27	09/03/19 14:21	7440-50-8	
Iron	<b>0.038J</b>	mg/L	0.050	0.012	1	08/27/19 05:27	09/03/19 14:21	7439-89-6	
Lead	<b>0.00018</b>	mg/L	0.00010	0.000046	1	08/27/19 05:27	09/03/19 14:21	7439-92-1	
Total Hardness by 2340B	<b>131</b>	mg/L	2.8	1.3	20	08/27/19 05:27	09/03/19 14:24		
Zinc	<b>0.0042J</b>	mg/L	0.0050	0.0024	1	08/27/19 05:27	09/03/19 14:21	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	08/30/19 06:30	09/04/19 12:35	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.0</b>	mg/L	2.0	1.0	1		08/22/19 18:28		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.62</b>	NTU	0.60	0.11	1		08/21/19 07:52		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>72.8</b>	mg/L	5.0	2.0	1		08/27/19 10:33		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/22/19 16:19		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>85.2</b>	mg/L	12.5	3.4	5		08/27/19 14:29	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

Sample: <b>WSP-SS-1-081919</b> Lab ID: <b>10488049004</b> Collected: 08/19/19 12:15 Received: 08/20/19 08:40 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	<b>0.0077</b>	mg/L	0.00050	0.00014	1	08/27/19 05:27	09/03/19 14:33	7440-38-2	
Cadmium	<b>0.00024</b>	mg/L	0.000080	0.000030	1	08/27/19 05:27	09/03/19 14:33	7440-43-9	
Copper	<b>0.015</b>	mg/L	0.0010	0.00043	1	08/27/19 05:27	09/03/19 14:33	7440-50-8	
Iron	<b>0.22</b>	mg/L	0.050	0.012	1	08/27/19 05:27	09/03/19 14:33	7439-89-6	
Lead	<b>0.00087</b>	mg/L	0.00010	0.000046	1	08/27/19 05:27	09/03/19 14:33	7439-92-1	
Potassium	<b>5.6</b>	mg/L	0.10	0.018	1	08/27/19 05:27	09/03/19 14:33	7440-09-7	
Sodium	<b>35.7</b>	mg/L	1.0	0.49	20	08/27/19 05:27	09/03/19 14:36	7440-23-5	
Total Hardness by 2340B	<b>213</b>	mg/L	2.8	1.3	20	08/27/19 05:27	09/03/19 14:36		
Zinc	<b>0.058</b>	mg/L	0.0050	0.0024	1	08/27/19 05:27	09/03/19 14:33	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	<b>0.0070</b>	mg/L	0.00050	0.00014	1	08/28/19 04:16	08/31/19 19:03	7440-38-2	
Calcium, Dissolved	<b>59.8</b>	mg/L	0.80	0.37	20	08/28/19 04:16	08/31/19 19:06	7440-70-2	
Copper, Dissolved	<b>0.0096</b>	mg/L	0.0010	0.00043	1	08/28/19 04:16	08/31/19 19:03	7440-50-8	
Iron, Dissolved	<b>0.015J</b>	mg/L	0.050	0.012	1	08/28/19 04:16	08/31/19 19:03	7439-89-6	
Magnesium, Dissolved	<b>13.0</b>	mg/L	0.010	0.0041	1	08/28/19 04:16	08/31/19 19:03	7439-95-4	
Manganese, Dissolved	<b>0.016</b>	mg/L	0.00050	0.00023	1	08/28/19 04:16	08/31/19 19:03	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	<b>0.0000070</b> J	mg/L	0.000010	0.000003 9	1	08/30/19 06:30	09/04/19 12:42	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.0</b>	mg/L	2.0	1.0	1		08/22/19 18:28		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>2.3</b>	NTU	0.60	0.11	1		08/21/19 08:06		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>115</b>	mg/L	5.0	2.0	1		08/27/19 10:52		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>ND</b>	mg/L	10.0	5.0	1		08/23/19 10:57		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	<b>ND</b>	mg/L	0.10	0.049	1		08/23/19 12:32	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2 Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	<b>ND</b>	mg/L	0.50	0.37	1	08/29/19 09:59	08/30/19 14:14	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	<b>0.55</b>	mg/L	0.20	0.095	1		08/29/19 09:51		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.071</b>	mg/L	0.010	0.0047	1		08/20/19 18:26		

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-1-081919</b> Lab ID: <b>10488049004</b> Collected: 08/19/19 12:15      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>3.0</b>	mg/L	1.0	0.29	1		08/28/19 02:45		B
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>92.1</b>	mg/L	12.5	3.4	5		08/27/19 14:29	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>39.5</b>	mg/L	2.0	0.82	1		08/21/19 13:49	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.074J</b>	mg/L	0.10	0.043	1	08/26/19 08:30	08/26/19 14:44	7723-14-0	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: WSP-SS-3E-081919      Lab ID: 10488049005      Collected: 08/19/19 11:45      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	0.021	mg/L	0.00050	0.00014	1	08/27/19 05:27	09/03/19 14:45	7440-38-2	
Cadmium	0.00060	mg/L	0.000080	0.000030	1	08/27/19 05:27	09/03/19 14:45	7440-43-9	
Copper	0.022	mg/L	0.0010	0.00043	1	08/27/19 05:27	09/03/19 14:45	7440-50-8	
Iron	0.16	mg/L	0.050	0.012	1	08/27/19 05:27	09/03/19 14:45	7439-89-6	
Lead	0.00093	mg/L	0.00010	0.000046	1	08/27/19 05:27	09/03/19 14:45	7439-92-1	
Potassium	3.6	mg/L	0.10	0.018	1	08/27/19 05:27	09/03/19 14:45	7440-09-7	
Sodium	24.5	mg/L	1.0	0.49	20	08/27/19 05:27	09/03/19 14:48	7440-23-5	
Total Hardness by 2340B	155	mg/L	2.8	1.3	20	08/27/19 05:27	09/03/19 14:48		
Zinc	0.035	mg/L	0.0050	0.0024	1	08/27/19 05:27	09/03/19 14:45	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic, Dissolved	0.020	mg/L	0.00050	0.00014	1	08/28/19 04:16	08/31/19 19:09	7440-38-2	
Calcium, Dissolved	42.1	mg/L	0.80	0.37	20	08/28/19 04:16	08/31/19 19:12	7440-70-2	
Copper, Dissolved	0.013	mg/L	0.0010	0.00043	1	08/28/19 04:16	08/31/19 19:09	7440-50-8	
Iron, Dissolved	0.025J	mg/L	0.050	0.012	1	08/28/19 04:16	08/31/19 19:09	7439-89-6	
Magnesium, Dissolved	10.5	mg/L	0.010	0.0041	1	08/28/19 04:16	08/31/19 19:09	7439-95-4	
Manganese, Dissolved	0.013	mg/L	0.00050	0.00023	1	08/28/19 04:16	08/31/19 19:09	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	0.0000080 J	mg/L	0.000010	0.000003 9	1	08/30/19 06:30	09/04/19 12:45	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	2.0	mg/L	2.0	1.0	1		08/22/19 18:28		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	2.0	NTU	0.60	0.11	1		08/21/19 08:00		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	94.9	mg/L	5.0	2.0	1		08/27/19 11:00		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/23/19 10:57		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		08/23/19 12:33	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2      Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	0.40J	mg/L	0.50	0.37	1	08/29/19 09:59	08/30/19 13:37	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	ND	mg/L	0.20	0.095	1		08/29/19 09:51		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	0.14	mg/L	0.010	0.0047	1		08/20/19 18:24		

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-3E-081919</b> Lab ID: <b>10488049005</b> Collected: 08/19/19 11:45      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>5.3</b>	mg/L	1.0	0.29	1		08/28/19 02:32		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>62.5</b>	mg/L	12.5	3.4	5		08/27/19 14:31	14808-79-8	
<b>SM4500CI-E Chloride</b> Analytical Method: SM 4500-CI E									
Chloride	<b>23.3</b>	mg/L	2.0	0.82	1		08/21/19 13:49	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.20</b>	mg/L	0.10	0.043	1	08/26/19 08:30	08/26/19 14:44	7723-14-0	

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-5-081919</b> Lab ID: <b>10488049006</b> Collected: 08/19/19 11:20      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.031</b>	mg/L	0.00050	0.00014	1	08/27/19 05:27	09/03/19 14:51	7440-38-2	
Cadmium	<b>0.00052J</b>	mg/L	0.00080	0.00030	1	08/27/19 05:27	09/03/19 14:51	7440-43-9	
Copper	<b>0.0049</b>	mg/L	0.0010	0.00043	1	08/27/19 05:27	09/03/19 14:51	7440-50-8	
Iron	<b>0.035J</b>	mg/L	0.050	0.012	1	08/27/19 05:27	09/03/19 14:51	7439-89-6	
Lead	<b>0.00019</b>	mg/L	0.00010	0.000046	1	08/27/19 05:27	09/03/19 14:51	7439-92-1	
Potassium	<b>2.7</b>	mg/L	0.10	0.018	1	08/27/19 05:27	09/03/19 14:51	7440-09-7	
Sodium	<b>21.6</b>	mg/L	0.050	0.024	1	08/27/19 05:27	09/03/19 14:51	7440-23-5	
Total Hardness by 2340B	<b>134</b>	mg/L	2.8	1.3	20	08/27/19 05:27	09/03/19 14:54		
Zinc	<b>0.0058</b>	mg/L	0.0050	0.0024	1	08/27/19 05:27	09/03/19 14:51	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic, Dissolved	<b>0.030</b>	mg/L	0.00050	0.00014	1	08/28/19 04:16	08/31/19 19:15	7440-38-2	
Calcium, Dissolved	<b>36.0</b>	mg/L	0.80	0.37	20	08/28/19 04:16	08/31/19 19:18	7440-70-2	
Copper, Dissolved	<b>0.0040</b>	mg/L	0.0010	0.00043	1	08/28/19 04:16	08/31/19 19:15	7440-50-8	
Iron, Dissolved	ND	mg/L	0.050	0.012	1	08/28/19 04:16	08/31/19 19:15	7439-89-6	
Magnesium, Dissolved	<b>9.8</b>	mg/L	0.010	0.0041	1	08/28/19 04:16	08/31/19 19:15	7439-95-4	
Manganese, Dissolved	<b>0.0051</b>	mg/L	0.00050	0.00023	1	08/28/19 04:16	08/31/19 19:15	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 <sub>9</sub>	1	08/30/19 06:30	09/04/19 12:54	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.8J</b>	mg/L	2.0	1.0	1		08/22/19 18:28		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.61</b>	NTU	0.60	0.11	1		08/21/19 07:58		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO <sub>3</sub>	<b>74.1</b>	mg/L	5.0	2.0	1		08/27/19 11:09		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/23/19 10:57		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		08/23/19 12:34	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2      Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	ND	mg/L	0.50	0.37	1	08/29/19 09:59	08/30/19 13:36	7727-37-9	
<b>SM4500NO3-H, NO<sub>2</sub> + NO<sub>3</sub> pres.</b> Analytical Method: SM 4500-NO <sub>3</sub> H									
Nitrogen, NO <sub>2</sub> plus NO <sub>3</sub>	<b>0.11J</b>	mg/L	0.20	0.095	1		08/29/19 09:52		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.071</b>	mg/L	0.010	0.0047	1		08/20/19 18:24		

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Sample: <b>WSP-SS-5-081919</b> Lab ID: <b>10488049006</b> Collected: 08/19/19 11:20      Received: 08/20/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>6.9</b>	mg/L	1.0	0.29	1		08/28/19 02:19		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>62.4</b>	mg/L	12.5	3.4	5		08/27/19 14:31	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>19.8</b>	mg/L	2.0	0.82	1		08/21/19 13:51	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.12</b>	mg/L	0.10	0.043	1	08/26/19 08:30	08/26/19 14:45	7723-14-0	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

QC Batch: 628683 Analysis Method: EPA 245.1  
 QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury, LL  
 Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

METHOD BLANK: 3391649 Matrix: Water  
 Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.000010	0.0000039	09/04/19 12:23	

LABORATORY CONTROL SAMPLE: 3391650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0001	0.000095	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3391651 3391652

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10488211001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	mg/L	ND	0.0001	0.0001	0.00010	0.00010	101	103	70-130	2	20		

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 627732 Analysis Method: EPA 200.8  
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET  
Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

METHOD BLANK: 3387372 Matrix: Water  
Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.00050	0.00014	08/31/19 14:03	
Cadmium	mg/L	ND	0.000080	0.000030	08/31/19 14:03	
Copper	mg/L	ND	0.0010	0.00043	08/31/19 14:03	
Iron	mg/L	ND	0.050	0.012	08/31/19 14:03	
Lead	mg/L	ND	0.00010	0.000046	08/31/19 14:03	
Potassium	mg/L	ND	0.10	0.018	08/31/19 14:03	
Sodium	mg/L	ND	0.050	0.024	08/31/19 14:03	
Zinc	mg/L	ND	0.0050	0.0024	08/31/19 14:03	

LABORATORY CONTROL SAMPLE: 3387373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.099	99	85-115	
Cadmium	mg/L	0.1	0.10	102	85-115	
Copper	mg/L	0.1	0.11	106	85-115	
Iron	mg/L	2	2.1	103	85-115	
Lead	mg/L	0.1	0.10	104	85-115	
Potassium	mg/L	2	2.0	101	85-115	
Sodium	mg/L	2	2.1	103	85-115	
Zinc	mg/L	0.1	0.11	105	85-115	

MATRIX SPIKE SAMPLE: 3387374

Parameter	Units	10487434001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.017	0.1	0.12	104	70-130	
Cadmium	mg/L	0.12 ug/L	0.1	0.11	105	70-130	
Copper	mg/L	0.0074	0.1	0.12	108	70-130	
Iron	mg/L	0.018J	2	2.2	109	70-130	
Lead	mg/L	0.078J ug/L	0.1	0.11	106	70-130	
Potassium	mg/L	3540 ug/L	2	5.4	91	70-130	
Sodium	mg/L	22500 ug/L	2	23.3	38	70-130 E,M1	
Zinc	mg/L	10.3 ug/L	0.1	0.11	101	70-130	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

Parameter	Units	3387375		3387376		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		10488043001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Arsenic	mg/L	0.0064	0.1	0.1	0.10	0.10	98	98	70-130	0	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	70-130	1	20	
Copper	mg/L	0.0069	0.1	0.1	0.10	0.10	96	96	70-130	0	20	
Iron	mg/L	0.076	2	2	2.2	2.2	105	106	70-130	1	20	
Lead	mg/L	0.00033	0.1	0.1	0.10	0.10	100	100	70-130	0	20	
Potassium	mg/L	1.5	2	2	3.4	3.4	93	97	70-130	2	20	
Sodium	mg/L	3.6	2	2	5.3	5.4	85	87	70-130	1	20	
Zinc	mg/L	0.0042J	0.1	0.1	0.10	0.10	101	101	70-130	0	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 627717 Analysis Method: EPA 200.8  
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3387267 Matrix: Water  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	mg/L	ND	0.00050	0.00014	08/31/19 16:22	
Calcium, Dissolved	mg/L	ND	0.040	0.018	08/31/19 16:22	
Copper, Dissolved	mg/L	ND	0.0010	0.00043	08/31/19 16:22	
Iron, Dissolved	mg/L	ND	0.050	0.012	08/31/19 16:22	
Magnesium, Dissolved	mg/L	ND	0.010	0.0041	08/31/19 16:22	
Manganese, Dissolved	mg/L	ND	0.00050	0.00023	08/31/19 16:22	

LABORATORY CONTROL SAMPLE: 3387268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	mg/L	0.1	0.10	101	85-115	
Calcium, Dissolved	mg/L	2	2.2	109	85-115	
Copper, Dissolved	mg/L	0.1	0.11	109	85-115	
Iron, Dissolved	mg/L	2	2.1	107	85-115	
Magnesium, Dissolved	mg/L	2	2.1	104	85-115	
Manganese, Dissolved	mg/L	0.1	0.11	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3387269 3387270

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Spike Conc.	Result	Spike Conc.	Result						
Arsenic, Dissolved	mg/L	0.015	0.1	0.1	0.12	0.12	101	104	70-130	2	20
Calcium, Dissolved	mg/L	193000	2	2	200	200	353	320	70-130	0	20 E,M1
Copper, Dissolved	mg/L	0.0048	0.1	0.1	0.11	0.11	102	106	70-130	3	20
Iron, Dissolved	mg/L	ND	2	2	2.1	2.2	105	108	70-130	3	20
Magnesium, Dissolved	mg/L	71000	2	2	74.2	73.3	162	115	70-130	1	20 M6
Manganese, Dissolved	mg/L	0.0019	0.1	0.1	0.11	0.11	105	108	70-130	2	20

MATRIX SPIKE SAMPLE: 3387271

Parameter	Units	10488043001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	mg/L	0.0059	0.1	0.11	100	70-130	
Calcium, Dissolved	mg/L	41.7	2	44.0	116	70-130	
Copper, Dissolved	mg/L	0.0025	0.1	0.11	105	70-130	
Iron, Dissolved	mg/L	ND	2	2.1	106	70-130	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

