2019 WATER QUALITY MONITORING BLUE MARSH RESERVOIR LEESPORT, PENNSYLVANIA



U.S. Army Corps of Engineers Philadelphia District Environmental Resources Branch

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1.0 INTRODUCTION

1.1 PURPOSE OF THE MONITORING PROGRAM

The U.S. Army Corps of Engineers (USACE) manages Blue Marsh Reservoir located in east-central Pennsylvania on the Tulpehocken Creek, which is within the Delaware River Basin. Blue Marsh Reservoir provides flood control and a dependable water supply to downstream communities west of Reading, PA. Additionally, the reservoir provides important habitat for fish, waterfowl, and other wildlife, and recreational opportunities through fishing, boating, and swimming. Due to the broad range of uses and demands that Blue Marsh Reservoir serves, the USACE monitors water quality, and other aspects related to ecological health, primarily to ensure public health safety. Results from water quality monitoring are compared to state and federal water quality standards and used to diagnose other problems that commonly affect reservoir health such as low dissolved oxygen, nutrient enrichment and toxic loadings. This report summarizes the results of water quality monitoring at Blue Marsh Reservoir in 2019.

1.2 DESCRIPTION OF BLUE MARSH RESERVOIR

Blue Marsh Reservoir was designed to provide flood control, a water supply, and enhanced water quality to downstream communities along Tulpehocken Creek. Located about six miles northwest of Reading, Pennsylvania near Route 183, the reservoir dams a drainage area of 175 square miles. The dam, completed in 1979, can impound up to 42.3 billion gallons of water. The primary surface water inputs into Blue Marsh Reservoir other than Tulpehocken Creek include Wolf, Northkill, and Little Northkill Creek from the northwest; Spring Creek from the west; and Licking Creek from the northeast. The reservoir is approximately 6 miles long and is 52 feet deep immediately above the dam near Lower Heidelberg during normal summer pool.

1.3 ELEMENTS OF THE MONITORING

The USACE, Philadelphia District, has been monitoring the water quality of Blue Marsh Reservoir since 1979. Over this time, the yearly monitoring designs have evolved to address new concerns such as health of public drinking water and contamination of reservoir bottom sediments. The 2019 monitoring program follows that in most recent years and includes the following major elements:

- Monthly water quality and bacteria monitoring of reservoir and upstream sources to evaluate compliance with Pennsylvania state water quality standards and to evaluate the health of the reservoir ecosystem starting on 25 June and ending on 10 September 2019;
- Monthly profile samples for temperature, dissolved oxygen, chlorophyll, pH, turbidity, and conductivity at all stations in the reservoir and watershed;
- Twice weekly coliform bacteria monitoring at three beach stations to ensure public health and safety at the Blue Marsh Reservoir swimming beach area; and
- Weekly and as needed algae samples at the Blue Marsh Reservoir swimming beach and other locations in the reservoir where algal blooms were observed from July through September.

2.0 METHODS

2.1 PHYSICAL STRATIFICATION MONITORING

Physical stratification monitoring of the water column was conducted monthly at Blue Marsh Reservoir from June through September 2019 (Table 2-1). Stratification parameters included temperature, dissolved oxygen (DO), pH, Chlorophyll a, turbidity, and conductivity. Monitoring was conducted at nine fixed stations located throughout the reservoir watershed (Fig. 2-1). Six stations were located within the reservoir body (BM-2, BM-6, BM-7, BM-8, BM-9, and BM-10) for which water quality was measured from surface to bottom at 5-ft depth intervals. Three stations (BM-1S, BM-5S, and BM-11S) were monitored for surface water quality only. All water quality parameters were measured with a calibrated YSI 6600 V2-4 water quality probe. For this report, all of the stratification monitoring results, when applicable, were summarized and compared to water quality standards established by the Pennsylvania Department of Environmental Protection (PADEP – Chapter 93 Water Quality Standards).

2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times at Blue Marsh Reservoir during the 2019 sampling season (Table 2-1). Water samples were collected at nine fixed stations in the reservoir watershed (Fig. 2-1). Surface water samples were collected at stations downstream of the reservoir (BM-1S), and upstream of the reservoir on Tulpehocken Creek (BM-5S) and Northkill Creek (BM-11S). Surface, middle, and bottom water samples were collected at the six stations within the reservoir (BM-2, BM-6, BM-7, BM-8, BM-9, and BM-10). Surface water samples were collected by opening sample containers approximately one foot below the surface of the water. Middle and bottom water samples were collected with a Van Dorn design horizontal water bottle sampler. Laboratory water sample analysis was conducted by M.J. Reider Associates, Inc Environmental Testing Laboratory located in Reading, Pennsylvania (U.S. EPA/PA DEP #06-00003) and SGS North America Inc. laboratory located in Dayton, New Jersey (DoD ELAP (ANAB L2248)).

Water samples from all depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen, total phosphorus, soluble phosphorus, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, and total organic carbon. Table 2-2 summarizes the laboratory methods detection limits, state water quality standards, and sample holding times for each water quality parameter monitored.

Table 2-1.	Water quality monitoring schedule of Blue Marsh Reservoir during 2019. Monitoring was conducted at 9 fixed stations located throughout the reservoir watershed.												
Physical Date of SamplePhysical StratificationWater Column 													
25 June	Х	Х	Х	Х									
16 July	Х	Х	Х	Х	Х								
30 July	Х	Х	х	х	х								
20 August	Х	Х	Х	Х	Х								
10 September	х	x	Х	Х									
(1) Surface wa	iter bacteria sample	es only	nal blaama within	the lake and owir	nming booch								

(2) Algae samples were collected from observed algal blooms within the lake and swimming beach areas as needed.