MATRIX SPIKE SAMPLE:		3387271					
Parameter	Units	10488043001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Magnesium, Dissolved	mg/L	8.1	2	10.8	135	70-130	M1
Manganese, Dissolved	mg/L	12.7 ug/L	0.1	0.12	105	70-130	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

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QC Batch: 627491 Analysis Method: EPA 180.1  
 QC Batch Method: EPA 180.1 Analysis Description: 180.1 Turbidity  
 Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

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METHOD BLANK: 3386246 Matrix: Water  
 Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Turbidity	NTU	ND	0.60	0.11	08/21/19 07:50	

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LABORATORY CONTROL SAMPLE: 3386247

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Turbidity	NTU	10.1	10.0	99	90-110	

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SAMPLE DUPLICATE: 3386249

Parameter	Units	10488049004 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	2.3	2.4	4	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 628641 Analysis Method: SM 2320B  
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

METHOD BLANK: 3391486 Matrix: Water  
Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	2.0	08/27/19 08:23	

LABORATORY CONTROL SAMPLE & LCSD: 3391487 3391488

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	42.0	40.5	105	101	90-110	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3391489 3391490

Parameter	Units	10487852002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	67.2	40	40	106	108	97	103	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3391491 3391492

Parameter	Units	10488535001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	205	40	40	244	243	97	93	80-120	1	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 627828 Analysis Method: SM 2540D  
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids  
Associated Lab Samples: 10488049001, 10488049002, 10488049003

METHOD BLANK: 3387763 Matrix: Water  
Associated Lab Samples: 10488049001, 10488049002, 10488049003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/22/19 16:19	

LABORATORY CONTROL SAMPLE: 3387764

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	50	44.0	88	80-120	

SAMPLE DUPLICATE: 3387765

Parameter	Units	10487738001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

SAMPLE DUPLICATE: 3387766

Parameter	Units	10487791003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	1960	2040	4	5	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 628103 Analysis Method: SM 2540D  
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3389021 Matrix: Water  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/23/19 10:57	

LABORATORY CONTROL SAMPLE: 3389022

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	94.0	94	80-120	

SAMPLE DUPLICATE: 3389023

Parameter	Units	10488530001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

SAMPLE DUPLICATE: 3389024

Parameter	Units	10487979005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	1220	1240	2	5	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 628040 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3388729 Matrix: Water  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	0.049	08/23/19 11:55	

LABORATORY CONTROL SAMPLE: 3388730

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3388731 3388732

Parameter	Units	10488087001		3388731		3388732		% Rec Limits	RPD	Max RPD	Qual	
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec					MSD % Rec
Nitrogen, Ammonia	mg/L	5.4	12.5	12.5	18.2	18.6	102	105	90-110	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3388733 3388734

Parameter	Units	10488535001		3388733		3388734		% Rec Limits	RPD	Max RPD	Qual	
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec					MSD % Rec
Nitrogen, Ammonia	mg/L	ND	2.5	2.5	2.7	2.6	107	102	90-110	5	20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 606389 Analysis Method: EPA 351.2  
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 2478357 Matrix: Water  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	0.37	08/30/19 13:07	

LABORATORY CONTROL SAMPLE: 2478358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.4	108	90-110	

MATRIX SPIKE SAMPLE: 2478359

Parameter	Units	60311252001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	92.0	25	36.7	-221	90-110	

MATRIX SPIKE SAMPLE: 2478361

Parameter	Units	60312439010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	1.3	5	5.9	92	90-110	

SAMPLE DUPLICATE: 2478360

Parameter	Units	60312950004 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	50.6	56.4	11	10 D6	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

QC Batch: 629230

Analysis Method: SM 4500-NO3 H

QC Batch Method: SM 4500-NO3 H

Analysis Description: SM4500NO3-H, NO2 + NO3 pres.

Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3394066

Matrix: Water

Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.20	0.095	08/29/19 09:42	

LABORATORY CONTROL SAMPLE: 3394067

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.3	91	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3394068 3394069

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10487606003 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Nitrogen, NO2 plus NO3	mg/L	0.64	2.5	2.5	2.9	2.8	89	88	80-120	1	30		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3394070 3394071

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10489236002 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Nitrogen, NO2 plus NO3	mg/L	0.96	2.5	2.5	2.2	2.4	50	59	80-120	9	30	M1	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

QC Batch: 627466

Analysis Method: SM 4500-P G

QC Batch Method: SM 4500-P G

Analysis Description: SM4500P-G, Phosphate, Ortho

Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3385975

Matrix: Water

Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Orthophosphate as P	mg/L	ND	0.010	0.0047	08/20/19 18:31	FS

LABORATORY CONTROL SAMPLE: 3385976

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Orthophosphate as P	mg/L	0.1	0.094	94	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3385977 3385978

Parameter	Units	MS		MSD		% Rec		% Rec Limits	RPD	Max RPD	Qual
		10488049004 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec				
Orthophosphate as P	mg/L	0.071	0.1	0.1	0.17	0.17	99	98	80-120	1	30

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 605956 Analysis Method: SM 5310C  
QC Batch Method: SM 5310C Analysis Description: 5310C Dissolved Organic Carbon  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 2476742 Matrix: Water  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	0.31J	1.0	0.29	08/27/19 22:39	

LABORATORY CONTROL SAMPLE: 2476743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	5	5.4	107	80-120	

MATRIX SPIKE SAMPLE: 2476744

Parameter	Units	10487578055 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	8.9	5	12.9	79	80-120	E,M1

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 628721 Analysis Method: ASTM D516  
QC Batch Method: ASTM D516 Analysis Description: ASTM D516 Sulfate Water  
Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

METHOD BLANK: 3391758 Matrix: Water  
Associated Lab Samples: 10488049001, 10488049002, 10488049003, 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.5	0.67	08/27/19 11:47	

LABORATORY CONTROL SAMPLE & LCSD: 3391759 3391760

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Sulfate	mg/L	20	20.6	20.0	103	100	80-120	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3391761 3391762

Parameter	Units	10488049001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	87.0	100	100	198	184	111	97	80-120	7	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3391763 3391764

Parameter	Units	10487563007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	786	500	500	1100	1160	63	74	80-120	5	30	M6

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report

Pace Project No.: 10488049

QC Batch: 627601 Analysis Method: SM 4500-Cl E  
 QC Batch Method: SM 4500-Cl E Analysis Description: SM4500Cl-E Chloride  
 Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3386648 Matrix: Water  
 Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	2.0	0.82	08/21/19 13:42	

LABORATORY CONTROL SAMPLE: 3386649

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3386650 3386651

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10487980001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	83.4	50	50	135	131	102	94	80-120	3	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3386652 3386653

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10488049005 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	23.3	50	50	73.7	75.6	101	104	80-120	3	20		

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

QC Batch: 628336 Analysis Method: SM 4500-P F  
QC Batch Method: SM 4500-P B Analysis Description: SM4500P-F, Total Phosphorus  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

METHOD BLANK: 3390415 Matrix: Water  
Associated Lab Samples: 10488049004, 10488049005, 10488049006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.10	0.043	08/26/19 14:36	

LABORATORY CONTROL SAMPLE: 3390416

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	1	0.98	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3390417 3390418

Parameter	Units	10488328001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Phosphorus	mg/L	<0.043	1	1.0	1	1.1	102	108	80-120	5	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3390419 3390420

Parameter	Units	10488163001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Phosphorus	mg/L	0.82	1	1.8	1	1.8	98	97	80-120	1	30	

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## QUALIFIERS

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

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### 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.

TNTC - Too Numerous To Count

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

FS The sample was filtered in the laboratory prior to analysis.

H3 Sample was received or analysis requested beyond the recognized method holding time.

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: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10488049001	WSP-SS-1-081519	EPA 200.8	627732	EPA 200.8	629715
10488049002	WSP-SS-3E-081519	EPA 200.8	627732	EPA 200.8	629715
10488049003	WSP-SS-5-081519	EPA 200.8	627732	EPA 200.8	629715
10488049004	WSP-SS-1-081919	EPA 200.8	627732	EPA 200.8	629715
10488049005	WSP-SS-3E-081919	EPA 200.8	627732	EPA 200.8	629715
10488049006	WSP-SS-5-081919	EPA 200.8	627732	EPA 200.8	629715
10488049004	WSP-SS-1-081919	EPA 200.8	627717	EPA 200.8	629730
10488049005	WSP-SS-3E-081919	EPA 200.8	627717	EPA 200.8	629730
10488049006	WSP-SS-5-081919	EPA 200.8	627717	EPA 200.8	629730
10488049001	WSP-SS-1-081519	EPA 245.1	628683	EPA 245.1	629918
10488049002	WSP-SS-3E-081519	EPA 245.1	628683	EPA 245.1	629918
10488049003	WSP-SS-5-081519	EPA 245.1	628683	EPA 245.1	629918
10488049004	WSP-SS-1-081919	EPA 245.1	628683	EPA 245.1	629918
10488049005	WSP-SS-3E-081919	EPA 245.1	628683	EPA 245.1	629918
10488049006	WSP-SS-5-081919	EPA 245.1	628683	EPA 245.1	629918
10488049001	WSP-SS-1-081519	EPA 160.4	628027		
10488049002	WSP-SS-3E-081519	EPA 160.4	628027		
10488049003	WSP-SS-5-081519	EPA 160.4	628027		
10488049004	WSP-SS-1-081919	EPA 160.4	628027		
10488049005	WSP-SS-3E-081919	EPA 160.4	628027		
10488049006	WSP-SS-5-081919	EPA 160.4	628027		
10488049001	WSP-SS-1-081519	EPA 180.1	627491		
10488049002	WSP-SS-3E-081519	EPA 180.1	627491		
10488049003	WSP-SS-5-081519	EPA 180.1	627491		
10488049004	WSP-SS-1-081919	EPA 180.1	627491		
10488049005	WSP-SS-3E-081919	EPA 180.1	627491		
10488049006	WSP-SS-5-081919	EPA 180.1	627491		
10488049001	WSP-SS-1-081519	SM 2320B	628641		
10488049002	WSP-SS-3E-081519	SM 2320B	628641		
10488049003	WSP-SS-5-081519	SM 2320B	628641		
10488049004	WSP-SS-1-081919	SM 2320B	628641		
10488049005	WSP-SS-3E-081919	SM 2320B	628641		
10488049006	WSP-SS-5-081919	SM 2320B	628641		
10488049001	WSP-SS-1-081519	SM 2540D	627828		
10488049002	WSP-SS-3E-081519	SM 2540D	627828		
10488049003	WSP-SS-5-081519	SM 2540D	627828		
10488049004	WSP-SS-1-081919	SM 2540D	628103		
10488049005	WSP-SS-3E-081919	SM 2540D	628103		
10488049006	WSP-SS-5-081919	SM 2540D	628103		
10488049004	WSP-SS-1-081919	EPA 350.1	628040		
10488049005	WSP-SS-3E-081919	EPA 350.1	628040		
10488049006	WSP-SS-5-081919	EPA 350.1	628040		
10488049004	WSP-SS-1-081919	EPA 351.2	606389	EPA 351.2	606802
10488049005	WSP-SS-3E-081919	EPA 351.2	606389	EPA 351.2	606802

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly + Nutrients-Revised Report  
Pace Project No.: 10488049

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10488049006	WSP-SS-5-081919	EPA 351.2	606389	EPA 351.2	606802
10488049004	WSP-SS-1-081919	SM 4500-NO3 H	629230		
10488049005	WSP-SS-3E-081919	SM 4500-NO3 H	629230		
10488049006	WSP-SS-5-081919	SM 4500-NO3 H	629230		
10488049004	WSP-SS-1-081919	SM 4500-P G	627466		
10488049005	WSP-SS-3E-081919	SM 4500-P G	627466		
10488049006	WSP-SS-5-081919	SM 4500-P G	627466		
10488049004	WSP-SS-1-081919	SM 5310C	605956		
10488049005	WSP-SS-3E-081919	SM 5310C	605956		
10488049006	WSP-SS-5-081919	SM 5310C	605956		
10488049001	WSP-SS-1-081519	ASTM D516	628721		
10488049002	WSP-SS-3E-081519	ASTM D516	628721		
10488049003	WSP-SS-5-081519	ASTM D516	628721		
10488049004	WSP-SS-1-081919	ASTM D516	628721		
10488049005	WSP-SS-3E-081919	ASTM D516	628721		
10488049006	WSP-SS-5-081919	ASTM D516	628721		
10488049004	WSP-SS-1-081919	SM 4500-CI E	627601		
10488049005	WSP-SS-3E-081919	SM 4500-CI E	627601		
10488049006	WSP-SS-5-081919	SM 4500-CI E	627601		
10488049004	WSP-SS-1-081919	SM 4500-P B	628336	SM 4500-P F	628390
10488049005	WSP-SS-3E-081919	SM 4500-P B	628336	SM 4500-P F	628390
10488049006	WSP-SS-5-081919	SM 4500-P B	628336	SM 4500-P F	628390

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**Sample Condition Upon Receipt - ESI Tech Specs**

Client Name: BP RM

Project #: **WO#: 10488049**

PM: JMA Due Date: 09/03/19  
CLIENT: BP-PIONEER

Courier:  Fed Ex  UPS  USPS  Client  
 Pace  Speedee  Commercial See Exception

Tracking Number: 7475 9397 3914

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No Biological Tissue Frozen?  Yes  No  N/A

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No

Thermometer:  T1(0461)  T2(1336)  T3(0459)  T4(0254)  T5(0048) Type of Ice:  Wet  Blue  None  Dry  Melted

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 4.8 °C Average Corrected Temp (no temp blank only):  See Exceptions  
Correction Factor: 10.1 Cooler Temp Corrected w/temp blank: 4.9 °C

USDA Regulated Soil: ( N/A, water sample/Other: \_\_\_\_\_) Date/Initials of Person Examining Contents: AM 08/20/19  
Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No  
If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. turb collected 8/15/19 arrived OOH JMA 8/20/19
Short Hold Time Analysis (<72 hr)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input checked="" type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Triple Volume Provided for MS/MSD (if more than 10 samples)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. Sample # <u>1-3: 1/1</u> <u>4-6: 3/2</u> <u>1-3: 1/1</u> <input type="checkbox"/> NaOH <input checked="" type="checkbox"/> HNO <sub>3</sub> <input checked="" type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , pH, NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	
Positive for Res. Chlorine? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	See Exception <input type="checkbox"/>
Res. Chlorine 0-6 Roll	
0-6 Strip	<u>213316BU</u>
0-14 Strip	<u>1002981</u>
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
3 Trip Blanks Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased):
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Field Data Required?  Yes  No

Comments/Resolution: \_\_\_\_\_

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: <u>9:00</u>	Temp: <u>4.8</u>	Corrected Temp: <u>4.9</u>
Time: <u>9:20</u>	put in cooler	
Time: _____	Temp: _____	Corrected Temp: _____

Project Manager Review: [Signature]

Date: 08/20/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: [Signature]





Sample Condition Upon Receipt

WO#: 60312506
Barcode
60312506

Client Name: Pace Minnesota

Courier: FedEx [checked] UPS [ ] VIA [ ] Clay [ ] PEX [ ] ECI [ ] Pace [ ] Xroads [ ] Client [ ] Other [ ]

Tracking #: 4638 0199 3749 Pace Shipping Label Used? Yes [ ] No [checked]

Custody Seal on Cooler/Box Present: Yes [checked] No [ ] Seals intact: Yes [checked] No [ ]

Packing Material: Bubble Wrap [ ] Bubble Bags [checked] Foam [ ] None [ ] Other [ ] 2PIC

Thermometer Used: T301 Type of Ice: Wet [checked] Blue [ ] None [ ]

Cooler Temperature (°C): As-read 1.5 Corr. Factor +0.0 Corrected 1.5

Date and initials of person examining contents: WBS 8/21/19

Temperature should be above freezing to 6°C

Table with 3 columns: Question, Yes/No/N/A checkboxes, and Notes. Rows include Chain of Custody, Short Hold Time, Rush Turn Around Time, Sufficient volume, Correct containers used, Pace containers used, Containers intact, Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?, Filtered volume received for dissolved tests?, Sample labels match COC, Samples contain multiple phases?, Containers requiring pH preservation, Cyanide water sample checks, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached to 5035A / TX1005 vials in the field?