2.3 TROPHIC STATE DETERMINATION

The trophic state of Blue Marsh Reservoir was determined by methods outlined by Carlson (1977) and EPA (1983). In general, these methods calculated trophic state indices (TSIs) independently for measures of total phosphorus, chlorophyll *a*, and secchi disk depth. Surface water measures of total phosphorus and chlorophyll a from chemistry monitoring were averaged in the calculation of monthly TSIs (Table 2-1). Secchi disk depth was measured at station BM-6.

2.4 RESERVOIR COLIFORM BACTERIA MONITORING

Monitoring for coliform bacteria contaminants within the watershed was conducted monthly at Blue Marsh Reservoir. Water samples were analyzed for total and fecal coliforms. Surface water samples were tested at all stations. Table 2-3 presents the test methods, detection limits, PADEP water quality standards, and sample holding times for the bacteria parameters monitored at Blue Marsh Reservoir in 2019. The bacteria analytical method was based on a membrane filtration technique. All of the samples were analyzed within their respective maximum allowable hold times.

Table 2-2.Water quality test methods, detection limits, state regulatory criteria, and sample
holding times for water quality parameters monitored at Blue Marsh Reservoir in
2019

Parameter	(2) Method	Laboratory Limit of Reporting	PADEP Surface Water Quality Criteria	Allowable Hold Times (Days)
Total Alkalinity	SM20 2320 B-11	10.0 mg/L	Min. 20 mg/L CaCO₃	14
Biochemical Oxygen Demand (BOD)	SM5210 B-11	5.0 mg/L	None	2
Total Phosphorus	SM4500-P E	0.01 mg/L	None	28
Diss./Ortho-Phosphate	NA	NA	None	28
Soluble Phosphorus	SM4500-P E	0.007 mg/L	None	28
Total Organic Carbon (TOC)	SM5310 B-11	1.0 mg/L	None	28
Total Inorganic Carbon (TIC) *	NA	NA	None	28
Total Carbon (TOC + TIC) *	NA	NA	None	28
(1) Chlorophyll <i>a</i>	YSI Probe		None	In Situ
Total Kjeldahl Nitrogen	EPA 351.2/ LACHAT	0.20 mg/L	None	28
Ammonia	SM4500 H-11LACHAT	0.20 mg/L	Temp. and pH dependent	28
Nitrate	EPA 353.2/ SM4500NO2B	0.11 mg/L	Maximum	28
Nitrite	SM4500NO2 B-11	0.01 mg/L	(nitrate + nitrite)	28
Total Dissolved Solids	SM2540 C-11	10.0 mg/L	Maximum 750 mg/L	7
Total Suspended Solids	SM2540 D-11	4.0 mg/L	None	7

(1) Chlorophyll a samples were recorded using a YSI 6600 with a chlorophyll sensor.

(2) Laboratory Methods Reference:

EPA- "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SM- "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012.

SW846- "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", 3rd. Edition, November 1986 and updates.

* Total Inorganic Carbon and Total Carbon were not sampled for in 2019



Figure 2-1. Blue Marsh Reservoir and the location of the 9 fixed stations monitored for water quality during 2019

Table 2 3. Water of	Table 2 3. Water quality test methods, detection limits, PADEP standards, and sample													
holding times for	holding times for bacteria parameters monitored at Blue Marsh Reservoir in 2019.													
Parameter Total Coliform Fecal Coliform E-coli														
Test method	SM 9223 B	SM 9222 D	SM 9222 D											
Limit of	1 clns/100-mls	1 clns/100-mls	1 clns/100-mls											
Quantification														
EPA/PADEP standard	None	Geometric mean	Geometric mean 126											
	None	single sample reading	single sample 235											
		of < $1000 \text{ clns}/100 \text{-mis}$	organisms/ 100 ml											
Maximum allowable holding time	30 hours	30 hours	30 hours											
Achieved holding	< 30 hours	< 30 hours < 30 hours												
time														

The PADEP monthly coliform bacteria standard is defined as a maximum geometric mean of 200 colonies/100-ml based on 5 consecutive samples collected on different days. In addition, a single sample standard of 1000 colonies/100-ml can also be used. These standards have been revised to e-coli standards which are most applicable at bathing beaches. The Philadelphia District maintains a bathing beach at Blue Marsh Reservoir and conducts separate bacteria sampling of that area. Given logistical sampling limitations (all monthly reservoir sampling conducted on one day) and that water contact recreation is permitted within the reservoir, the reservoir coliform data collected by the Corps is compared to the single sample standard as a method of collecting and evaluating background coliform data on the main body of the reservoir. Although our sampling design does not fully meet the Environmental Protection Agency and PA Department of Environmental Protection guidelines for bathing beach monitoring, we feel that this interpretation of the coliform data meets the intent of the Environmental Protection Agency and PA Department of Environmental Protection water quality standards for evaluating Blue Marsh Reservoir bacteria levels within the main reservoir body.

2.5 SWIMMING BEACH MONITORING

Bacteria monitoring was conducted on a twice weekly routine near the public swimming beach at the Dry Brooks day use area (Table 2-4) of Blue Marsh Reservoir to gauge compliance with Pennsylvania Department of Health and Unites States Environmental Protection Agency bathing beach water quality standards. These standards are in place to ensure public safety for this water contact recreation. Three stations (SB-1, SB-2, and SB-3) were monitored in the swimming beach area for total coliform and Escherichia coli (Figure 2-2). The coliform bacteria samples were collected and analyzed by the same methods used for monthly coliform bacteria sampling. The bacteria monitoring for Blue Marsh Swimming Beach follows a multi-step program of conditional monitoring and increased sampling frequency. Each step or "condition" of monitoring responds to incremental increases of coliform contamination, and reflected the risk to public health at the swimming beach area and the appropriate response for public safety to include beach closure.