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date:

September 12, 2019

Shawn Bisch  
Pioneer Technical  
307 E. Park Ave  
Suite 421  
Anaconda, MT 59711

RE: Project: WSP Weekly  
Pace Project No.: 10488992

Dear Shawn Bisch:

Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

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

Sincerely,



Jennifer Anderson  
jennifer.anderson@pacelabs.com  
(612)607-6436  
Project Manager

Enclosures

cc: Steve Lubick, Pioneer Technical Services



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WSP Weekly

Pace Project No.: 10488992

### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485  
 A2LA Certification #: 2926.01  
 Alabama Certification #: 40770  
 Alaska Contaminated Sites Certification #: 17-009  
 Alaska DW Certification #: MN00064  
 Arizona Certification #: AZ0014  
 Arkansas DW Certification #: MN00064  
 Arkansas WW Certification #: 88-0680  
 California Certification #: 2929  
 CNMI Saipan Certification #: MP0003  
 Colorado Certification #: MN00064  
 Connecticut Certification #: PH-0256  
 EPA Region 8+Wyoming DW Certification #: via MN 027-053-137  
 Florida Certification #: E87605  
 Georgia Certification #: 959  
 Guam EPA Certification #: MN00064  
 Hawaii Certification #: MN00064  
 Idaho Certification #: MN00064  
 Illinois Certification #: 200011  
 Indiana Certification #: C-MN-01  
 Iowa Certification #: 368  
 Kansas Certification #: E-10167  
 Kentucky DW Certification #: 90062  
 Kentucky WW Certification #: 90062  
 Louisiana DEQ Certification #: 03086  
 Louisiana DW Certification #: MN00064  
 Maine Certification #: MN00064  
 Maryland Certification #: 322  
 Massachusetts Certification #: M-MN064  
 Michigan Certification #: 9909  
 Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137  
 Minnesota Petrofund Certification #: 1240  
 Mississippi Certification #: MN00064  
 Missouri Certification #: 10100  
 Montana Certification #: CERT0092  
 Nebraska Certification #: NE-OS-18-06  
 Nevada Certification #: MN00064  
 New Hampshire Certification #: 2081  
 New Jersey Certification #: MN002  
 New York Certification #: 11647  
 North Carolina DW Certification #: 27700  
 North Carolina WW Certification #: 530  
 North Dakota Certification #: R-036  
 Ohio DW Certification #: 41244  
 Ohio VAP Certification #: CL101  
 Oklahoma Certification #: 9507  
 Oregon Primary Certification #: MN300001  
 Oregon Secondary Certification #: MN200001  
 Pennsylvania Certification #: 68-00563  
 Puerto Rico Certification #: MN00064  
 South Carolina Certification #: 74003001  
 Tennessee Certification #: TN02818  
 Texas Certification #: T104704192  
 Utah Certification #: MN00064  
 Vermont Certification #: VT-027053137  
 Virginia Certification #: 460163  
 Washington Certification #: C486  
 West Virginia DEP Certification #: 382  
 West Virginia DW Certification #: 9952 C  
 Wisconsin Certification #: 999407970  
 Wyoming UST Certification #: via A2LA 2926.01

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
 Missouri Inorganic Drinking Water Certification #: 10090  
 Arkansas Drinking Water  
 Arkansas Certification #: 19-016-0  
 Arkansas Drinking Water  
 Illinois Certification #: 004455  
 Iowa Certification #: 118  
 Kansas/NELAP Certification #: E-10116  
 Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
 Oklahoma Certification #: 9205/9935  
 Florida: Cert E871149 SEKS WET  
 Texas Certification #: T104704407-18-11  
 Utah Certification #: KS000212018-8  
 Illinois Certification #: 004592  
 Kansas Field Laboratory Accreditation: # E-92587  
 Missouri SEKS Micro Certification: 10070

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WSP Weekly

Pace Project No.: 10488992

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10488992001	WSP-SS-1-082219	Water	08/22/19 10:30	08/27/19 08:40
10488992002	WSP-SS-3E-082219	Water	08/22/19 10:05	08/27/19 08:40
10488992003	WSP-SS-5-082219	Water	08/22/19 09:35	08/27/19 08:40
10488992004	WSP-SS-1-082619	Water	08/26/19 12:00	08/27/19 08:40
10488992005	WSP-SS-3E-082619	Water	08/26/19 11:35	08/27/19 08:40
10488992006	WSP-SS-5-082619	Water	08/26/19 11:10	08/27/19 08:40

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly

Pace Project No.: 10488992

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10488992001	WSP-SS-1-082219	EPA 200.8	BWB	7	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10488992002	WSP-SS-3E-082219	EPA 200.8	BWB	7	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10488992003	WSP-SS-5-082219	EPA 200.8	BWB	7	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10488992004	WSP-SS-1-082619	EPA 200.8	BWB	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
10488992005	WSP-SS-3E-082619	SM 4500-CI E	AR3	1	PASI-M
		EPA 200.8	BWB	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
SM 5310C	MJK	1	PASI-K		

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly

Pace Project No.: 10488992

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10488992006	WSP-SS-5-082619	ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		EPA 200.8	BWB	9	PASI-M
		EPA 245.1	BTS	1	PASI-M
		EPA 160.4	EPT	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	EPT	1	PASI-M
		SM 5310C	MJK	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly

Pace Project No.: 10488992

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

6 samples were analyzed for EPA 200.8. 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 200.8 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.

**Internal Standards:**

All internal standards were within QC limits 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: 631326

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489088002

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

- MSD (Lab ID: 3403912)
- Sodium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly

Pace Project No.: 10488992

---

**Method:** EPA 245.1

**Description:** 245.1 Mercury, LL

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

6 samples were analyzed for EPA 245.1. 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 245.1 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly

Pace Project No.: 10488992

---

**Method:** EPA 160.4

**Description:** 160.4 Total Volatile Suspended

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

6 samples were analyzed for EPA 160.4. 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: WSP Weekly

Pace Project No.: 10488992

---

**Method:** EPA 180.1

**Description:** 180.1 Turbidity

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

### General Information:

6 samples were analyzed for EPA 180.1. 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.

H3: Sample was received or analysis requested beyond the recognized method holding time.

- WSP-SS-1-082219 (Lab ID: 10488992001)
- WSP-SS-3E-082219 (Lab ID: 10488992002)
- WSP-SS-5-082219 (Lab ID: 10488992003)

### 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: WSP Weekly

Pace Project No.: 10488992

---

**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

6 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly

Pace Project No.: 10488992

---

**Method:** SM 2540D

**Description:** 2540D Total Suspended Solids

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

6 samples were analyzed for SM 2540D. 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.

QC Batch: 629006

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 3393049)
- Total Suspended Solids

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly

Pace Project No.: 10488992

---

**Method:** SM 5310C

**Description:** 5310C Dissolved Organic Carbon

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

3 samples were analyzed for SM 5310C. 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.

QC Batch: 606976

B: Analyte was detected in the associated method blank.

- BLANK for HBN 606976 [WETA/611 (Lab ID: 2480666)]
  - Dissolved Organic Carbon

**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: 606976

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60311649003

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

- MS (Lab ID: 2480668)
  - Dissolved Organic Carbon

**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: WSP Weekly

Pace Project No.: 10488992

---

**Method:** ASTM D516

**Description:** ASTM D516 Sulfate Water

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

6 samples were analyzed for ASTM D516. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly

Pace Project No.: 10488992

---

**Method:** SM 4500-CI E

**Description:** SM4500CI-E Chloride

**Client:** BPAR-PIONEER-MT

**Date:** September 12, 2019

**General Information:**

3 samples were analyzed for SM 4500-CI E. 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.

**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: WSP Weekly

Pace Project No.: 10488992

Sample: WSP-SS-1-082219      Lab ID: 10488992001      Collected: 08/22/19 10:30      Received: 08/27/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0078</b>	mg/L	0.00050	0.00014	1	09/11/19 05:27	09/11/19 23:52	7440-38-2	
Cadmium	<b>0.00027</b>	mg/L	0.000080	0.000030	1	09/11/19 05:27	09/11/19 23:52	7440-43-9	
Copper	<b>0.016</b>	mg/L	0.0010	0.00043	1	09/11/19 05:27	09/11/19 23:52	7440-50-8	
Iron	<b>0.18</b>	mg/L	0.050	0.012	1	09/11/19 05:27	09/11/19 23:52	7439-89-6	
Lead	<b>0.00080</b>	mg/L	0.00010	0.000046	1	09/11/19 05:27	09/11/19 23:52	7439-92-1	
Total Hardness by 2340B	<b>198</b>	mg/L	2.8	1.3	20	09/11/19 05:27	09/11/19 23:56		
Zinc	<b>0.053</b>	mg/L	0.0050	0.0024	1	09/11/19 05:27	09/11/19 23:52	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.0000070</b> J	mg/L	0.000010	0.000003 9	1	09/06/19 08:22	09/06/19 12:52	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.8</b>	mg/L	2.0	1.0	1		08/28/19 14:29		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.6</b>	NTU	0.60	0.11	1		08/27/19 12:26		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>118</b>	mg/L	5.0	2.0	1		09/03/19 14:28		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>5.0J</b>	mg/L	10.0	5.0	1		08/28/19 09:57		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>102</b>	mg/L	12.5	3.4	5		09/06/19 14:45	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: WSP Weekly  
Pace Project No.: 10488992

Sample: <b>WSP-SS-3E-082219</b> Lab ID: <b>10488992002</b> Collected: 08/22/19 10:05      Received: 08/27/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.020</b>	mg/L	0.00050	0.00014	1	09/11/19 05:27	09/11/19 23:59	7440-38-2	
Cadmium	<b>0.00056</b>	mg/L	0.000080	0.000030	1	09/11/19 05:27	09/11/19 23:59	7440-43-9	
Copper	<b>0.023</b>	mg/L	0.0010	0.00043	1	09/11/19 05:27	09/11/19 23:59	7440-50-8	
Iron	<b>0.13</b>	mg/L	0.050	0.012	1	09/11/19 05:27	09/11/19 23:59	7439-89-6	
Lead	<b>0.00086</b>	mg/L	0.00010	0.000046	1	09/11/19 05:27	09/11/19 23:59	7439-92-1	
Total Hardness by 2340B	<b>149</b>	mg/L	2.8	1.3	20	09/11/19 05:27	09/12/19 00:02		
Zinc	<b>0.032</b>	mg/L	0.0050	0.0024	1	09/11/19 05:27	09/11/19 23:59	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.0000050</b> J	mg/L	0.000010	0.000003 9	1	09/06/19 08:22	09/06/19 12:55	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.4</b>	mg/L	2.0	1.0	1		08/28/19 14:29		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.5</b>	NTU	0.60	0.11	1		08/27/19 12:24		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>96.0</b>	mg/L	5.0	2.0	1		09/03/19 14:33		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>8.0J</b>	mg/L	10.0	5.0	1		08/28/19 09:57		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>72.9</b>	mg/L	12.5	3.4	5		09/06/19 14:47	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly  
Pace Project No.: 10488992

Sample: <b>WSP-SS-5-082219</b> Lab ID: <b>10488992003</b> Collected: 08/22/19 09:35      Received: 08/27/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.029</b>	mg/L	0.00050	0.00014	1	09/11/19 05:27	09/12/19 00:05	7440-38-2	
Cadmium	<b>0.000046J</b>	mg/L	0.000080	0.000030	1	09/11/19 05:27	09/12/19 00:05	7440-43-9	
Copper	<b>0.0047</b>	mg/L	0.0010	0.00043	1	09/11/19 05:27	09/12/19 00:05	7440-50-8	
Iron	<b>0.030J</b>	mg/L	0.050	0.012	1	09/11/19 05:27	09/12/19 00:05	7439-89-6	
Lead	<b>0.00016</b>	mg/L	0.00010	0.000046	1	09/11/19 05:27	09/12/19 00:05	7439-92-1	
Total Hardness by 2340B	<b>128</b>	mg/L	2.8	1.3	20	09/11/19 05:27	09/12/19 00:08		
Zinc	<b>0.0038J</b>	mg/L	0.0050	0.0024	1	09/11/19 05:27	09/12/19 00:05	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	09/06/19 08:22	09/06/19 12:59	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.4J</b>	mg/L	2.0	1.0	1		08/28/19 14:29		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.53J</b>	NTU	0.60	0.11	1		08/27/19 12:23		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>73.8</b>	mg/L	5.0	2.0	1		09/03/19 14:41		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/28/19 09:57		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>67.9</b>	mg/L	12.5	3.4	5		09/06/19 14:49	14808-79-8	

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### ANALYTICAL RESULTS

Project: WSP Weekly

Pace Project No.: 10488992

**Sample: WSP-SS-1-082619**      **Lab ID: 10488992004**      Collected: 08/26/19 12:00      Received: 08/27/19 08:40      Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0073</b>	mg/L	0.00050	0.00014	1	09/11/19 05:27	09/12/19 00:11	7440-38-2	
Cadmium	<b>0.00024</b>	mg/L	0.000080	0.000030	1	09/11/19 05:27	09/12/19 00:11	7440-43-9	
Copper	<b>0.016</b>	mg/L	0.0010	0.00043	1	09/11/19 05:27	09/12/19 00:11	7440-50-8	
Iron	<b>0.20</b>	mg/L	0.050	0.012	1	09/11/19 05:27	09/12/19 00:11	7439-89-6	
Lead	<b>0.00087</b>	mg/L	0.00010	0.000046	1	09/11/19 05:27	09/12/19 00:11	7439-92-1	
Potassium	<b>5.4</b>	mg/L	0.10	0.018	1	09/11/19 05:27	09/12/19 00:11	7440-09-7	
Sodium	<b>34.5</b>	mg/L	1.0	0.49	20	09/11/19 05:27	09/12/19 00:14	7440-23-5	
Total Hardness by 2340B	<b>206</b>	mg/L	2.8	1.3	20	09/11/19 05:27	09/12/19 00:14		
Zinc	<b>0.056</b>	mg/L	0.0050	0.0024	1	09/11/19 05:27	09/12/19 00:11	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.000070</b> J	mg/L	0.000010	0.000003	1	09/06/19 08:22	09/06/19 13:02	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.0</b>	mg/L	2.0	1.0	1		08/28/19 14:29		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>2.3</b>	NTU	0.60	0.11	1		08/27/19 12:53		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO <sub>3</sub>	<b>116</b>	mg/L	5.0	2.0	1		09/04/19 13:08		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>5.0J</b>	mg/L	10.0	5.0	1		08/28/19 11:31		
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>3.0</b>	mg/L	1.0	0.29	1		09/03/19 20:26		B
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>102</b>	mg/L	12.5	3.4	5		09/06/19 14:49	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>38.5</b>	mg/L	2.0	0.82	1		09/03/19 11:28	16887-00-6	

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### ANALYTICAL RESULTS

Project: WSP Weekly  
Pace Project No.: 10488992

Sample: <b>WSP-SS-3E-082619</b> Lab ID: <b>10488992005</b> Collected: 08/26/19 11:35      Received: 08/27/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.022</b>	mg/L	0.00050	0.00014	1	09/11/19 05:27	09/12/19 11:16	7440-38-2	
Cadmium	<b>0.00079</b>	mg/L	0.00080	0.00030	1	09/11/19 05:27	09/12/19 11:16	7440-43-9	
Copper	<b>0.034</b>	mg/L	0.0010	0.00043	1	09/11/19 05:27	09/12/19 11:16	7440-50-8	
Iron	<b>0.29</b>	mg/L	0.050	0.012	1	09/11/19 05:27	09/12/19 11:16	7439-89-6	
Lead	<b>0.0017</b>	mg/L	0.00010	0.000046	1	09/11/19 05:27	09/12/19 11:16	7439-92-1	
Potassium	<b>3.5</b>	mg/L	0.10	0.018	1	09/11/19 05:27	09/12/19 11:16	7440-09-7	
Sodium	<b>24.7</b>	mg/L	1.0	0.49	20	09/11/19 05:27	09/12/19 11:19	7440-23-5	
Total Hardness by 2340B	<b>157</b>	mg/L	2.8	1.3	20	09/11/19 05:27	09/12/19 11:19		
Zinc	<b>0.063</b>	mg/L	0.0050	0.0024	1	09/11/19 05:27	09/12/19 11:16	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	<b>0.000012</b>	mg/L	0.000010	0.000003 9	1	09/06/19 08:22	09/06/19 13:05	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.8</b>	mg/L	2.0	1.0	1		08/28/19 14:29		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>2.4</b>	NTU	0.60	0.11	1		08/27/19 12:46		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO <sub>3</sub>	<b>93.2</b>	mg/L	5.0	2.0	1		09/04/19 13:16		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>6.0J</b>	mg/L	10.0	5.0	1		08/28/19 11:31		
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>5.8</b>	mg/L	1.0	0.29	1		09/03/19 20:13		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>72.4</b>	mg/L	12.5	3.4	5		09/06/19 14:50	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>22.4</b>	mg/L	2.0	0.82	1		09/03/19 11:29	16887-00-6	

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## ANALYTICAL RESULTS

Project: WSP Weekly

Pace Project No.: 10488992

Sample: <b>WSP-SS-5-082619</b> Lab ID: <b>10488992006</b> Collected: 08/26/19 11:10      Received: 08/27/19 08:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.030</b>	mg/L	0.00050	0.00014	1	09/11/19 05:27	09/12/19 11:22	7440-38-2	
Cadmium	<b>0.00037J</b>	mg/L	0.00080	0.00030	1	09/11/19 05:27	09/12/19 11:22	7440-43-9	
Copper	<b>0.0047</b>	mg/L	0.0010	0.00043	1	09/11/19 05:27	09/12/19 11:22	7440-50-8	
Iron	<b>0.029J</b>	mg/L	0.050	0.012	1	09/11/19 05:27	09/12/19 11:22	7439-89-6	
Lead	<b>0.00017</b>	mg/L	0.00010	0.000046	1	09/11/19 05:27	09/12/19 11:22	7439-92-1	
Potassium	<b>2.8</b>	mg/L	0.10	0.018	1	09/11/19 05:27	09/12/19 11:22	7440-09-7	
Sodium	<b>21.9</b>	mg/L	0.050	0.024	1	09/11/19 05:27	09/12/19 11:22	7440-23-5	
Total Hardness by 2340B	<b>136</b>	mg/L	2.8	1.3	20	09/11/19 05:27	09/12/19 11:25		
Zinc	<b>0.0032J</b>	mg/L	0.0050	0.0024	1	09/11/19 05:27	09/12/19 11:22	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	09/06/19 08:22	09/06/19 13:08	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.4J</b>	mg/L	2.0	1.0	1		08/28/19 14:29		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.52J</b>	NTU	0.60	0.11	1		08/27/19 12:43		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO <sub>3</sub>	<b>75.6</b>	mg/L	5.0	2.0	1		09/04/19 13:24		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		08/28/19 11:31		
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>6.7</b>	mg/L	1.0	0.29	1		09/03/19 19:47		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>70.1</b>	mg/L	12.5	3.4	5		09/06/19 14:51	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>19.6</b>	mg/L	2.0	0.82	1		09/03/19 11:29	16887-00-6	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly

Pace Project No.: 10488992

QC Batch: 628914

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury, LL

Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

METHOD BLANK: 3392797

Matrix: Water

Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.000010	0.0000039	09/06/19 12:46	

LABORATORY CONTROL SAMPLE: 3392798

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0001	0.00010	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3392799 3392800

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10489088001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	mg/L	0.0000090 J	0.0001	0.0001	0.00011	0.00011	103	99	70-130	4	20		

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### QUALITY CONTROL DATA

Project: WSP Weekly  
Pace Project No.: 10488992

QC Batch: 631326 Analysis Method: EPA 200.8  
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET  
Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

METHOD BLANK: 3403909 Matrix: Water  
Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.00050	0.00014	09/11/19 23:46	
Cadmium	mg/L	ND	0.000080	0.000030	09/11/19 23:46	
Copper	mg/L	ND	0.0010	0.00043	09/11/19 23:46	
Iron	mg/L	ND	0.050	0.012	09/11/19 23:46	
Lead	mg/L	ND	0.00010	0.000046	09/11/19 23:46	
Potassium	mg/L	ND	0.10	0.018	09/11/19 23:46	
Sodium	mg/L	ND	0.050	0.024	09/11/19 23:46	
Zinc	mg/L	ND	0.0050	0.0024	09/11/19 23:46	

LABORATORY CONTROL SAMPLE: 3403910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.096	96	85-115	
Cadmium	mg/L	0.1	0.099	99	85-115	
Copper	mg/L	0.1	0.10	104	85-115	
Iron	mg/L	2	2.1	104	85-115	
Lead	mg/L	0.1	0.10	102	85-115	
Potassium	mg/L	2	2.1	103	85-115	
Sodium	mg/L	2	2.1	106	85-115	
Zinc	mg/L	0.1	0.10	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3403911 3403912

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10489088002 Result	Spike Conc.	Spike Conc.	MS Result						
Arsenic	mg/L	0.0044	0.1	0.1	0.098	0.099	94	94	70-130	0	20
Cadmium	mg/L	0.00023	0.1	0.1	0.093	0.093	93	92	70-130	1	20
Copper	mg/L	0.017	0.1	0.1	0.11	0.11	97	97	70-130	0	20
Iron	mg/L	0.054	2	2	2.1	2.1	100	100	70-130	0	20
Lead	mg/L	0.00064	0.1	0.1	0.089	0.090	89	89	70-130	1	20
Potassium	mg/L	7940 ug/L	2	2	9.8	9.9	93	100	70-130	1	20
Sodium	mg/L	52900 ug/L	2	2	54.8	56.1	99	161	70-130	2	20 M1
Zinc	mg/L	0.074	0.1	0.1	0.17	0.18	101	101	70-130	0	20

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**QUALITY CONTROL DATA**

Project: WSP Weekly

Pace Project No.: 10488992

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QC Batch:	629000	Analysis Method:	EPA 160.4
QC Batch Method:	EPA 160.4	Analysis Description:	160.4 Total Volatile Suspended Solids
Associated Lab Samples:	10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006		

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METHOD BLANK: 3393035 Matrix: Water  
Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Volatile Suspended Solids	mg/L	1.0J	2.0	1.0	08/28/19 14:29	

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SAMPLE DUPLICATE: 3393036

Parameter	Units	10488992001 Result	Dup Result	RPD	Max RPD	Qualifiers
Volatile Suspended Solids	mg/L	2.8	3.2J		20	

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### QUALITY CONTROL DATA

Project: WSP Weekly

Pace Project No.: 10488992

QC Batch: 628755

Analysis Method: EPA 180.1

QC Batch Method: EPA 180.1

Analysis Description: 180.1 Turbidity

Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

METHOD BLANK: 3391864

Matrix: Water

Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Turbidity	NTU	ND	0.60	0.11	08/27/19 12:21	

LABORATORY CONTROL SAMPLE: 3391865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Turbidity	NTU	10.1	10.0	99	90-110	

SAMPLE DUPLICATE: 3391956

Parameter	Units	10488992006 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	0.52J	0.57J		20	

SAMPLE DUPLICATE: 3391957

Parameter	Units	10488992004 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	2.3	2.6	10	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly  
Pace Project No.: 10488992

QC Batch: 630028 Analysis Method: SM 2320B  
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
Associated Lab Samples: 10488992001, 10488992002, 10488992003

METHOD BLANK: 3397803 Matrix: Water  
Associated Lab Samples: 10488992001, 10488992002, 10488992003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	2.0	09/03/19 13:47	

LABORATORY CONTROL SAMPLE & LCSD: 3397804 3397805

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	41.1	41.1	103	103	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3397806 3397807

Parameter	Units	10488669020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	571	40	40	612	611	102	101	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3397808 3397809

Parameter	Units	10489453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	355	40	40	394	396	97	104	80-120	1	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly  
Pace Project No.: 10488992

QC Batch: 630124 Analysis Method: SM 2320B  
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
Associated Lab Samples: 10488992004, 10488992005, 10488992006

METHOD BLANK: 3398338 Matrix: Water  
Associated Lab Samples: 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	ND	5.0	2.0	09/04/19 08:12	

LABORATORY CONTROL SAMPLE & LCSD: 3398339 3398340

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	40	40.8	41.2	102	103	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3398341 3398342

Parameter	Units	1048895001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	187	40	40	231	231	110	110	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3398343 3398344

Parameter	Units	10489425001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<2.0	40	40	39.4	40.5	97	100	80-120	3	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly  
Pace Project No.: 10488992

QC Batch: 628953      Analysis Method: SM 2540D  
QC Batch Method: SM 2540D      Analysis Description: 2540D Total Suspended Solids  
Associated Lab Samples: 10488992001, 10488992002, 10488992003

METHOD BLANK: 3392882      Matrix: Water  
Associated Lab Samples: 10488992001, 10488992002, 10488992003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/28/19 09:57	

LABORATORY CONTROL SAMPLE: 3392883

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	98.0	98	80-120	

SAMPLE DUPLICATE: 3392884

Parameter	Units	10488992001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	5.0J	12.0		5	

SAMPLE DUPLICATE: 3392885

Parameter	Units	10488992002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	8.0J	5.0J		5	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly  
Pace Project No.: 10488992

QC Batch: 629006 Analysis Method: SM 2540D  
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids  
Associated Lab Samples: 10488992004, 10488992005, 10488992006

METHOD BLANK: 3393046 Matrix: Water  
Associated Lab Samples: 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	08/28/19 11:31	

LABORATORY CONTROL SAMPLE: 3393047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	98.0	98	80-120	

SAMPLE DUPLICATE: 3393048

Parameter	Units	10488954001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	14.0		5	

SAMPLE DUPLICATE: 3393049

Parameter	Units	10488954002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	22.0	24.0	9	5	D6

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### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: WSP Weekly

Pace Project No.: 10488992

QC Batch: 606976 Analysis Method: SM 5310C  
 QC Batch Method: SM 5310C Analysis Description: 5310C Dissolved Organic Carbon  
 Associated Lab Samples: 10488992004, 10488992005, 10488992006

METHOD BLANK: 2480666 Matrix: Water

Associated Lab Samples: 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	0.33J	1.0	0.29	09/03/19 18:17	

LABORATORY CONTROL SAMPLE: 2480667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	5	5.3	106	80-120	

MATRIX SPIKE SAMPLE: 2480668

Parameter	Units	60311649003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	ND	5	2.2	40	80-120	M1

SAMPLE DUPLICATE: 2480669

Parameter	Units	10488992006 Result	Dup Result	RPD	Max RPD	Qualifiers
Dissolved Organic Carbon	mg/L	6.7	7.0	5	25	

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**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: WSP Weekly  
Pace Project No.: 10488992

QC Batch: 630608 Analysis Method: ASTM D516  
QC Batch Method: ASTM D516 Analysis Description: ASTM D516 Sulfate Water  
Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

METHOD BLANK: 3400838 Matrix: Water  
Associated Lab Samples: 10488992001, 10488992002, 10488992003, 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.5	0.67	09/06/19 14:42	

LABORATORY CONTROL SAMPLE & LCSD: 3400839 3400840

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Sulfate	mg/L	20	20.8	20.9	104	104	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3400841 3400842

Parameter	Units	10488992001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	102	100	100	187	195	85	93	80-120	4	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3400843 3400844

Parameter	Units	10488992005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	72.4	100	100	180	168	107	96	80-120	7	30	

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### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: WSP Weekly

Pace Project No.: 10488992

QC Batch: 629934 Analysis Method: SM 4500-Cl E  
 QC Batch Method: SM 4500-Cl E Analysis Description: SM4500Cl-E Chloride  
 Associated Lab Samples: 10488992004, 10488992005, 10488992006

METHOD BLANK: 3397479 Matrix: Water

Associated Lab Samples: 10488992004, 10488992005, 10488992006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.87J	2.0	0.82	09/03/19 11:15	

LABORATORY CONTROL SAMPLE: 3397480

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	49.0	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3397481 3397482

Parameter	Units	3397481		3397482		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10489289001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Chloride	mg/L	61.4	50	50	104	102	85	82	80-120	1	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3397483 3397484

Parameter	Units	3397483		3397484		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10489502001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Chloride	mg/L	97.5	50	50	147	149	98	104	80-120	2	20

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**REPORT OF LABORATORY ANALYSIS**

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## QUALIFIERS

Project: WSP Weekly

Pace Project No.: 10488992

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### 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.

TNTC - Too Numerous To Count

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

H3 Sample was received or analysis requested beyond the recognized method holding time.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly  
Pace Project No.: 10488992

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10488992001	WSP-SS-1-082219	EPA 200.8	631326	EPA 200.8	631610
10488992002	WSP-SS-3E-082219	EPA 200.8	631326	EPA 200.8	631610
10488992003	WSP-SS-5-082219	EPA 200.8	631326	EPA 200.8	631610
10488992004	WSP-SS-1-082619	EPA 200.8	631326	EPA 200.8	631610
10488992005	WSP-SS-3E-082619	EPA 200.8	631326	EPA 200.8	631610
10488992006	WSP-SS-5-082619	EPA 200.8	631326	EPA 200.8	631610
10488992001	WSP-SS-1-082219	EPA 245.1	628914	EPA 245.1	630623
10488992002	WSP-SS-3E-082219	EPA 245.1	628914	EPA 245.1	630623
10488992003	WSP-SS-5-082219	EPA 245.1	628914	EPA 245.1	630623
10488992004	WSP-SS-1-082619	EPA 245.1	628914	EPA 245.1	630623
10488992005	WSP-SS-3E-082619	EPA 245.1	628914	EPA 245.1	630623
10488992006	WSP-SS-5-082619	EPA 245.1	628914	EPA 245.1	630623
10488992001	WSP-SS-1-082219	EPA 160.4	629000		
10488992002	WSP-SS-3E-082219	EPA 160.4	629000		
10488992003	WSP-SS-5-082219	EPA 160.4	629000		
10488992004	WSP-SS-1-082619	EPA 160.4	629000		
10488992005	WSP-SS-3E-082619	EPA 160.4	629000		
10488992006	WSP-SS-5-082619	EPA 160.4	629000		
10488992001	WSP-SS-1-082219	EPA 180.1	628755		
10488992002	WSP-SS-3E-082219	EPA 180.1	628755		
10488992003	WSP-SS-5-082219	EPA 180.1	628755		
10488992004	WSP-SS-1-082619	EPA 180.1	628755		
10488992005	WSP-SS-3E-082619	EPA 180.1	628755		
10488992006	WSP-SS-5-082619	EPA 180.1	628755		
10488992001	WSP-SS-1-082219	SM 2320B	630028		
10488992002	WSP-SS-3E-082219	SM 2320B	630028		
10488992003	WSP-SS-5-082219	SM 2320B	630028		
10488992004	WSP-SS-1-082619	SM 2320B	630124		
10488992005	WSP-SS-3E-082619	SM 2320B	630124		
10488992006	WSP-SS-5-082619	SM 2320B	630124		
10488992001	WSP-SS-1-082219	SM 2540D	628953		
10488992002	WSP-SS-3E-082219	SM 2540D	628953		
10488992003	WSP-SS-5-082219	SM 2540D	628953		
10488992004	WSP-SS-1-082619	SM 2540D	629006		
10488992005	WSP-SS-3E-082619	SM 2540D	629006		
10488992006	WSP-SS-5-082619	SM 2540D	629006		
10488992004	WSP-SS-1-082619	SM 5310C	606976		
10488992005	WSP-SS-3E-082619	SM 5310C	606976		
10488992006	WSP-SS-5-082619	SM 5310C	606976		
10488992001	WSP-SS-1-082219	ASTM D516	630608		
10488992002	WSP-SS-3E-082219	ASTM D516	630608		
10488992003	WSP-SS-5-082219	ASTM D516	630608		
10488992004	WSP-SS-1-082619	ASTM D516	630608		
10488992005	WSP-SS-3E-082619	ASTM D516	630608		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly

Pace Project No.: 10488992

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10488992006	WSP-SS-5-082619	ASTM D516	630608		
10488992004	WSP-SS-1-082619	SM 4500-CI E	629934		
10488992005	WSP-SS-3E-082619	SM 4500-CI E	629934		
10488992006	WSP-SS-5-082619	SM 4500-CI E	629934		

### REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt - ESI Tech Specs**

Client Name:

Project #:

**WO#: 10488992**

PM: JMA

Due Date: 09/10/19

CLIENT: BP-PIONEER

Courier:

Fed Ex  UPS  USPS  Client  
 Pace  Speedee  Commercial See Exception

Tracking Number: 7475 9397 3903

Custody Seal on Cooler/Box Present?

Yes  No

Seals Intact?

Yes  No

Biological Tissue Frozen?

Yes  No  N/A

Packing Material:

Bubble Wrap

Bubble Bags

None

Other:

PB

Temp Blank?

Yes  No

Thermometer:

T1(0461)

T2(1336)

T3(0459)

T4(0254)

T5(0048)

Type of Ice:

Wet

Blue

None

Dry

Melted

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 4.1 °C

Average Corrected Temp

See Exceptions

Correction Factor: TRUE

Cooler Temp Corrected w/temp blank: 4.1 °C

(no temp blank only):

USDA Regulated Soil: ( N/A, water sample/Other: \_\_\_\_\_)

Date/Initials of Person Examining Contents: AM 08-27-19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. 8/22/19 turb received OOH JMA 8/27/19
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input checked="" type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Triple Volume Provided for MS/MSD (if more than 10 samples)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Field Filtered Volume Received for Dissolved Tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. Sample # <u>1-6:1/1</u> <input type="checkbox"/> NaOH <input checked="" type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Chlorine? <input type="checkbox"/> No <input type="checkbox"/> pH Paper Lot# <input type="checkbox"/>
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Res. Chlorine 0-6 Roll <u>213316BU</u> 0-6 Strip 0-14 Strip
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PTAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased):
3 Trip Blanks Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: \_\_\_\_\_

Field Data Required?  Yes  No

Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: <u>947</u>	Temp: <u>4.1°C</u>	Corrected Temp: <u>TRUE</u>
Time: <u>1007</u>	put in cooler <u>4.1°C</u>	
Time: _____	Temp: _____	Corrected Temp: <u>TRUE</u>

Project Manager Review: [Signature]

Date: 08/27/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: AM (2)





Sample Condition Upon Receipt

WO#: 60313193



Client Name: Pace Analytical Minnesota

Courier: FedEx [x] UPS [ ] VIA [ ] Clay [ ] PEX [ ] ECI [ ] Pace [ ] Xroads [ ] Client [ ] Other [ ]

Tracking #: 4638 0199 5189 Pace Shipping Label Used? Yes [ ] No [x]

Custody Seal on Cooler/Box Present: Yes [x] No [ ] Seals intact: Yes [x] No [ ]

Packing Material: Bubble Wrap [ ] Bubble Bags [x] Foam [ ] None [ ] Other [x] ZPIC

Thermometer Used: T361 Type of Ice: Wet [x] Blue [ ] None [ ]

Cooler Temperature (°C): As-read 0-1 Corr. Factor 0.0 Corrected 0-1

Date and initials of person examining contents: VB 8/28/19

Temperature should be above freezing to 6°C

Table with 2 columns: Question and Answer (checkboxes). Rows include Chain of Custody, Samples arrived, Short Hold Time, Rush Turn Around Time, Sufficient volume, Correct containers used, Pace containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels match, Samples contain multiple phases, Containers requiring pH preservation, Cyanide water sample checks, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached.