Table 2-3.	Sampling dates for coliform bacteria monitoring at the Blue Marsh Reservoir swimming beach during 2019											
Week 1	13 and 16 May	Week 9	08 and 11 July									
Week 2	20, 22, 23 and 24 May	Week 10	15 and 18 July									
Week 3	28, 30 and 31 May	Week 11	22 and 25 July									
Week 4	03 and 06 June	Week 12	29 July and 01 and 02 August									
Week 5	10 and 13 June	Week 13	05 and 08 August									
Week 6	17, 20 and 21 June	Week 14	12 and 15 August									
Week 7	24, 25, 26 and 27 June	Week 15	19 and 22 August									
Week 8	01 and 03 July	Week 16	26 and 29 August									



Figure 2-2. Swimming beach bacteriological monitoring stations at Blue Marsh Reservoir in 2019

2.6 LAKE ALGAE MONITORING

Algal blooms have been an historic issue at Blue Marsh Reservoir as the watershed is approximately 75% agriculture based usage. In 2019, heavy rains and warm air temperatures early in the season created conditions within Blue Marsh Reservoir that favored the development of algae blooms. High density blooms were observed in many locations throughout the reservoir. In cooperation with the Pennsylvania Department of Environmental Protection and Department of Health, an immediate response and monitoring plan was developed. Stakeholders and the public were notified of the risks of potential harmful toxic algae and the risks associated with contact recreation within the lake.

Sampling kits provided by the Pennsylvania Department of Environmental Protection were used to collect samples from the swimming beach area of Blue Marsh Reservoir and from high density algal blooms throughout the lake when they were observed. This sampling was conducted from July through September of 2019. Samples were collected each week and provided to the Pennsylvania Department of Environmental Protection for processing and analysis utilizing approved collection and analysis methodologies. Algae sample analysis included species identification, population density estimates and toxin production levels. Sample analysis was conducted at the Pennsylvania Department of Environmental Protection Bureau of Laboratories in Harrisburg, Pennsylvania and by Green Water Laboratories in Florida. No federal or Pennsylvania recreational waters and human contact criteria for cyanobacteria have been established to date. Lab analysis results were therefore compared to the Environmental Protection Agencies *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin EPA 822-F-19-00.*

3.0 RESULTS AND DISCUSSION

3.1 STRATIFICATION MONITORING

The following sections summarize the results of water quality monitoring for physical and chemical parameters: temperature, dissolved oxygen, and pH. Seasonal and spatial patterns of surface water quality measured throughout the reservoir watershed, and seasonal and depth related patterns of the stratified water column based on measures from the deepest portion of the reservoir (station BM-6 or the "Tower") are described. It is appropriate to focus discussion on tributary source waters influencing reservoir water quality and lake stratification at station BM-6 as water quality problems related to depth are generally most severe in deep water habitats. Corps personnel collected the physical/chemical water quality data discussed herein over the monitoring period from June through September 2019, the most biologically productive time of the year for the reservoir. All of the parameters were measured with a calibrated YSI 6600 V2-4 water quality probe and are presented in Appendix A.

3.1.1 Temperature

Temperature is the primary influencing factor on water density, affects the solubility of many chemical compounds, and can therefore influence the effect of pollutants on aquatic life. Increased temperatures elevate the metabolic oxygen demand, in conjunction with reduced oxygen solubility, and can impact many species. Vertical stratification patterns naturally occurring in lakes affect the distribution of dissolved and suspended compounds.

Surface water temperature seasonal patterns upstream of the reservoir at stations BM-5S and BM-11S closely resembled each other throughout the sampling season (Fig. 3-1). Maximum surface water temperatures at station BM-5S was 21.25°C in August and 22.99°C at station BM-11S in August. The maximum surface water temperature downstream of the reservoir at station BM-1S was 22.35°C in August with a minimum of 19.48°C in late June. Downstream temperatures are influenced through selective withdrawals at the Blue Marsh Dam. Annually the Corps performs selective withdrawal releases in an attempt to maintain temperatures downstream in the Tulpehocken Creek of less than 20°C in support of the trout fishery. The ability to meet this objective is dependent on meteorological conditions and other physical and operational limitations. The temperature objective was exceeded in 2019 from July through September.

Blue Marsh Reservoir was stratified with respect to temperature during 2019. The stratification pattern was most apparent at station BM-6 or the "Tower" station located in the deepest part of the reservoir (Fig. 3-2). The presence of temperature stratification was evident in June sampling with temperatures from surface (25.60°C) to bottom (17.63°C) differing by 7.97°C. The deeper and cooler temperature (<20°C) water was available for selective withdrawal to attempt to meet downstream temperature objectives until early July. Stratification peaked in late July and a noticeable shift to deeper warmer water temperatures was evident throughout the

summer. An erosion of the epilimnion was seen in September as the lake began the process of de-stratifying.

3.1.2 Dissolved Oxygen

Dissolved oxygen (DO) is the measure of the amount of DO in water. Typically, DO concentrations in surface waters are less than 10 mg/L. Dissolved Oxygen concentrations are subject to diurnal and seasonal fluctuations that can be influenced, in part, by temperature, river discharge, and photosynthetic activity. Dissolved Oxygen is essential to the respiratory metabolism of most aquatic organisms. It affects the availability and solubility of nutrients and subsequently the productivity of aquatic ecosystems. Low levels of oxygen can facilitate the release of nutrients from bottom sediments.

Surface waters upstream of the reservoir at tributary stations BM-5S and BM-11S had similar seasonal DO patterns throughout the sampling season (Fig. 3-3). The maximum DO concentration of 9.68 mg/L was recorded in June at station BM-11S with a minimum recorded value of 7.51 mg/L in August at Station BM-11S. The maximum surface water DO concentration downstream of the dam at station BM-1S was 9.78 mg/L recorded in June with a minimum of 6.79 mg/L recorded in September.

Seasonal stratification and chemical and biological processes at Blue Marsh Reservoir dramatically influenced the distribution of DO in the water column during 2019 (Fig. 3-4). Stratification was apparent from late June through September at station BM-6, as DO concentrations decreased with depth with the exception of early July. Historically, the lower oxygen levels deeper in the lake progressively move up the water column to within approximately 15-feet of the surface in mid- to late August. In most years the surface waters remain oxygenated as a result of surface algal productivity and surface water wind mixing. In 2019, the DO pattern in the deeper water column was as pronounced as previous years. In late July sampling, only the top 0-5 feet of the reservoir was oxygenated at Station BM-6. The low DO conditions can be detrimental to water quality and aquatic life. Dissolved oxygen concentrations in the upper water column of Blue Marsh Reservoir were not in compliance with PADEP water quality standards during the 2019 sampling season during the July and August sampling. The Pennsylvania water quality standard for DO is a minimum concentration of 5 mg/L within the epilimnion of stratified lakes.

The health of aquatic ecosystems can be impaired by low DO concentrations in the water column. Hypoxia, or conditions of DO concentrations less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. In all months sampled during 2019, the water column of Blue Marsh was affected by hypoxia (Fig. 3-4). Hypoxic water occupied most of the water column in late July through August. Hypoxia in the lower water column is a symptom of eutrophication. Nutrients in the water column feed explosive algal growth at the surface photic zone. Dead and decaying algae sink to lower levels of the water column and during the process of decay; oxygen is removed from the water.



Figure 3-1. Tributary and downstream surface water temperatures (°C) measured at Blue Marsh Reservoir in 2019. Station BM-1S is located downstream of the reservoir. See Appendix A for summary of plotted values. The cold-water species preference temperature of 20°C is shown as a red line reference.



Figure 3-2. Temperature stratification and release portal elevations at station BM-6 of Blue Marsh Reservoir in 2019. See Appendix A for summary of plotted values.

3.1.3 pH

The hydrogen –ion concentration in water is measured as pH. The pH scale is 0-14. A pH below 7 is considered acidic and a pH above 7 is basic. High pH values tend to facilitate solubilization of ammonia, salts, and heavy metals. Low pH levels tend to increase carbonic acid and carbon dioxide concentrations. Lethal effects of pH on aquatic life typically occur below pH 4.5 and above pH 9.5.

Measures of pH in the surface waters at Blue Marsh Reservoirs upstream and downstream sampling stations followed a similar pattern during 2019 (Fig. 3-5). In the months sampled, no pH measures violated the PADEP water quality standard maximum and minimum pH level of 9.0 and 6.0, respectably. For the entire monitoring period and at all surface water stream stations, pH ranged from 7.53 to 8.22.

The pH profile in the water column of Blue Marsh Reservoir was consistent with a stratified lake during 2019 (Fig. 3-6). Throughout the monitoring period the upper 0-10 feet of the water column had consistently higher pH measures than the deeper waters. During the sampling season, pH at the surface to a depth of approximately 10 feet ranged between 7.60 and 9.53. In contrast, measures of pH in the lower water column (>10 feet deep) were consistently lower during the monitoring period and ranged between 7.56 and 7.33. The higher pH in surface waters (euphotic zone) of the reservoir is a result of excessive algal blooms. As a function of increased productivity during photosynthesis, algae remove CO₂ from the water column. Dissolved CO₂ is slightly acidic; its reduction in the water column manifests an increase in pH. In 2019, this increased surface water productivity resulted in water samples at Blue Marsh Reservoir station BM-6 being slightly higher in pH than deeper waters. Lake surface waters violated the PADEP water quality standard maximum pH level of 9.0 during June through July.



Figure 3-3. Tributary and outflow surface water dissolved oxygen concentrations measured at Blue Marsh Reservoir in 2019. (The PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.



Figure 3-4. Release portal elevations and dissolved oxygen stratification at station BM-6 of Blue Marsh Reservoir in 2019. (PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.



Figure 3-5. Tributary and outflow surface water pH measured at Blue Marsh Reservoir in 2019. (The PADEP water quality standard for pH is a range from 6 to 9.) See Appendix A for summary of plotted values.



Figure 3-6. Release portal elevations and stratification of pH at station BM-6 of Blue Marsh Reservoir in 2019. (The PADEP water quality standard for pH is a range from 6 to 9.) See Appendix A for summary of plotted values.

3.2 WATER COLUMN CHEMISTRY MONITORING

The following sections describe temporal, spatial, and depth patterns for the water quality parameters measured in surface, middle, and bottom waters of Blue Marsh Reservoir during 2019 (Table 3-2).

3.2.1 Ammonia

Total Ammonia (NH3) is a measure of the most reduced inorganic form of nitrogen in water and includes dissolved ammonia and the ammonium ion. Ammonia is a small component of the nitrogen cycle but as an essential plant nutrient, it contributes to the trophic status of a water body. Excess ammonia contributes to eutrophication of water bodies. This can result in excessive algal growths and impacts on recreation and drinking water supplies. In high concentrations, ammonia is toxic to aquatic life.