Client Notification/ Resolution: Copy COC to Client? Y [x] N [ ] Field Data Required? Y [ ] N [x]

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

September 17, 2019

Shawn Bisch  
Pioneer Technical  
307 E. Park Ave  
Suite 421  
Anaconda, MT 59711

RE: Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

Dear Shawn Bisch:

Enclosed are the analytical results for sample(s) received by the laboratory on September 04, 2019. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

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

Sincerely,



Jennifer Anderson  
jennifer.anderson@pacelabs.com  
(612)607-6436  
Project Manager

Enclosures

cc: Steve Lubick, Pioneer Technical Services



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485  
 A2LA Certification #: 2926.01  
 Alabama Certification #: 40770  
 Alaska Contaminated Sites Certification #: 17-009  
 Alaska DW Certification #: MN00064  
 Arizona Certification #: AZ0014  
 Arkansas DW Certification #: MN00064  
 Arkansas WW Certification #: 88-0680  
 California Certification #: 2929  
 CNMI Saipan Certification #: MP0003  
 Colorado Certification #: MN00064  
 Connecticut Certification #: PH-0256  
 EPA Region 8+Wyoming DW Certification #: via MN 027-053-137  
 Florida Certification #: E87605  
 Georgia Certification #: 959  
 Guam EPA Certification #: MN00064  
 Hawaii Certification #: MN00064  
 Idaho Certification #: MN00064  
 Illinois Certification #: 200011  
 Indiana Certification #: C-MN-01  
 Iowa Certification #: 368  
 Kansas Certification #: E-10167  
 Kentucky DW Certification #: 90062  
 Kentucky WW Certification #: 90062  
 Louisiana DEQ Certification #: 03086  
 Louisiana DW Certification #: MN00064  
 Maine Certification #: MN00064  
 Maryland Certification #: 322  
 Massachusetts Certification #: M-MN064  
 Michigan Certification #: 9909  
 Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137  
 Minnesota Petrofund Certification #: 1240  
 Mississippi Certification #: MN00064  
 Missouri Certification #: 10100  
 Montana Certification #: CERT0092  
 Nebraska Certification #: NE-OS-18-06  
 Nevada Certification #: MN00064  
 New Hampshire Certification #: 2081  
 New Jersey Certification #: MN002  
 New York Certification #: 11647  
 North Carolina DW Certification #: 27700  
 North Carolina WW Certification #: 530  
 North Dakota Certification #: R-036  
 Ohio DW Certification #: 41244  
 Ohio VAP Certification #: CL101  
 Oklahoma Certification #: 9507  
 Oregon Primary Certification #: MN300001  
 Oregon Secondary Certification #: MN200001  
 Pennsylvania Certification #: 68-00563  
 Puerto Rico Certification #: MN00064  
 South Carolina Certification #: 74003001  
 Tennessee Certification #: TN02818  
 Texas Certification #: T104704192  
 Utah Certification #: MN00064  
 Vermont Certification #: VT-027053137  
 Virginia Certification #: 460163  
 Washington Certification #: C486  
 West Virginia DEP Certification #: 382  
 West Virginia DW Certification #: 9952 C  
 Wisconsin Certification #: 999407970  
 Wyoming UST Certification #: via A2LA 2926.01

### Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219  
 Missouri Inorganic Drinking Water Certification #: 10090  
 Arkansas Drinking Water  
 Arkansas Certification #: 19-016-0  
 Arkansas Drinking Water  
 Illinois Certification #: 004455  
 Iowa Certification #: 118  
 Kansas/NELAP Certification #: E-10116  
 Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1  
 Oklahoma Certification #: 9205/9935  
 Florida: Cert E871149 SEKS WET  
 Texas Certification #: T104704407-18-11  
 Utah Certification #: KS000212018-8  
 Illinois Certification #: 004592  
 Kansas Field Laboratory Accreditation: # E-92587  
 Missouri SEKS Micro Certification: 10070

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10489964001	WSP-SS-1-082919	Water	08/29/19 11:00	09/04/19 08:30
10489964002	WSP-SS-3E-082919	Water	08/29/19 10:30	09/04/19 08:30
10489964003	WSP-SS-5-082919	Water	08/29/19 09:55	09/04/19 08:30
10489964004	WSP-SS-1-090319	Water	09/03/19 09:30	09/04/19 08:30
10489964005	WSP-SS-3E-090319	Water	09/03/19 09:10	09/04/19 08:30
10489964006	WSP-SS-5-090319	Water	09/03/19 10:30	09/04/19 08:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10489964001	WSP-SS-1-082919	EPA 200.8	BWB	7	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JFP	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JFP	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10489964002	WSP-SS-3E-082919	EPA 200.8	BWB	7	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JFP	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JFP	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10489964003	WSP-SS-5-082919	EPA 200.8	BWB	7	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JFP	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JFP	1	PASI-M
		ASTM D516	AR3	1	PASI-M
10489964004	WSP-SS-1-090319	EPA 200.8	BWB	9	PASI-M
		EPA 200.8	PW1	6	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JFP	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JFP	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	AR3	1	PASI-M
		SM 5310C	LDB	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	DCL	1	PASI-M
10489964005	WSP-SS-3E-090319	EPA 200.8	BWB	9	PASI-M

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	PW1	6	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JFP	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JFP	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	AR3	1	PASI-M
		SM 5310C	LDB	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	DCL	1	PASI-M
<b>10489964006</b>	<b>WSP-SS-5-090319</b>	EPA 200.8	BWB	9	PASI-M
		EPA 200.8	PW1	6	PASI-M
		EPA 245.1	LMW	1	PASI-M
		EPA 160.4	JFP	1	PASI-M
		EPA 180.1	KDC	1	PASI-M
		SM 2320B	KDC	1	PASI-M
		SM 2540D	JFP	1	PASI-M
		EPA 350.1	AR3	1	PASI-M
		EPA 351.2	AJS	1	PASI-K
		SM 4500-NO3 H	DCL	1	PASI-M
		SM 4500-P G	AR3	1	PASI-M
		SM 5310C	LDB	1	PASI-K
		ASTM D516	AR3	1	PASI-M
		SM 4500-CI E	AR3	1	PASI-M
		SM 4500-P F	DCL	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

6 samples were analyzed for EPA 200.8. 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 200.8 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.

**Internal Standards:**

All internal standards were within QC limits 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: 630900

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489964001,10490002001

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

- MS (Lab ID: 3402467)
  - Sodium
- MS (Lab ID: 3402468)
  - Sodium
- MSD (Lab ID: 3402469)
  - Potassium
  - Sodium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS, Dissolved

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for EPA 200.8. 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 200.8 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.

**Internal Standards:**

All internal standards were within QC limits 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: 630829

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489964004,10490037012

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

- MSD (Lab ID: 3402216)
- Calcium, Dissolved

**Additional Comments:**

Analyte Comments:

QC Batch: 630829

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 3402215)
- Calcium, Dissolved
- MSD (Lab ID: 3402216)
- Calcium, Dissolved

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 245.1

**Description:** 245.1 Mercury, LL

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

6 samples were analyzed for EPA 245.1. 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 245.1 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 160.4

**Description:** 160.4 Total Volatile Suspended

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

6 samples were analyzed for EPA 160.4. 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: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 180.1

**Description:** 180.1 Turbidity

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

### General Information:

6 samples were analyzed for EPA 180.1. 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.

H3: Sample was received or analysis requested beyond the recognized method holding time.

- WSP-SS-1-082919 (Lab ID: 10489964001)
- WSP-SS-3E-082919 (Lab ID: 10489964002)
- WSP-SS-5-082919 (Lab ID: 10489964003)

### 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: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** SM 2320B

**Description:** 2320B Alkalinity

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

6 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: 630841

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489732002,10490187001

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

- MS (Lab ID: 3402259)
  - Alkalinity, Total as CaCO<sub>3</sub>
- MSD (Lab ID: 3402260)
  - Alkalinity, Total as CaCO<sub>3</sub>

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** SM 2540D

**Description:** 2540D Total Suspended Solids

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

6 samples were analyzed for SM 2540D. 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.

QC Batch: 630301

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 3399080)
- Total Suspended Solids

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 350.1

**Description:** 350.1 Ammonia

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for EPA 350.1. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** EPA 351.2

**Description:** 351.2 Total Kjeldahl Nitrogen

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for EPA 351.2. 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 351.2 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: 609154

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489995003,60313691001

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

- MS (Lab ID: 2488356)
- Nitrogen, Kjeldahl, Total

**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: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** SM 4500-NO3 H

**Description:** SM4500NO3-H, NO2 + NO3 pres.

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

### General Information:

3 samples were analyzed for SM 4500-NO3 H. 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: 630831

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489236003,10489236004

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

- MS (Lab ID: 3402225)
  - Nitrogen, NO2 plus NO3
- MS (Lab ID: 3402227)
  - Nitrogen, NO2 plus NO3
- MSD (Lab ID: 3402226)
  - Nitrogen, NO2 plus NO3
- MSD (Lab ID: 3402228)
  - Nitrogen, NO2 plus NO3

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** SM 4500-P G

**Description:** Phosphate, Ortho Low Level

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for SM 4500-P G. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

---

**Method:** SM 5310C

**Description:** 5310C Dissolved Organic Carbon

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for SM 5310C. 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: WSP Weekly + Nutrients

Pace Project No.: 10489964

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**Method:** ASTM D516

**Description:** ASTM D516 Sulfate Water

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

### General Information:

6 samples were analyzed for ASTM D516. 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.

QC Batch: 630610

P8: Analyte was detected in the method blank. All associated samples had concentrations of at least ten times greater than the blank or were below the reporting limit.

- BLANK (Lab ID: 3400850)
- Sulfate

### 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.

### Additional Comments:

Analyte Comments:

QC Batch: 630610

P8: Analyte was detected in the method blank. All associated samples had concentrations of at least ten times greater than the blank or were below the reporting limit.

- BLANK (Lab ID: 3400850)
- Sulfate

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

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**Method:** SM 4500-CI E

**Description:** SM4500CI-E Chloride

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for SM 4500-CI E. 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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

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**Method:** SM 4500-P F

**Description:** SM4500P-F, Total Phosphorus

**Client:** BPAR-PIONEER-MT

**Date:** September 17, 2019

**General Information:**

3 samples were analyzed for SM 4500-P F. 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 SM 4500-P B 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: 631145

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10489431001,10489431002

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

- MS (Lab ID: 3403313)

- Phosphorus

**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: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: <b>WSP-SS-1-082919</b> Lab ID: <b>10489964001</b> Collected: 08/29/19 11:00      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0070</b>	mg/L	0.00050	0.00014	1	09/10/19 12:11	09/11/19 16:53	7440-38-2	
Cadmium	<b>0.00028</b>	mg/L	0.000080	0.000030	1	09/10/19 12:11	09/11/19 16:53	7440-43-9	
Copper	<b>0.015</b>	mg/L	0.0010	0.00043	1	09/10/19 12:11	09/11/19 16:53	7440-50-8	
Iron	<b>0.17</b>	mg/L	0.050	0.012	1	09/10/19 12:11	09/11/19 16:53	7439-89-6	
Lead	<b>0.00079</b>	mg/L	0.00010	0.000046	1	09/10/19 12:11	09/11/19 16:53	7439-92-1	
Total Hardness by 2340B	<b>200</b>	mg/L	2.8	1.3	20	09/10/19 12:11	09/11/19 16:56		
Zinc	<b>0.054</b>	mg/L	0.0050	0.0024	1	09/10/19 12:11	09/11/19 16:53	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	09/10/19 10:32	09/11/19 13:28	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.0</b>	mg/L	2.0	1.0	1		09/05/19 14:32		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.9</b>	NTU	0.60	0.11	1		09/04/19 13:15		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>117</b>	mg/L	5.0	2.0	1		09/09/19 11:03		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>6.0J</b>	mg/L	10.0	5.0	1		09/04/19 16:32		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>95.5</b>	mg/L	12.5	3.4	5		09/06/19 15:09	14808-79-8	

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: WSP-SS-3E-082919      Lab ID: 10489964002      Collected: 08/29/19 10:30      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	0.021	mg/L	0.00050	0.00014	1	09/10/19 12:11	09/11/19 17:09	7440-38-2	
Cadmium	0.00096	mg/L	0.000080	0.000030	1	09/10/19 12:11	09/11/19 17:09	7440-43-9	
Copper	0.037	mg/L	0.0010	0.00043	1	09/10/19 12:11	09/11/19 17:09	7440-50-8	
Iron	0.36	mg/L	0.050	0.012	1	09/10/19 12:11	09/11/19 17:09	7439-89-6	
Lead	0.0023	mg/L	0.00010	0.000046	1	09/10/19 12:11	09/11/19 17:09	7439-92-1	
Total Hardness by 2340B	149	mg/L	2.8	1.3	20	09/10/19 12:11	09/11/19 17:12		
Zinc	0.078	mg/L	0.0050	0.0024	1	09/10/19 12:11	09/11/19 17:09	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	0.000010	mg/L	0.000010	0.000003 9	1	09/10/19 10:32	09/11/19 13:31	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	3.8	mg/L	2.0	1.0	1		09/05/19 14:32		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	2.3	NTU	0.60	0.11	1		09/04/19 13:12		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	98.7	mg/L	5.0	2.0	1		09/09/19 11:09		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	11.0	mg/L	10.0	5.0	1		09/04/19 16:32		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	73.2	mg/L	12.5	3.4	5		09/06/19 15:10	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: <b>WSP-SS-5-082919</b> Lab ID: <b>10489964003</b> Collected: 08/29/19 09:55      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.028</b>	mg/L	0.00050	0.00014	1	09/10/19 12:11	09/11/19 17:15	7440-38-2	
Cadmium	<b>0.00064J</b>	mg/L	0.000080	0.000030	1	09/10/19 12:11	09/11/19 17:15	7440-43-9	
Copper	<b>0.0052</b>	mg/L	0.0010	0.00043	1	09/10/19 12:11	09/11/19 17:15	7440-50-8	
Iron	<b>0.061</b>	mg/L	0.050	0.012	1	09/10/19 12:11	09/11/19 17:15	7439-89-6	
Lead	<b>0.00034</b>	mg/L	0.00010	0.000046	1	09/10/19 12:11	09/11/19 17:15	7439-92-1	
Total Hardness by 2340B	<b>131</b>	mg/L	2.8	1.3	20	09/10/19 12:11	09/11/19 17:18		
Zinc	<b>0.0070</b>	mg/L	0.0050	0.0024	1	09/10/19 12:11	09/11/19 17:15	7440-66-6	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	09/10/19 10:32	09/11/19 13:41	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.4J</b>	mg/L	2.0	1.0	1		09/05/19 14:32		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.2</b>	NTU	0.60	0.11	1		09/04/19 13:11		H3
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>76.6</b>	mg/L	5.0	2.0	1		09/09/19 11:15		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		09/04/19 16:32		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>66.9</b>	mg/L	12.5	3.4	5		09/06/19 15:10	14808-79-8	

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

**Sample: WSP-SS-1-090319**      **Lab ID: 10489964004**      Collected: 09/03/19 09:30      Received: 09/04/19 08:30      Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.0068</b>	mg/L	0.00050	0.00014	1	09/10/19 12:11	09/11/19 17:21	7440-38-2	
Cadmium	<b>0.00024</b>	mg/L	0.000080	0.000030	1	09/10/19 12:11	09/11/19 17:21	7440-43-9	
Copper	<b>0.022</b>	mg/L	0.0010	0.00043	1	09/10/19 12:11	09/11/19 17:21	7440-50-8	
Iron	<b>0.14</b>	mg/L	0.050	0.012	1	09/10/19 12:11	09/11/19 17:21	7439-89-6	
Lead	<b>0.00067</b>	mg/L	0.00010	0.000046	1	09/10/19 12:11	09/11/19 17:21	7439-92-1	
Potassium	<b>5.2</b>	mg/L	0.10	0.018	1	09/10/19 12:11	09/11/19 17:21	7440-09-7	
Sodium	<b>33.0</b>	mg/L	1.0	0.49	20	09/10/19 12:11	09/11/19 17:24	7440-23-5	
Total Hardness by 2340B	<b>203</b>	mg/L	2.8	1.3	20	09/10/19 12:11	09/11/19 17:24		
Zinc	<b>0.048</b>	mg/L	0.0050	0.0024	1	09/10/19 12:11	09/11/19 17:21	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic, Dissolved	<b>0.0068</b>	mg/L	0.00050	0.00014	1	09/11/19 10:42	09/11/19 23:56	7440-38-2	
Calcium, Dissolved	<b>58.3</b>	mg/L	0.80	0.37	20	09/11/19 10:42	09/12/19 00:11	7440-70-2	M1
Copper, Dissolved	<b>0.0084</b>	mg/L	0.0010	0.00043	1	09/11/19 10:42	09/13/19 01:24	7440-50-8	
Iron, Dissolved	<b>0.014J</b>	mg/L	0.050	0.012	1	09/11/19 10:42	09/11/19 23:56	7439-89-6	
Magnesium, Dissolved	<b>12.8</b>	mg/L	0.010	0.0041	1	09/11/19 10:42	09/11/19 23:56	7439-95-4	
Manganese, Dissolved	<b>0.0093</b>	mg/L	0.00050	0.00023	1	09/11/19 10:42	09/11/19 23:56	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	09/10/19 10:32	09/11/19 13:44	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.6J</b>	mg/L	2.0	1.0	1		09/05/19 14:32		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>1.7</b>	NTU	0.60	0.11	1		09/04/19 13:31		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>113</b>	mg/L	5.0	2.0	1		09/09/19 11:23		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		09/05/19 16:39		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		09/09/19 17:29	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2      Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	<b>0.44J</b>	mg/L	0.50	0.37	1	09/13/19 11:10	09/16/19 12:52	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	<b>0.49</b>	mg/L	0.20	0.095	1		09/09/19 10:13		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.070</b>	mg/L	0.010	0.0047	1		09/04/19 13:27		

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: <b>WSP-SS-1-090319</b> Lab ID: <b>10489964004</b> Collected: 09/03/19 09:30      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>2.8</b>	mg/L	1.0	0.29	1		09/17/19 10:10		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>102</b>	mg/L	12.5	3.4	5		09/06/19 15:25	14808-79-8	
<b>SM4500CI-E Chloride</b> Analytical Method: SM 4500-CI E									
Chloride	<b>38.5</b>	mg/L	2.0	0.82	1		09/10/19 14:25	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	ND	mg/L	0.10	0.043	1	09/10/19 08:55	09/11/19 14:22	7723-14-0	

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### ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: <b>WSP-SS-3E-090319</b> Lab ID: <b>10489964005</b> Collected: 09/03/19 09:10 Received: 09/04/19 08:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic	<b>0.021</b>	mg/L	0.00050	0.00014	1	09/10/19 12:11	09/11/19 17:27	7440-38-2	
Cadmium	<b>0.00072</b>	mg/L	0.000080	0.000030	1	09/10/19 12:11	09/11/19 17:27	7440-43-9	
Copper	<b>0.027</b>	mg/L	0.0010	0.00043	1	09/10/19 12:11	09/11/19 17:27	7440-50-8	
Iron	<b>0.18</b>	mg/L	0.050	0.012	1	09/10/19 12:11	09/11/19 17:27	7439-89-6	
Lead	<b>0.0012</b>	mg/L	0.00010	0.000046	1	09/10/19 12:11	09/11/19 17:27	7439-92-1	
Potassium	<b>3.6</b>	mg/L	0.10	0.018	1	09/10/19 12:11	09/11/19 17:27	7440-09-7	
Sodium	<b>25.8</b>	mg/L	1.0	0.49	20	09/10/19 12:11	09/11/19 17:30	7440-23-5	
Total Hardness by 2340B	<b>154</b>	mg/L	2.8	1.3	20	09/10/19 12:11	09/11/19 17:30		
Zinc	<b>0.043</b>	mg/L	0.0050	0.0024	1	09/10/19 12:11	09/11/19 17:27	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Arsenic, Dissolved	<b>0.022</b>	mg/L	0.00050	0.00014	1	09/11/19 10:42	09/12/19 00:27	7440-38-2	
Calcium, Dissolved	<b>44.6</b>	mg/L	0.80	0.37	20	09/11/19 10:42	09/12/19 00:30	7440-70-2	
Copper, Dissolved	<b>0.014</b>	mg/L	0.0010	0.00043	1	09/11/19 10:42	09/13/19 01:40	7440-50-8	
Iron, Dissolved	<b>0.012J</b>	mg/L	0.050	0.012	1	09/11/19 10:42	09/12/19 00:27	7439-89-6	
Magnesium, Dissolved	<b>11.7</b>	mg/L	0.010	0.0041	1	09/11/19 10:42	09/12/19 00:27	7439-95-4	
Manganese, Dissolved	<b>0.0039</b>	mg/L	0.00050	0.00023	1	09/11/19 10:42	09/12/19 00:27	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 9	1	09/10/19 10:32	09/11/19 14:03	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>2.8</b>	mg/L	2.0	1.0	1		09/05/19 14:32		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>2.0</b>	NTU	0.60	0.11	1		09/04/19 13:28		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO3	<b>93.0</b>	mg/L	5.0	2.0	1		09/09/19 11:29		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	<b>5.0J</b>	mg/L	10.0	5.0	1		09/05/19 16:39		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		09/09/19 17:31	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2 Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	<b>1.2</b>	mg/L	0.50	0.37	1	09/13/19 11:10	09/16/19 12:49	7727-37-9	
<b>SM4500NO3-H, NO2 + NO3 pres.</b> Analytical Method: SM 4500-NO3 H									
Nitrogen, NO2 plus NO3	<b>0.10J</b>	mg/L	0.20	0.095	1		09/09/19 10:13		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.14</b>	mg/L	0.010	0.0047	1		09/04/19 13:23		

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: <b>WSP-SS-3E-090319</b> Lab ID: <b>10489964005</b> Collected: 09/03/19 09:10      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>5.0</b>	mg/L	1.0	0.29	1		09/17/19 09:48		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>75.7</b>	mg/L	12.5	3.4	5		09/06/19 15:25	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>24.1</b>	mg/L	2.0	0.82	1		09/10/19 14:26	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	<b>0.16</b>	mg/L	0.10	0.043	1	09/10/19 08:55	09/11/19 16:49	7723-14-0	

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

Sample: <b>WSP-SS-5-090319</b> Lab ID: <b>10489964006</b> Collected: 09/03/19 10:30      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic	<b>0.028</b>	mg/L	0.00050	0.00014	1	09/10/19 12:11	09/11/19 17:39	7440-38-2	
Cadmium	<b>0.00054J</b>	mg/L	0.00080	0.00030	1	09/10/19 12:11	09/11/19 17:39	7440-43-9	
Copper	<b>0.0048</b>	mg/L	0.0010	0.00043	1	09/10/19 12:11	09/11/19 17:39	7440-50-8	
Iron	<b>0.032J</b>	mg/L	0.050	0.012	1	09/10/19 12:11	09/11/19 17:39	7439-89-6	
Lead	<b>0.00017</b>	mg/L	0.00010	0.000046	1	09/10/19 12:11	09/11/19 17:39	7439-92-1	
Potassium	<b>2.9</b>	mg/L	0.10	0.018	1	09/10/19 12:11	09/11/19 17:39	7440-09-7	
Sodium	<b>22.3</b>	mg/L	0.050	0.024	1	09/10/19 12:11	09/11/19 17:39	7440-23-5	
Total Hardness by 2340B	<b>135</b>	mg/L	2.8	1.3	20	09/10/19 12:11	09/11/19 17:42		
Zinc	<b>0.0036J</b>	mg/L	0.0050	0.0024	1	09/10/19 12:11	09/11/19 17:39	7440-66-6	
<b>200.8 MET ICPMS, Dissolved</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8									
Arsenic, Dissolved	<b>0.028</b>	mg/L	0.00050	0.00014	1	09/11/19 10:42	09/12/19 00:34	7440-38-2	
Calcium, Dissolved	<b>36.4</b>	mg/L	0.80	0.37	20	09/11/19 10:42	09/12/19 00:37	7440-70-2	
Copper, Dissolved	<b>0.0040</b>	mg/L	0.0010	0.00043	1	09/11/19 10:42	09/13/19 01:50	7440-50-8	
Iron, Dissolved	ND	mg/L	0.050	0.012	1	09/11/19 10:42	09/12/19 00:34	7439-89-6	
Magnesium, Dissolved	<b>10.3</b>	mg/L	0.010	0.0041	1	09/11/19 10:42	09/12/19 00:34	7439-95-4	
Manganese, Dissolved	<b>0.0032</b>	mg/L	0.00050	0.00023	1	09/11/19 10:42	09/12/19 00:34	7439-96-5	
<b>245.1 Mercury, LL</b> Analytical Method: EPA 245.1      Preparation Method: EPA 245.1									
Mercury	ND	mg/L	0.000010	0.000003 <sub>9</sub>	1	09/10/19 10:32	09/11/19 14:06	7439-97-6	
<b>160.4 Total Volatile Suspended</b> Analytical Method: EPA 160.4									
Volatile Suspended Solids	<b>1.4J</b>	mg/L	2.0	1.0	1		09/05/19 14:32		
<b>180.1 Turbidity</b> Analytical Method: EPA 180.1									
Turbidity	<b>0.51J</b>	NTU	0.60	0.11	1		09/04/19 13:36		
<b>2320B Alkalinity</b> Analytical Method: SM 2320B									
Alkalinity, Total as CaCO <sub>3</sub>	<b>75.4</b>	mg/L	5.0	2.0	1		09/09/19 11:34		
<b>2540D Total Suspended Solids</b> Analytical Method: SM 2540D									
Total Suspended Solids	ND	mg/L	10.0	5.0	1		09/05/19 16:39		
<b>350.1 Ammonia</b> Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.10	0.049	1		09/09/19 17:32	7664-41-7	
<b>351.2 Total Kjeldahl Nitrogen</b> Analytical Method: EPA 351.2      Preparation Method: EPA 351.2									
Nitrogen, Kjeldahl, Total	<b>0.62</b>	mg/L	0.50	0.37	1	09/13/19 11:10	09/16/19 12:53	7727-37-9	
<b>SM4500NO3-H, NO<sub>2</sub> + NO<sub>3</sub> pres.</b> Analytical Method: SM 4500-NO <sub>3</sub> H									
Nitrogen, NO <sub>2</sub> plus NO <sub>3</sub>	<b>0.14J</b>	mg/L	0.20	0.095	1		09/09/19 10:16		
<b>Phosphate, Ortho Low Level</b> Analytical Method: SM 4500-P G									
Orthophosphate as P	<b>0.042</b>	mg/L	0.010	0.0047	1		09/04/19 13:28		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Sample: <b>WSP-SS-5-090319</b> Lab ID: <b>10489964006</b> Collected: 09/03/19 10:30      Received: 09/04/19 08:30      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310C Dissolved Organic Carbon</b> Analytical Method: SM 5310C									
Dissolved Organic Carbon	<b>6.7</b>	mg/L	2.0	0.58	2		09/17/19 10:23		
<b>ASTM D516 Sulfate Water</b> Analytical Method: ASTM D516									
Sulfate	<b>76.9</b>	mg/L	12.5	3.4	5		09/06/19 15:26	14808-79-8	
<b>SM4500Cl-E Chloride</b> Analytical Method: SM 4500-Cl E									
Chloride	<b>20.6</b>	mg/L	2.0	0.82	1		09/10/19 14:28	16887-00-6	
<b>SM4500P-F, Total Phosphorus</b> Analytical Method: SM 4500-P F      Preparation Method: SM 4500-P B									
Phosphorus	ND	mg/L	0.10	0.043	1	09/10/19 08:55	09/11/19 14:24	7723-14-0	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch: 630965 Analysis Method: EPA 245.1  
 QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury, LL  
 Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

METHOD BLANK: 3402722 Matrix: Water  
 Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.000010	0.0000039	09/11/19 13:22	

LABORATORY CONTROL SAMPLE: 3402723

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0001	0.000099	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3402724 3402725

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10489964002 Result	Spike Conc.	Spike Conc.	Conc.								
Mercury	mg/L	0.000010	0.0001	0.0001	0.00012	0.00011	105	99	70-130	5	20		

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch:	630900	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
Associated Lab Samples:	10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006		

METHOD BLANK: 3402465 Matrix: Water  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.00050	0.00014	09/11/19 16:29	
Cadmium	mg/L	ND	0.000080	0.000030	09/11/19 16:29	
Copper	mg/L	ND	0.0010	0.00043	09/11/19 16:29	
Iron	mg/L	ND	0.050	0.012	09/11/19 16:29	
Lead	mg/L	ND	0.00010	0.000046	09/11/19 16:29	
Potassium	mg/L	ND	0.10	0.018	09/11/19 16:29	
Sodium	mg/L	ND	0.050	0.024	09/11/19 16:29	
Zinc	mg/L	ND	0.0050	0.0024	09/11/19 16:29	

LABORATORY CONTROL SAMPLE: 3402466

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.098	98	85-115	
Cadmium	mg/L	0.1	0.10	102	85-115	
Copper	mg/L	0.1	0.10	105	85-115	
Iron	mg/L	2	2.1	107	85-115	
Lead	mg/L	0.1	0.11	106	85-115	
Potassium	mg/L	2	2.1	104	85-115	
Sodium	mg/L	2	2.1	106	85-115	
Zinc	mg/L	0.1	0.11	105	85-115	

MATRIX SPIKE SAMPLE: 3402467

Parameter	Units	10489964001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.0070	0.1	0.10	97	70-130	
Cadmium	mg/L	0.00028	0.1	0.10	101	70-130	
Copper	mg/L	0.015	0.1	0.12	106	70-130	
Iron	mg/L	0.17	2	2.3	106	70-130	
Lead	mg/L	0.00079	0.1	0.10	103	70-130	
Potassium	mg/L	5.3	2	7.2	94	70-130	
Sodium	mg/L	34.9	2	35.5	26	70-130 M1	
Zinc	mg/L	0.054	0.1	0.16	101	70-130	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Parameter	Units	3402468		3402469		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10490002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Arsenic	mg/L	0.0041	0.1	0.1	0.10	0.11	100	101	70-130	1	20		
Cadmium	mg/L	0.00018	0.1	0.1	0.10	0.10	102	103	70-130	0	20		
Copper	mg/L	0.013	0.1	0.1	0.12	0.12	108	109	70-130	1	20		
Iron	mg/L	0.024J	2	2	2.2	2.2	107	110	70-130	3	20		
Lead	mg/L	0.00033	0.1	0.1	0.11	0.11	106	105	70-130	1	20		
Potassium	mg/L	7720 ug/L	2	2	10.2	10.4	122	136	70-130	3	20	M1	
Sodium	mg/L	51400 ug/L	2	2	56.5	57.9	255	323	70-130	2	20	M1	
Zinc	mg/L	0.054	0.1	0.1	0.16	0.16	107	108	70-130	0	20		

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch: 630829 Analysis Method: EPA 200.8  
 QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved  
 Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3402213 Matrix: Water

Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	mg/L	ND	0.00050	0.00014	09/11/19 23:49	
Calcium, Dissolved	mg/L	ND	0.040	0.018	09/11/19 23:49	
Copper, Dissolved	mg/L	ND	0.0010	0.00043	09/13/19 01:18	
Iron, Dissolved	mg/L	ND	0.050	0.012	09/11/19 23:49	
Magnesium, Dissolved	mg/L	ND	0.010	0.0041	09/11/19 23:49	
Manganese, Dissolved	mg/L	ND	0.00050	0.00023	09/11/19 23:49	

LABORATORY CONTROL SAMPLE: 3402214

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	mg/L	0.1	0.097	97	85-115	
Calcium, Dissolved	mg/L	2	2.1	103	85-115	
Copper, Dissolved	mg/L	0.1	0.10	102	85-115	
Iron, Dissolved	mg/L	2	2.2	109	85-115	
Magnesium, Dissolved	mg/L	2	2.1	106	85-115	
Manganese, Dissolved	mg/L	0.1	0.11	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3402215 3402216

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10489964004 Result	Spike Conc.	Spike Conc.	Conc.								
Arsenic, Dissolved	mg/L	0.0068	0.1	0.1	0.11	0.11	99	100	70-130	1	20		
Calcium, Dissolved	mg/L	58.3	2	2	60.6	59.6	111	66	70-130	2	20	E,M1	
Copper, Dissolved	mg/L	0.0084	0.1	0.1	0.10	0.10	96	97	70-130	0	20		
Iron, Dissolved	mg/L	0.014J	2	2	2.2	2.2	107	110	70-130	2	20		
Magnesium, Dissolved	mg/L	12.8	2	2	15.2	15.2	117	120	70-130	0	20		
Manganese, Dissolved	mg/L	0.0093	0.1	0.1	0.12	0.12	106	107	70-130	1	20		

MATRIX SPIKE SAMPLE: 3402217

Parameter	Units	10490037012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	mg/L	8.7 ug/L	0.1	0.11	98	70-130	
Calcium, Dissolved	mg/L	1440 ug/L	2	3.5	102	70-130	
Copper, Dissolved	mg/L	ND	0.1	0.10	102	70-130	
Iron, Dissolved	mg/L	ND	2	2.2	109	70-130	
Magnesium, Dissolved	mg/L	265 ug/L	2	2.4	104	70-130	
Manganese, Dissolved	mg/L	0.79 ug/L	0.1	0.11	106	70-130	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 630335 Analysis Method: EPA 160.4  
QC Batch Method: EPA 160.4 Analysis Description: 160.4 Total Volatile Suspended Solids  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

METHOD BLANK: 3399264 Matrix: Water  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Volatile Suspended Solids	mg/L	ND	2.0	1.0	09/05/19 14:32	

SAMPLE DUPLICATE: 3399265

Parameter	Units	10489995004 Result	Dup Result	RPD	Max RPD	Qualifiers
Volatile Suspended Solids	mg/L	2.0	1.8J		20	