EPA guidance for ambient water quality criteria for ammonia in freshwater are dependent on temperature and pH (EPA, 2013). Table 3.1 shows the acute and chronic criteria that are expected to protect freshwater aquatic life. The EPA (2013) also provides tables with the temperature and pH-dependent values of the acute criterion magnitude and the temperature and pH-dependent values of the chronic criterion magnitude. These tables provide an expected ammonia criteria over a wide range of pH and temperature values and can be utilized to evaluate field collected samples.

Ammonia concentrations were low in Blue Marsh Reservoir during 2019 (Table 3-2). Concentrations measured for 30 samples did exceed the laboratory minimum reporting limit of 0.20 mg/L. These samples were collected primarily at bottom water sampling locations within the reservoir body. The maximum single recorded sample of 1.4 mg/L was collected from station BM-6B on 20 August. Concentrations of ammonia measured at Blue Marsh Reservoir were in compliance with the PADEP and EPA water quality standards during 2019.

Table 3.1 Environmental Protection Agency Ammonia Freshwater Criteria 2013										
2013 Final Aquatic Life Criteria for Ammonia (Magnitude, Frequency, and Duration)										
(mg TAN/L) pH 7.0, T=20°C										
Acute (1-hour average)	17									
Chronic (30-day rolling average)	1.9*									
*Not to exceed 2.5 times the CCC as a 4-day average within the 30-days, i.e. 4.8 mg TAN/L at pH 7 and										
20°C, more than once in three years on average.										

Criteria frequency: Not to be exceeded more than once in three years on average.

Table 3-2	Table 3-2. Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2019												
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	ТОС	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	110	<33	0.03	< 0.20	0.04	3.9	NS	216	0.80	2.3	0.08	11.0
	7/16/2019	135	<10	0.07	< 0.20	0.04	4.0	NS	221	0.65	2.9	0.08	5.7
	7/30/2019	156	<5.0	0.04	0.21	0.10	4.0	NS	223	0.69	3.3	0.05	<4.0
	8/20/2019	144	8.5	0.02	0.27	0.24	3.6	NS	232	0.71	2.6	0.04	<4.0
DM 015	9/10/2019	150	5.1	0.02	0.32	0.25	3.3	NS	231	0.66	2.2	0.04	<4.0
DIVI-015													
	6/25/2019	80.5	<3.3	0.04	0.20	0.05	2.4	NS	165	2.8	3.5	0.08	19.0
	7/16/2019	74	<14	0.04	< 0.20	0.03	1.9	NS	156	1.4	21.8	0.04	12.5
	7/30/2019	75	<5.0	0.01	< 0.20	0.03	1.9	NS	132	1.5	4.5	0.02	10.9
	8/20/2019	85.5	3.7	0.02	< 0.20	0.11	2.1	NS	161	1.1	4.0	0.02	4.7
DM 028	9/10/2019	100	1.1	0.01	< 0.20	0.12	2.2	NS	184	0.5	2.7	0.02	4.9
DIVI-025													

Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2019													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	ТОС	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	90	<33	0.11	0.24	0.03	4.0	NS	165	0.69	2.4	0.12	7.8
	7/16/2019	140	<10	0.10	0.27	0.04	4.0	NS	209	0.69	2.6	0.12	12
	7/30/2019	165	<5.0	0.02	0.30	0.06	4.1	NS	235	0.84	2.7	0.02	<4.0
	8/20/2019	131	6.1	< 0.007	< 0.20	0.26	3.1	NS	206	0.55	2.3	0.02	<4.0
DM 02M	9/10/2019	105	2.6	0.01	< 0.20	0.11	2.6	NS	183	0.48	2.5	0.03	4.6
DIVI-02IVI													
	6/25/2019	114	<33	0.06	< 0.20	0.04	5.3	NS	226	0.48	1.7	0.10	21.9
	7/16/2019	160	<10	0.08	0.52	0.04	4.2	NS	233	3.10	2.0	3.01	224
	7/30/2019	165	<5.0	0.05	0.33	0.10	4.1	NS	232	0.91	2.6	0.05	4.1
	8/20/2019	164	8.2	0.03	0.46	0.19	3.8	NS	236	0.84	2.6	0.81	72.4
DM 02D	9/10/2019	150	4.3	0.05	0.52	0.05	3.4	NS	236	0.98	2.8	0.07	12.2
DIVI-02D													

Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2019													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	179	<33	0.07	< 0.20	0.02	6.6	NS	304	0.35	1.8	0.18	40.3
	7/16/2019	243	<10	0.05	< 0.20	< 0.01	7.4	NS	346	< 0.20	1.0	0.07	6.6
	7/30/2019	240	<5.0	0.04	< 0.20	0.01	7.6	NS	315	0.34	1.7	0.04	<4.0
	8/20/2019	203	2.7	0.06	< 0.20	0.02	7.1	NS	312	0.47	2.3	0.06	4.6
DM 050	9/10/2019	210	3.2	0.05	< 0.20	< 0.01	7.9	NS	332	0.94	2.1	0.05	46
BM-035													
	6/25/2019	75	<33	0.09	< 0.20	0.08	2.3	NS	164	1.40	11.1	0.32	21.4
	7/16/2019	70	<10	0.03	< 0.20	< 0.01	2.0	NS	149	1.20	3.1	0.03	11.8
	7/30/2019	111	<5.0	0.02	< 0.20	0.03	1.8	NS	126	0.69	3.7	0.02	10
	8/20/2019	86	4.6	0.01	< 0.20	0.13	2.1	NS	146	0.70	3.9	< 0.01	4.9
DM 065	9/10/2019	105	2.2	0.01	< 0.20	0.10	2.3	NS	194	0.38	3.5	0.02	4.8
DIVI-005													