SAMPLE DUPLICATE: 3399266

Parameter	Units	10489995005 Result	Dup Result	RPD	Max RPD	Qualifiers
Volatile Suspended Solids	mg/L	1.0J	1.2J		20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 630239 Analysis Method: EPA 180.1  
QC Batch Method: EPA 180.1 Analysis Description: 180.1 Turbidity  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

METHOD BLANK: 3398803 Matrix: Water  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Turbidity	NTU	ND	0.60	0.11	09/04/19 13:09	

LABORATORY CONTROL SAMPLE: 3398804

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Turbidity	NTU	10.1	9.8	98	90-110	

SAMPLE DUPLICATE: 3398805

Parameter	Units	10489964005 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	2.0	2.3	16	20	

SAMPLE DUPLICATE: 3398806

Parameter	Units	10489964006 Result	Dup Result	RPD	Max RPD	Qualifiers
Turbidity	NTU	0.51J	0.55J		20	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 630841 Analysis Method: SM 2320B  
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

METHOD BLANK: 3402254 Matrix: Water  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	2.0	09/09/19 09:27	

LABORATORY CONTROL SAMPLE & LCSD: 3402255 3402256

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	42.2	42.0	105	105	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3402257 3402258

Parameter	Units	10489732002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	9.3	40	40	50.6	50.6	103	103	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3402259 3402260

Parameter	Units	10490187001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	587	40	40	618	613	78	67	80-120	1	20	M1

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch: 630301

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 10489964001, 10489964002, 10489964003

METHOD BLANK: 3399078

Matrix: Water

Associated Lab Samples: 10489964001, 10489964002, 10489964003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	09/04/19 16:32	

LABORATORY CONTROL SAMPLE: 3399079

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	88.0	88	80-120	

SAMPLE DUPLICATE: 3399080

Parameter	Units	10489940001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	75.0	82.0	9	5	D6

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 630507 Analysis Method: SM 2540D  
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3400078 Matrix: Water  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	10.0	5.0	09/05/19 16:39	

LABORATORY CONTROL SAMPLE: 3400079

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	90.0	90	80-120	

SAMPLE DUPLICATE: 3400080

Parameter	Units	10489943004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	132	133	1	5	

SAMPLE DUPLICATE: 3400081

Parameter	Units	10489995001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		5	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch: 630749 Analysis Method: EPA 350.1  
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3401635 Matrix: Water

Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	0.049	09/09/19 16:02	

LABORATORY CONTROL SAMPLE: 3401636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2.5	2.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3401637 3401638

Parameter	Units	10489436010		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Nitrogen, Ammonia	mg/L	<0.049	2.5	2.5	2.8	2.6	110	103	90-110	6	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3401639 3401640

Parameter	Units	10489675003		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Nitrogen, Ammonia	mg/L	ND	2.5	2.5	2.5	2.5	101	99	90-110	2	20		

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### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch: 609154 Analysis Method: EPA 351.2  
 QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN  
 Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 2488352 Matrix: Water

Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	0.37	09/16/19 11:59	

LABORATORY CONTROL SAMPLE: 2488353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.4	107	90-110	

MATRIX SPIKE SAMPLE: 2488354

Parameter	Units	60313691001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	2.0	5	7.1	102	90-110	

MATRIX SPIKE SAMPLE: 2488356

Parameter	Units	10489995003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	1.1	5	6.8	113	90-110	M1

SAMPLE DUPLICATE: 2488355

Parameter	Units	60313809002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	117	123	5	10	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 630831 Analysis Method: SM 4500-NO3 H  
QC Batch Method: SM 4500-NO3 H Analysis Description: SM4500NO3-H, NO2 + NO3 pres.  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3402223 Matrix: Water  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.20	0.095	09/09/19 09:54	

LABORATORY CONTROL SAMPLE: 3402224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.4	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3402225 3402226

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10489236003 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Nitrogen, NO2 plus NO3	mg/L	0.73	2.5	2.5	1.5	1.4	31	28	80-120	4	30	M1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3402227 3402228

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10489236004 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Nitrogen, NO2 plus NO3	mg/L	0.21	2.5	2.5	1.3	1.1	41	37	80-120	9	30	M1	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

QC Batch: 630181

Analysis Method: SM 4500-P G

QC Batch Method: SM 4500-P G

Analysis Description: SM4500P-G, Phosphate, Ortho

Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3398550

Matrix: Water

Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Orthophosphate as P	mg/L	ND	0.010	0.0047	09/04/19 11:24	FS

LABORATORY CONTROL SAMPLE: 3398551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Orthophosphate as P	mg/L	0.1	0.096	96	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3398552 3398553

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		10489964005 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Orthophosphate as P	mg/L	0.14	0.2	0.2	0.34	0.34	99	100	80-120	1	30		

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

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QC Batch:	609728	Analysis Method:	SM 5310C
QC Batch Method:	SM 5310C	Analysis Description:	5310C Dissolved Organic Carbon
Associated Lab Samples:	10489964004, 10489964005, 10489964006		

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METHOD BLANK: 2490948 Matrix: Water

Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	ND	1.0	0.29	09/17/19 09:30	

---

LABORATORY CONTROL SAMPLE: 2490949

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	5	5.2	104	80-120	

---

MATRIX SPIKE SAMPLE: 2490950

Parameter	Units	10491156001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	3.1	5	8.3	104	80-120	

---

SAMPLE DUPLICATE: 2490951

Parameter	Units	10491156002 Result	Dup Result	RPD	Max RPD	Qualifiers
Dissolved Organic Carbon	mg/L	3.2	3.2	0	25	

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**QUALITY CONTROL DATA**

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 630610 Analysis Method: ASTM D516  
QC Batch Method: ASTM D516 Analysis Description: ASTM D516 Sulfate Water  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

METHOD BLANK: 3400850 Matrix: Water  
Associated Lab Samples: 10489964001, 10489964002, 10489964003, 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	4.7	2.5	0.67	09/06/19 14:43	P8

LABORATORY CONTROL SAMPLE & LCSD: 3400851 3400852

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Sulfate	mg/L	20	20.8	20.5	104	103	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3400853 3400854

Parameter	Units	10489485005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	285	500	500	786	852	100	113	80-120	8	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3400855 3400856

Parameter	Units	10489964003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	66.9	100	100	169	167	102	100	80-120	1	30	

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 631275 Analysis Method: SM 4500-Cl E  
QC Batch Method: SM 4500-Cl E Analysis Description: SM4500Cl-E Chloride  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3403769 Matrix: Water  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	2.0	0.82	09/10/19 14:21	

LABORATORY CONTROL SAMPLE: 3403770

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	49.6	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3403771 3403772

Parameter	Units	3403771		3403772		% Rec	MSD	% Rec	MSD	% Rec	Limits	RPD	Max RPD	Qual
		10489964005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result									
Chloride	mg/L	24.1	50	50	77.0	76.0	106	104	80-120	1	20			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3403773 3403774

Parameter	Units	3403773		3403774		% Rec	MSD	% Rec	MSD	% Rec	Limits	RPD	Max RPD	Qual
		10490041003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result									
Chloride	mg/L	32.6	50	50	81.8	83.5	98	102	80-120	2	20			

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### QUALITY CONTROL DATA

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

QC Batch: 631145 Analysis Method: SM 4500-P F  
QC Batch Method: SM 4500-P B Analysis Description: SM4500P-F, Total Phosphorus  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

METHOD BLANK: 3403309 Matrix: Water  
Associated Lab Samples: 10489964004, 10489964005, 10489964006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.10	0.043	09/11/19 12:51	

LABORATORY CONTROL SAMPLE: 3403310

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	1	1.1	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3403311 3403312

Parameter	Units	3403311		3403312		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10489431001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Phosphorus	mg/L	0.14	1	1	1.2	1.2	104	102	80-120	2	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3403313 3403314

Parameter	Units	3403313		3403314		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10489431002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Phosphorus	mg/L	ND	1	1	1.3	1.2	124	119	80-120	4	30 M1	

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## QUALIFIERS

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

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### 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.

TNTC - Too Numerous To Count

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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-K Pace Analytical Services - Kansas City

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

FS The sample was filtered in the laboratory prior to analysis.

H3 Sample was received or analysis requested beyond the recognized method holding time.

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

p8 Analyte was detected in the method blank. All associated samples had concentrations of at least ten times greater than the blank or were below the reporting limit.

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly + Nutrients  
Pace Project No.: 10489964

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10489964001	WSP-SS-1-082919	EPA 200.8	630900	EPA 200.8	631510
10489964002	WSP-SS-3E-082919	EPA 200.8	630900	EPA 200.8	631510
10489964003	WSP-SS-5-082919	EPA 200.8	630900	EPA 200.8	631510
10489964004	WSP-SS-1-090319	EPA 200.8	630900	EPA 200.8	631510
10489964005	WSP-SS-3E-090319	EPA 200.8	630900	EPA 200.8	631510
10489964006	WSP-SS-5-090319	EPA 200.8	630900	EPA 200.8	631510
10489964004	WSP-SS-1-090319	EPA 200.8	630829	EPA 200.8	631608
10489964005	WSP-SS-3E-090319	EPA 200.8	630829	EPA 200.8	631608
10489964006	WSP-SS-5-090319	EPA 200.8	630829	EPA 200.8	631608
10489964001	WSP-SS-1-082919	EPA 245.1	630965	EPA 245.1	631291
10489964002	WSP-SS-3E-082919	EPA 245.1	630965	EPA 245.1	631291
10489964003	WSP-SS-5-082919	EPA 245.1	630965	EPA 245.1	631291
10489964004	WSP-SS-1-090319	EPA 245.1	630965	EPA 245.1	631291
10489964005	WSP-SS-3E-090319	EPA 245.1	630965	EPA 245.1	631291
10489964006	WSP-SS-5-090319	EPA 245.1	630965	EPA 245.1	631291
10489964001	WSP-SS-1-082919	EPA 160.4	630335		
10489964002	WSP-SS-3E-082919	EPA 160.4	630335		
10489964003	WSP-SS-5-082919	EPA 160.4	630335		
10489964004	WSP-SS-1-090319	EPA 160.4	630335		
10489964005	WSP-SS-3E-090319	EPA 160.4	630335		
10489964006	WSP-SS-5-090319	EPA 160.4	630335		
10489964001	WSP-SS-1-082919	EPA 180.1	630239		
10489964002	WSP-SS-3E-082919	EPA 180.1	630239		
10489964003	WSP-SS-5-082919	EPA 180.1	630239		
10489964004	WSP-SS-1-090319	EPA 180.1	630239		
10489964005	WSP-SS-3E-090319	EPA 180.1	630239		
10489964006	WSP-SS-5-090319	EPA 180.1	630239		
10489964001	WSP-SS-1-082919	SM 2320B	630841		
10489964002	WSP-SS-3E-082919	SM 2320B	630841		
10489964003	WSP-SS-5-082919	SM 2320B	630841		
10489964004	WSP-SS-1-090319	SM 2320B	630841		
10489964005	WSP-SS-3E-090319	SM 2320B	630841		
10489964006	WSP-SS-5-090319	SM 2320B	630841		
10489964001	WSP-SS-1-082919	SM 2540D	630301		
10489964002	WSP-SS-3E-082919	SM 2540D	630301		
10489964003	WSP-SS-5-082919	SM 2540D	630301		
10489964004	WSP-SS-1-090319	SM 2540D	630507		
10489964005	WSP-SS-3E-090319	SM 2540D	630507		
10489964006	WSP-SS-5-090319	SM 2540D	630507		
10489964004	WSP-SS-1-090319	EPA 350.1	630749		
10489964005	WSP-SS-3E-090319	EPA 350.1	630749		
10489964006	WSP-SS-5-090319	EPA 350.1	630749		
10489964004	WSP-SS-1-090319	EPA 351.2	609154	EPA 351.2	609677
10489964005	WSP-SS-3E-090319	EPA 351.2	609154	EPA 351.2	609677

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WSP Weekly + Nutrients

Pace Project No.: 10489964

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10489964006	WSP-SS-5-090319	EPA 351.2	609154	EPA 351.2	609677
10489964004	WSP-SS-1-090319	SM 4500-NO3 H	630831		
10489964005	WSP-SS-3E-090319	SM 4500-NO3 H	630831		
10489964006	WSP-SS-5-090319	SM 4500-NO3 H	630831		
10489964004	WSP-SS-1-090319	SM 4500-P G	630181		
10489964005	WSP-SS-3E-090319	SM 4500-P G	630181		
10489964006	WSP-SS-5-090319	SM 4500-P G	630181		
10489964004	WSP-SS-1-090319	SM 5310C	609728		
10489964005	WSP-SS-3E-090319	SM 5310C	609728		
10489964006	WSP-SS-5-090319	SM 5310C	609728		
10489964001	WSP-SS-1-082919	ASTM D516	630610		
10489964002	WSP-SS-3E-082919	ASTM D516	630610		
10489964003	WSP-SS-5-082919	ASTM D516	630610		
10489964004	WSP-SS-1-090319	ASTM D516	630610		
10489964005	WSP-SS-3E-090319	ASTM D516	630610		
10489964006	WSP-SS-5-090319	ASTM D516	630610		
10489964004	WSP-SS-1-090319	SM 4500-CI E	631275		
10489964005	WSP-SS-3E-090319	SM 4500-CI E	631275		
10489964006	WSP-SS-5-090319	SM 4500-CI E	631275		
10489964004	WSP-SS-1-090319	SM 4500-P B	631145	SM 4500-P F	631254
10489964005	WSP-SS-3E-090319	SM 4500-P B	631145	SM 4500-P F	631254
10489964006	WSP-SS-5-090319	SM 4500-P B	631145	SM 4500-P F	631254

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**Sample Condition Upon Receipt – ESI Tech Specs**

Client Name:

Project #:

**BP**

**WO#: 10489964**

PM: JMA

Due Date: 09/17/19

CLIENT: BP-PIONEER

Courier:  Fed Ex  UPS  USPS  Client  
 Pace  Speedee  Commercial  See Exception

Tracking Number: 7475-9397-3899

Custody Seal on Cooler/Box Present?  Yes  No      Seals Intact?  Yes  No      Biological Tissue Frozen?  Yes  No  N/A

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_      Temp Blank?  Yes  No

Thermometer:  T1(0461)  T2(1336)  T3(0459)      Type of Ice:  Wet  Blue  None  Dry  Melted  
 T4(0254)  T5(0048)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: <u>5.1</u> °C	Average Corrected Temp (no temp blank only): _____ °C	See Exceptions <input type="checkbox"/>
Correction Factor: <u>TRUE</u>	Cooler Temp Corrected w/temp blank: <u>5.1</u> °C		

USDA Regulated Soil: (  N/A, water sample/Other: \_\_\_\_\_ )

Date/Initials of Person Examining Contents: ERZ 9/4/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input checked="" type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Sample Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Triple Volume Provided for MS/MSD (if more than 10 samples)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other _____	11. If no, write ID/ Date/Time on Container Below: <u>Pour off for TLN</u> See Exception <input type="checkbox"/>
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. Sample #  <input type="checkbox"/> NaOH <input checked="" type="checkbox"/> HNO <sub>3</sub> <input checked="" type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, <u>DOC</u> Oil and Grease, JMA 9/4/19 <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.      See Exception <input type="checkbox"/>
3 Trip Blanks Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased):
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: \_\_\_\_\_

Field Data Required?  Yes  No

Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: <u>1000</u>	Temp: <u>5.1</u>	Corrected Temp: <u>5.1</u>
Time: <u>1020</u>	put in cooler	
Time: _____	Temp: _____	Corrected Temp: _____

**Project Manager Review:**

Date: 09/04/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: AA (2)





**Sample Condition Upon Receipt**

WO#: 60313947



Client Name: Pace Minn.