Table 3-2 c	ontinued. Summa	ry of surf	ace, mido	lle, and bo	ttom wat	er quality	monitori	ng data fo	r Blue Ma	rsh Reser	voir in 2	019	
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	95	<33	0.10	0.21	0.04	3.6	NS	`174	0.47	2.5	0.11	9.3
	7/16/2019	118	<10	0.05	0.25	0.04	3.5	NS	208	0.59	2.6	0.07	5.6
	7/30/2019	135	<5.0	0.01	< 0.20	0.32	3.9	NS	205	0.55	2.4	< 0.01	<4.0
	8/20/2019	135	8.2	0.02	< 0.20	0.27	3.4	NS	208	0.58	2.3	0.02	<4.0
DMOCM	9/10/2019	110	1.4	< 0.007	< 0.20	0.13	2.4	NS	188	0.48	3.3	< 0.01	4.0
BIM-00M													
	6/25/2019	118	<33	0.07	< 0.20	0.05	4.2	NS	220	0.70	2.2	0.09	9.4
	7/16/2019	166	<10	0.08	0.60	0.10	3.9	NS	255	0.99	2.2	0.09	38.5
	7/30/2019	196	<5.0	0.06	1.2	0.12	2.9	NS	241	1.7	2.4	0.08	8.2
	8/20/2019	177	13.0	0.04	1.4	0.15	3.0	NS	252	1.8	2.9	0.11	9.3
DM 06D	9/10/2019	130	6.5	< 0.007	0.26	0.21	3.3	NS	254	0.37	2.5	< 0.01	<4.0
DIVI-00D													

Table 3-2 c	ontinued. Summ	ary of surf	face, mid	dle, and b	ottom wat	er quality	monitori	ng data fo	r Blue Ma	rsh Reser	voir in 20	19	
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	92	<33	0.06	< 0.20	0.06	2.2	NS	171	3.7	4.2	0.07	25.1
Station BM-07S BM-07M	7/16/2019	80	<20	0.02	< 0.20	0.04	1.9	NS	159	1.7	3.5	0.03	16.2
	7/30/2019	62	5.3	0.02	< 0.20	0.02	1.9	NS	134	1.1	4.0	0.07	9.8
	8/20/2019	88	4.9	0.01	< 0.20	0.09	2.1	NS	164	0.69	3.5	0.02	5.9
DM 079	9/10/2019	115	1.0	< 0.007	< 0.20	0.13	2.3	NS	193	< 0.20	3.0	< 0.01	5.0
BM-0/5													
	6/25/2019	90	<33	0.05	< 0.20	0.02	4.3	NS	174	0.72	2.4	0.10	16
Table 3-2 col Station BM-07S BM-07M	7/16/2019	130	<10	0.10	0.24	0.02	3.7	NS	206	0.68	2.4	0.12	8.5
	7/30/2019	115	<5.0	0.02	0.21	0.03	3.4	NS	175	0.69	2.6	0.03	<4.0
	8/20/2019	113	6.0	0.02	< 0.20	0.31	3.1	NS	198	0.49	2.5	0.02	<4.0
DM 07M	9/10/2019	115	2.5	0.01	< 0.20	0.12	2.3	NS	175	0.49	3.0	0.01	5.0
DIVI-0/IVI													

Table 3-2 c	ontinued. Summa	ary of surf	face, mid	dle, and bo	ottom wate	er quality i	nonitorir	ng data for	Blue Mar	sh Reser	voir in 20	019	
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Station BM-07B BM-08S	6/25/2019	110	<33	0.07	< 0.20	0.03	4.4	NS	186	0.65	2.1	0.08	9.9
	7/16/2019	208	<10	0.08	0.34	0.02	5.6	NS	246	1.1	1.6	0.40	94.6
	7/30/2019	153	<5.0	0.03	0.34	0.04	4.5	NS	224	0.34	2.3	0.03	8.7
	8/20/2019	178	7.8	0.04	0.67	0.16	3.4	NS	252	1.1	2.6	0.09	48.3
	9/10/2019	129	2.3	0.002	0.22	0.09	3.5	NS	242	0.71	2.6	0.05	20
BM-0/B													
	6/25/2019	79	<33	0.04	< 0.20	0.04	2.2	NS	140	1.6	3.2	0.06	13.1
	7/16/2019	73	<20	0.03	< 0.20	0.03	1.7	NS	151	0.82	3.1	0.03	13.5
	7/30/2019	70	<5.0	0.02	< 0.20	0.03	1.8	NS	117	0.72	4.3	0.02	8.9
	8/20/2019	89.5	4.9	0.02	< 0.20	0.07	1.9	NS	155	0.67	4.1	0.04	5.2
DM 085	9/10/2019	145	1.8	0.008	< 0.20	0.10	2.2	NS	186	< 0.20	3.2	< 0.01	5.9
DIVI-085													

Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2019 Station ALK BOD5 DISS-P NH3 NO2 NO3 PO4 TDS TKN TOC TP TSS Station Date mg/L mg/L													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	80	<33	0.02	< 0.20	0.02	3.3	NS	173	0.48	1.9	0.03	8.2
	7/16/2019	93	<10	0.03	< 0.20	0.02	2.8	NS	168	0.65	2.5	0.03	7.9
	7/30/2019	84	<5.0	0.02	< 0.20	0.03	2.2	NS	130	0.98	3.3	0.04	11.6
	8/20/2019	109	3.0	0.01	0.22	0.05	2.5	NS	176	0.77	3.0	0.04	7.0
	9/10/2019	110	1.6	< 0.007	< 0.20	0.07	2.3	NS	167	< 0.20	3.2	0.02	4.3
DIVI-00IVI													
Station BM-08M BM-08B													
	6/25/2019	81	<33	0.03	< 0.20	0.02	3.6	NS	172	0.42	1.6	0.04	10.2
	7/16/2019	130	<10	0.06	0.42	0.02	2.9	NS	206	1.2	2.1	0.11	125
	7/30/2019	115	<5.0	0.04	1.0	0.05	2.5	NS	219	3.6	5.0	0.68	138
	8/20/2019	101	4.4	0.02	0.48	0.05	2.1	NS	182	0.75	2.8	0.13	27.8
DM 09D	9/10/2019	121	2.1	0.01	< 0.20	0.06	2.6	NS	189	0.97	3.0	0.18	57.6
DIVI-00D													

Table 3-2 c	ontinued. Summa	ary of surf	ace, mide	dle, and bo	ttom wate	r quality r	nonitorir	ng data for	Blue Mar	sh Reser	voir in 20	019	
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	85	<100	0.10	< 0.20	0.06	2.2	NS	174	5.5	4.4	0.12	30.8
	7/16/2019	80	<20	0.03	< 0.20	0.03	1.8	NS	148	0.99	3.4	0.04	14.9
	7/30/2019	77	6.1	0.02	< 0.20	0.03	1.9	NS	139	1.1	4.3	0.02	7.0
	8/20/2019	85	5.9	0.02	< 0.20	0.07	2.0	NS	141	0.86	3.7	0.04	7.7
	9/10/2019	120	2.3	< 0.007	< 0.20	0.11	2.2	NS	186	0.46	3.2	< 0.01	5.5
BIM-095													
	6/25/2019	100	<33	0.06	< 0.20	< 0.01	4.1	NS	176	0.40	2.4	0.07	8.2
	7/16/2019	125	<20	0.04	< 0.20	0.02	3.7	NS	209	0.81	2.3	0.07	8.9
	7/30/2019	115	<5.0	0.01	< 0.20	0.03	3.6	NS	193	0.42	2.5	0.03	4.1
	8/20/2019	151	5.5	0.05	0.25	0.20	4.1	NS	236	0.55	2.4	0.05	9.8
	9/10/2019	110	1.5	0.01	< 0.20	0.06	2.5	NS	188	< 0.20	3.0	0.02	4.2
DIVI-09IVI													

Table 3-2 c	le 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2019												
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	135	<33	0.04	< 0.20	0.03	6.0	NS	227	0.53	1.2	0.06	76.3
	7/16/2019	210	<27	0.05	< 0.20	< 0.01	5.9	NS	323	0.85	1.3	0.16	61.3
	7/30/2019	140	<5.0	0.02	0.32	0.05	4.8	NS	278	0.84	2.1	0.07	37.6
	8/20/2019	181	3.3	0.07	0.61	0.06	4.1	NS	270	0.94	2.4	0.11	74.4
	9/10/2019	160	2.7	0.05	< 0.20	0.04	4.6	NS	255	0.52	2.3	0.10	60
BM-09B													
	6/25/2019	83	<33	0.02	< 0.20	0.06	2.3	NS	170	1.9	7.9	0.20	51.6
	7/16/2019	80	<68	0.08	< 0.20	0.08	1.4	NS	171	3.5	5.1	0.10	34
	7/30/2019	79	<5.0	< 0.007	< 0.20	0.03	1.8	NS	124	1.1	3.5	0.05	10.8
	8/20/2019	84	4.3	0.03	< 0.20	0.07	2.0	NS	149	0.71	3.7	0.03	7.2
DM 105	9/10/2019	130	3.3	0.02	< 0.20	0.07	2.5	NS	183	0.51	3.3	0.02	6.3
DIVI-105													

Table 3-2 c	ontinued. Summa	ary of surf	face, mid	dle, and bo	ottom wate	er quality i	nonitorir	ig data for	Blue Mar	sh Reser	voir in 2()19	
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	6/25/2019	115	<33	0.04	< 0.20	0.04	5.5	NS	223	0.72	1.7	0.11	31.8
	7/16/2019	122	<20	0.03	< 0.20	0.03	3.7	NS	218	1.1	2.6	0.05	10.9
	7/30/2019	90	<5.0	0.03	< 0.20	0.03	2.4	NS	150	1.3	3.4	0.05	13.0
	8/20/2019	122	2.9	0.02	< 0.20	0.05	3.4	NS	209	0.70	3.2	0.05	10.3
DN 1014	9/10/2019	117	4.1	0.03	< 0.20	0.06	2.6	NS	188	0.48	3.4	0.04	6.9
BM-10M													
	6/25/2019	125	<33	0.06	< 0.20	0.02	5.6	NS	222	0.28	1.3	0.06	26.5
	7/16/2019	202	<20	0.05	< 0.20	0.02	5.9	NS	264	1.6	1.5	0.23	264
	7/30/2019	180	<5.0	0.01	< 0.20	0.02	5.7	NS	247	3.4	2.4	0.21	112
	8/20/2019	166	2.9	0.10	0.54	0.02	4.9	NS	265	0.49	2.8	0.12	138
DM 10D	9/10/2019	165	2.4	0.05	< 0.20	0.03	5.6	NS	275	0.27	2.4	0.07	137
BM-10B													

Table 3-2 c	Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2019													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	ТР	TSS	
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
	6/25/2019	35	<33	0.04	< 0.20	0.01	3.5	NS	99	0.33	2.0	0.04	12.0	
	7/16/2019	130	<10	0.05	< 0.20	< 0.01	5.0	NS	208	0.40	1.1	0.05	11.9	
DV 110	7/30/2019	70	<5.0	0.03	< 0.20	< 0.01	3.7	NS	125	0.44	1.9	0.04	6.8	
	8/20/2019	84	1.8	0.05	< 0.20	< 0.01	2.6	NS	137	0.60	3.6	0.05	10.3	
	9/10/2019	164	<1.0	0.04	< 0.20	0.02	5.6	NS	270	< 0.20	2.3	0.05	8.7	
BM-112														

< Laboratory analysis result was less than the limit of quantification or limit of detection. NS- Not Sampled

3.2.2 Nitrite and Nitrate

Nitrite (NO2) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. Nitrite concentrations were low at Blue Marsh Reservoir during 2019 (Table 3-2). Concentrations ranged from less than the reporting limit of 0.01 mg/L to 0.32 mg/L during the sampling season.