Courier: FedEx  UPS  VIA  Clay  PEX  ECI  Pace  Xroads  Client  Other

Tracking #: 4638019912792 Pace Shipping Label Used? Yes  No

Custody Seal on Cooler/Box Present: Yes  No  Seals intact: Yes  No

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other

Thermometer Used: Q-301 Type of Ice: Wet  Blue  None

Cooler Temperature (°C): As-read 2.1 Corr. Factor 0.0 Corrected 2.1

Date and initials of person examining contents: 9/5/19 RL

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WFI</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservation date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>9/5/19</u> <u>RL</u>
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y  N  Field Data Required? Y  N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

ATTACHMENT 3  
DAILY LOG SHEETS



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature Rolo Neff Date 8-1-19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	8:35	8.01		16	2.90	.72	25.0		MWB-1									
SS-3E	8:55	8.53	3.66	20	3.57	4.28		4869.78	MWB-2									
SS-4	9:15					4.09	18.7		MWB-3									
SS-5	9:50	9.83	377	22	1.18	3.27		4835.27										
SS-5 FLOW	9:48					1.38	39.8											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	8:45	7.98	485	15.59	5.27	7.19	10	
SS-2								
SS-3E	9:05	9.00	384	20.00	2.16	7.76	7	
SS-5	10:00	10.03	370	20.74	2.15	7.61	7	ORP 118.4

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH PROBE CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TURB. CHAMBER CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH METER ADJUSTMENT

**SAMPLES TAKEN FOR LAB ANALYSIS**

<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input checked="" type="checkbox"/>	SS-3W, SS-4
<input checked="" type="checkbox"/>	IA-1, IA-2, IA-3
<input checked="" type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn

<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R

<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml FR

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CHECKED ACTUAL DATE/TIME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLER RUNNING
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLES TAKEN FOR ANALYSIS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PROGRAMMED NEXT RUN

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	9:45	1500	11.4
WEATHER			
Sunny 66°F			
Calibrations		GENERAL COMMENTS	
Type	Time/Date		
pH	810   8/1/19		
Cond	815		
Turb	820		
DO	825		

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature Steve Lubick Date 8-5-19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1150	8.53		19	2.36	0.70	23		W3C MWB-1	1030	8.26	357	14.23	1.86	8.29	7		
SS-3E	1124	8.52	369	21	3.20	4.21		4849.71	MWB-2									
SS-4	1120					4.05	16.5		MWB-3									
SS-5	1055	10.04	371	22	0.82	3.22		4835.22										
SS-5 FLOW	1052					1.27	37.1											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	1200	8.64	524	19.02	3.89	7.56	10	
SS-2	-	-						
SS-3E	1130	9.25	464	20.64	1.91	8.25	7	
SS-5	1100	10.27	373	20.49	1.80	7.21	7	ORP 116.2

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH PROBE CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TURB. CHAMBER CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH METER ADJUSTMENT

**SAMPLES TAKEN FOR LAB ANALYSIS**

<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	IA-1, IA-2, IA-3
<input type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn

<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R

<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml FR

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CHECKED ACTUAL DATE/TIME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLER RUNNING
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLES TAKEN FOR ANALYSIS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PROGRAMMED NEXT RUN

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	1055	1700	11.4
WEATHER			
Sunny Warm 76°F			
Calibrations		GENERAL COMMENTS	
Type	Time/Date		
pH	710 / 8/5/19		
Cond	715		
Turb	1005		
DO	725		

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature Steve Lulick Date 8/8/19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1045	8.33		18	2.30	0.68	21.6		MWB-1	855	7.78	300	13.64	2.32	8.85	7		
SS-3E	1012	8.54	373	21	3.30	4.11		4869.61	MWB-2	910	7.81	481	15.03	2.19	7.92	7		
SS-4	1017					4.07	17.1		MWB-3	920	8.20	488	16.27	1.83	7.55	6		
SS-5	950	10.17	384	22	0.74	3.25		4835.25										
SS-5 FLOW	948					1.32	38.3											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	1100	8.40	567	17.97	3.08	7.45	9	
SS-2								
SS-3E	1015	9.08	409	20.99	1.75	7.92	7	
SS-5	1000	10.24	395	21.29	1.15	7.33	6	ORP 103.6

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00'): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	pH PROBE CLEANED TURB. CHAMBER CLEANED  pH METER ADJUSTMENT
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

- SS-1 COMPOSITE
- SS-3E COMPOSITE
- SS-5 COMPOSITE
- SS-3W, SS-4
- IA-1, IA-2, IA-3
- WWC-C, EWC-C

- MWB-1
- MWB-2
- MWB-3
- 1 X 500 ml Pn
- 1 X 250 ml R

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	CHECKED ACTUAL DATE/TIME SAMPLER RUNNING SAMPLES TAKEN FOR ANALYSIS PROGRAMMED NEXT RUN
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

- 1 X 1 Qt R
- 1 X 500 ml Pn

- SS-1 COMPOSITE
- SS-5 COMPOSITE
- SS-3E COMPOSITE
- SS-3W, SS-4
- 1 X 500 ml Ps
- 1 X 250 ml FR

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	930	1600	11.5
WEATHER			
90° P Cloudy Calm			
Calibrations			GENERAL COMMENTS
Type	Time/Date		
pH	830 / 8-8-19		
Cond	840		
Turb	835		
DO	845		

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature

*Steve Lull*

Date

8/12/19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1110	8.06		14	8.50	0.86	39.6		MWB-1	945	8.04	322	10.54	6.54	8.72	12	WN	—
SS-3E	1036	8.79	372	19	3.91	4.20		4869.7	MWB-2									
SS-4	1034					4.19	27.5		MWB-3									
SS-5	1020	10.11	375	20	0.94	3.36		4835.36										
SS-5 FLOW	1015					1.48	42.4											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	1115	8.21	387	13.69	28.7	8.58	20	
SS-2	-	-						
SS-3E	1040	9.18	384	19.14	3.17	7.52	9	
SS-5	1025	10.24	357	18.76	1.22	6.74	7	ORP 118.4

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH PROBE CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TURB. CHAMBER CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH METER ADJUSTMENT

**SAMPLES TAKEN FOR LAB ANALYSIS**

<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input checked="" type="checkbox"/>	SS-3W, SS-4
<input checked="" type="checkbox"/>	IA-1, IA-2, IA-3
<input checked="" type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn

<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R

<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml FR

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CHECKED ACTUAL DATE/TIME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLER RUNNING
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLES TAKEN FOR ANALYSIS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PROGRAMMED NEXT RUN

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	958	2800	12.4
WEATHER			
64° Overcast			
Calibrations			GENERAL COMMENTS
Type	Time/Date		
pH	900 / 8-12-19		
Cond	905		
Turb	910		
DO	915		



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature Steve Dull Date 8/15/19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1045	8.18		15	2.42	0.70	23		MWB-1									
SS-3E	1020	9.01	373	19	3.53	4.17		4869.67	MWB-2									
SS-4	1015					4.15	23.9		MWB-3									
SS-5	940	10.07	379	20	3.46	3.26		4835.24										
SS-5 FLOW	935					1.41	40.5											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	1050	8:20	538	14.99	4.15	8.36	7	
SS-2								
SS-3E	1025	9:24	395	19.24	3.28	8.68	8	
SS-5	945	10.09	369	18.8	1.09	9.41	7	ORP 179.4

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00'): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1, Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	DESCRIPTION
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH PROBE CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TURB. CHAMBER CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH METER ADJUSTMENT

**SAMPLES TAKEN FOR LAB ANALYSIS**

<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input checked="" type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	IA-1, IA-2, IA-3
<input type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn

<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R

<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml F R

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	DESCRIPTION
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CHECKED ACTUAL DATE/TIME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLER RUNNING
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLES TAKEN FOR ANALYSIS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PROGRAMMED NEXT RUN

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	900	2500	12.4
WEATHER			
74° Partly Cloudy			
Calibrations			GENERAL COMMENTS
Type	Time/Date		
pH	830 / 8-15-19		
Cond	835 /		
Turb	840 /		
DO	845 /		

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature Steve Ludwig Date 8/19/19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1205	8.09		17	2.46	0.69	22.3		MWB-1	1090	8.20	332	13.84	2.04	8.79	7		
SS-3E	1140	9.08	372	19	2.07	4.05		4869.55	MWB-2									
SS-4	1135					4.03	14.0		MWB-3									
SS-5	1115	9.96	388	20	1.04	3.20		4835.20										
SS-5 FLOW	1111					1.37	39.5											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS	
SS-1	1215	8.45	550	17.4	3.07	8.06	8		
SS-2									
SS-3E	1145	9.29	408	19.25	2.51	8.51	7		
SS-5	1120	10.22	383	19.01	1.06	6.93	7	ORP	149.6

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH PROBE CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TURB. CHAMBER CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH METER ADJUSTMENT

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CHECKED ACTUAL DATE/TIME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLER RUNNING
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLES TAKEN FOR ANALYSIS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PROGRAMMED NEXT RUN

**SAMPLES TAKEN FOR LAB ANALYSIS**

<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	IA-1, IA-2, IA-3
<input type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn

<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R

<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml FR

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	1050	2000	11.5
WEATHER			
88° P. Cloudy Breezy			
Calibrations			GENERAL COMMENTS
Type	Time/Date		
pH	945 / 8-19-19		
Cond	950 /		
Turb	955 /		
DO	1000 /		

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature

*Handwritten Signature*

Date

8/22/19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1020	7.93		15	2.05	0.71	24		MWB-1									
SS-3E	1000	9.03	376	19	3.24	3.92		4869.42	MWB-2									
SS-4	955					4.67	17.1		MWB-3									
SS-5	930	10.20	390	21	0.94	3.25		4835.25										
SS-5 FLOW	924					1.27	37.1											

Field Parameters (Twice Weekly)								
STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	1030	8.06	546	15.34	2.94	8.13	7	
SS-2	-	-						
SS-3E	1005	9.30	390	19.34	2.54	8.44	7	
SS-5	935	10.24	396	19.62	0.86	7.63	7	ORP 128

Field Parameters (Quarterly)										
STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00'): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	pH PROBE CLEANED TURB. CHAMBER CLEANED  pH METER ADJUSTMENT
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

**SAMPLES TAKEN FOR LAB ANALYSIS**

<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	IA-1, IA-2, IA-3
<input type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn

<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R

<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml FR

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	CHECKED ACTUAL DATE/TIME SAMPLER RUNNING SAMPLES TAKEN FOR ANALYSIS PROGRAMMED NEXT RUN
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	900	1600	11.5
WEATHER			
55° Overcast Rain			
Calibrations			GENERAL COMMENTS
Type	Time/Date		
pH	845 / 8-22-19		
Cond	850 /		
Turb	855 /		
DO	900 /		

R=RAW F=FILTERED P=PRESERVED n=NITRIC s=SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature Steve Luber Date 8/26/19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1155	8.39		13	2.69	0.70	23		WSSC MWB-1	1020	8.20	306	11.14	3.62	8.87	7		
SS-3E	1130	9.44	378	18	3.78	3.87		4869.37	MWB-2									
SS-4	1126					4.06	16.3		MWB-3									
SS-5	1105	10.27	398	19	.92	3.23		4835.23										
SS-5 FLOW	1100					1.39	40											

Field Parameters (Twice Weekly)								SPECIFIC COMMENTS
STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	
SS-1	1200	8.48	545	13.36	4.70	9.15	8	
SS-2	-	-						
SS-3E	1135	9.59	399	18.21	3.92	8.69	7	
SS-5	1110	10.18	375	18.09	1.03	7.03	7	ORP 130.3

Field Parameters (Quarterly)										COMMENTS
STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00'): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

INSTRUMENT PANEL MAINTENANCE			
SS-1	SS-2	SS-3E	SS-5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pH PROBE CLEANED			
TURB. CHAMBER CLEANED			
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pH METER ADJUSTMENT			

SAMPLES TAKEN FOR LAB ANALYSIS	
<input checked="" type="checkbox"/>	SS-1 COMPOSITE
<input checked="" type="checkbox"/>	SS-3E COMPOSITE
<input checked="" type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	IA-1, IA-2, IA-3
<input type="checkbox"/>	WWC-C, EWC-C
<input type="checkbox"/>	1 X 1 Qt R
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	MWB-1
<input type="checkbox"/>	MWB-2
<input type="checkbox"/>	MWB-3
<input type="checkbox"/>	1 X 500 ml Pn
<input type="checkbox"/>	1 X 250 ml R
<input type="checkbox"/>	SS-1 COMPOSITE
<input type="checkbox"/>	SS-5 COMPOSITE
<input type="checkbox"/>	SS-3E COMPOSITE
<input type="checkbox"/>	SS-3W, SS-4
<input type="checkbox"/>	1 X 500 ml Ps
<input type="checkbox"/>	1 X 250 ml FR

ISCO COMPOSITE SAMPLERS		
SS-1	SS-3E	SS-5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

CHECKED ACTUAL DATE/TIME  
SAMPLER RUNNING  
SAMPLES TAKEN FOR ANALYSIS  
PROGRAMMED NEXT RUN

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	1040	1900	11.4
WEATHER			
70° Clear			
Calibrations		GENERAL COMMENTS	
Type	Time/Date		
pH	900 / 8-26-19		
Cond	905 /		
Turb	910 /		
DO	915 /		

R = RAW F = FILTERED P = PRESERVED n = NITRIC s = SULFURIC ACID



**WARM SPRINGS PONDS  
DAILY FIELD INSPECTION LOG**

Signature

*Robert Neff*

Date

8-29-19

STATION	INSTRUMENT PANEL - IRM								SAMPLED ONCE PER MONTH									
	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	AMETEK or STAFF GAGE	FLOW (cfs)	ELEV (ft)	STATION	SAMPLE TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO (ppm)	COLOR	STAFF GAUGE	FLOW RATE (cfs)
SS-1	1050	8.32		14	2.39	0.69	22.3		MWB-1									
SS-3E	1020	9.50	3.85	18	3.81	3.81		4869.3	MWB-2									
SS-4	1015					4.05	15.5		MWB-3									
SS-5	945	10.30	402	19	1.21	3.21		4835.2										
SS-5 FLOW	943					1.33	38.5											

**Field Parameters (Twice Weekly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	COMP TURB (NTU)	DO mg/L @ C	COLOR	SPECIFIC COMMENTS
SS-1	1100	8.37	582	13.41	2.79	8.54	7	
SS-2								
SS-3E	1030	9.41	406	18.05	5.27	8.74	10	
SS-5	955	10.19	397	18.03	1.15	8.66	7	ORP 183.5

**Field Parameters (Quarterly)**

STATION	ANALYSIS TIME	pH	Cond (mS/cm)	TEMP (C)	TURB (NTU)	DO mg/L @ C	COLOR	STAFF GAUGE	ELEV (ft)	COMMENTS
SS-3W										
SS-4										
POND 1										
WWC										
EWC										
SWC										
MWC										
IA-1										
IA-2										
IA-3										

REFERENCE ELEV (0.00'): POND 3 Ametek: 4865.50' - POND 2 Ametek 4832.00' / Staff Gage: 4830.00' - POND 1 Staff Gage: 4815.00'

**INSTRUMENT PANEL MAINTENANCE**

SS-1	SS-2	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH PROBE CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TURB. CHAMBER CLEANED
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pH METER ADJUSTMENT

**SAMPLES TAKEN FOR LAB ANALYSIS**

- SS-1 COMPOSITE
- SS-3E COMPOSITE
- SS-5 COMPOSITE
- SS-3W, SS-4
- IA-1, IA-2, IA-3
- WWC-C, EWC-C

- MWB-1
- MWB-2
- MWB-3
- 1 X 500 ml Pn
- 1 X 250 ml R

**ISCO COMPOSITE SAMPLERS**

SS-1	SS-3E	SS-5	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CHECKED ACTUAL DATE/TIME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLER RUNNING
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SAMPLES TAKEN FOR ANALYSIS
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PROGRAMMED NEXT RUN

- 1 X 1 Qt R
- 1 X 500 ml Pn

- SS-1 COMPOSITE
- SS-5 COMPOSITE
- SS-3E COMPOSITE
- SS-3W, SS-4
- 1 X 500 ml Ps
- 1 X 250 ml FR

PUMP BACK STATION	TIME	TOTAL PUMPBACK FLOW	DITCH HEIGHT
	9:20	0	10.2
WEATHER			
Partly Cloudy			
Calibrations		GENERAL COMMENTS	
Type	Time/Date		
pH	840   8/29/19		
Cond	845		
Turb	850		
DO	855		

R=RAW F=FILTERED P=PRESERVED n=NITRIC s=SULFURIC ACID





ATTACHMENT 4

MILL-WILLOW BYPASS

Raw Data included in Attachment 2 (data package, 10487020) above.

**MILL-WILLOW BYPASS MONITORING SUMMARY FORM**

**Name:** Atlantic Richfield Company  
**Address:** 317 Anaconda Road  
 Butte, MT 59701

**Facility:** Warm Springs Ponds  
**Location:** Anaconda, Montana

**Date Monitored:** 8/8/2019

**Monitoring Personnel:** Steve Lubick

PARAMETER	MWB-1	MWB-2	MWB-3
pH	7.8	7.8	8.2
Dissolved Oxygen (ppm)	8.9	7.9	7.6
Temperature ( C )	13.6	15.0	16.3
Color	7.0	7.0	6.0
Turbidity (ntu)	2.3	2.2	1.8
Flow (cfs)	NA		

PARAMETER	MWB-1	MWB-2	MWB-3
Hardness	104	203	200

PARAMETER	TOTAL RECOVERABLE CONCENTRATION (mg/l)		
	MWB-1	MWB-2	MWB-3
Arsenic	0.0250	0.0240	0.0250
Cadmium	0.00009	0.00005	0.00006
Copper	0.005	0.003	0.0032
Iron	0.180	0.130	0.140
Lead	0.00080	0.00040	0.00043
Mercury	<0.0000039	<0.0000039	<0.0000039
Selenium	<0.00014	<0.00014	<0.00014
Silver	<0.000077	<0.000077	<0.000077
Zinc	0.006	0.005	0.005

PARAMETER	WQB-7 AQUATIC STANDARDS (mg/l)		
	50 mg/l hardness	Acute Values 150 mg/l hardness	300 mg/l hardness
Arsenic	0.340	0.340	0.340
<b>Cadmium*</b>	0.001	0.003	0.007
<b>Copper*</b>	0.007	0.021	0.039
Iron	N/A	N/A	N/A
<b>Lead*</b>	0.034	0.137	0.331
Mercury	0.0017	0.0017	0.0017
Selenium	0.02	0.00	0.02
<b>Silver*</b>	0.001	0.008	0.027
<b>Zinc*</b>	0.067	0.169	0.304

\*Limits are adjusted according to measured hardness