Nitrate (NO3) is the measure of the most oxidized and stable form of nitrogen. It is the principal form of combined nitrogen in natural waters. Nitrate is the primary form of nitrogen used by plants as a nutrient to stimulate plant growth. Nitrate concentrations maintained similar seasonal patterns across all stations in Blue Marsh Reservoir in 2019. Consistently higher concentrations were measured at upstream tributary station BM-5S (Table 3-2). Elevated nitrate concentrations at this station are likely attributed to agriculture in the upstream watershed. Concentrations at all sampling locations and depths ranged from 1.4 to 7.9 mg/L. Seasonal mean concentrations at surface tributary stations BM-5S (7.32 mg/L) maintained the highest concentrations of all stations and dates sampled.

Concentrations of nitrate and nitrite measured at Blue Marsh Reservoir were in compliance with PADEP water quality standards during 2019. The state water quality standard for nitrogen from nitrite and nitrate sources is a summed concentration of not more than 10 mg/L. Summed concentrations at all stations were less than the State standard. The highest nitrogen summed concentration of 7.91 mg/L occurred in the surface waters at station BM-5S in September.

3.2.3 Total Kjeldahl Nitrogen

Total Kjeldahl nitrogen (TKN) is a measure of organic nitrogen that is inclusive of ammonia. Organic nitrogen is not immediately available for biological activity and is therefore not available for plant growth until decomposition to inorganic form occurs. In general, TKN remained low but variable throughout the water column of Blue Marsh Reservoir in 2019 (Table 3-2). Concentrations measured at all stations and depths in the reservoir and tributaries ranged from less than the laboratory reporting limit of 0.20 mg/L to 5.5 mg/L.

3.2.4 Total Phosphorus

Total phosphorus (TP) is a measure of both organic and inorganic forms of phosphorus. It is an essential plant nutrient and is often the most limiting nutrient to plant growth in freshwater systems. Inputs of phosphorus are the prime contributing factors to eutrophication in most freshwater systems. Phosphorus bound to bottom sediments in lakes can be released when oxygen levels are depleted in bottom waters. This phosphorus then becomes available for plant growth. EPA guidance for nutrient criteria in lakes and reservoirs suggests a maximum concentration for total phosphorus of 0.01-mg/L (EPA 2000). Lakes and reservoirs exceeding this concentration are more likely to experience algal bloom problems during the growing season. Total phosphorus in the watershed and lake body of Blue Marsh Reservoir was frequently measured at concentrations well above this standard during 2019 (Table 3-2). Bottom deep waters within the lake and upstream tributary station BM-5S routinely had higher measured concentrations. This may be a direct result of nutrient enrichment in the upstream watershed and phosphorus release from bottom sediments during anoxic conditions experienced at Blue Marsh annually. In 2019, 97 of the 105 samples measured for total phosphorus at Blue Marsh Reservoir, including its tributaries, were greater than the EPA guideline. The single sample values for all stations and depths ranged from 3.01 mg/L to <0.01 mg/L. Agriculture and other land use found in the watershed contribute to the historic and currently measured elevated total phosphorus levels in Blue Marsh reservoir.

3.2.5 Total Dissolved Phosphorus

Total dissolved phosphorus (DISS P) in the water column of Blue Marsh Reservoir was consistently low during 2019. The single sample values for all stations and depths ranged from 0.11 mg/L to <0.007 mg/L (Table 3-2).

3.2.6 Total Dissolved Solids

Total dissolved solids (TDS) are a measure of the amount of non-filterable dissolved material in the water. Dissolved salts such as sulfate, magnesium, chloride, and sodium contribute to elevated levels. Total dissolved solids (TDS) in the water column of Blue Marsh Reservoir at all stations and depths ranged from 346 mg/L to 99 mg/L in 2019 (Table 3-2). Upstream tributary station BM-5S routinely had the highest monthly measured concentrations and maintained the highest seasonal sampling average of 322 mg/L. The state water quality standard for TDS is a maximum concentration of 500 mg/L. Total dissolved solids measured at Blue Marsh Reservoir in 2019 were in compliance with PADEP water quality standards.

3.2.7 Total Suspended Solids

Total suspended solids (TSS) are a measure of the amount of filterable particulate matter that is suspended within the water column. High concentrations increase the turbidity of the water and can hinder photosynthetic activity, result in damage to fish gills, and cause impairment to spawning habitat (smothering). Total suspended solids in the waters of Blue Marsh Reservoir were generally low during the 2019 sampling period (Table 3-2). Sample results at all stations and depths ranged from 224 mg/L to <4.0 mg/L (laboratory minimum reporting limit). The maximum and consistently higher TSS readings were taken in the deep bottom water samples at reservoir lake sampling stations. Uncharacteristically high single sample readings from these water samples can be attributed to sample collection error. Bottom sediments can be resulted uring the sample collection process and are sometimes inadvertently included in the
sample. Nearly all the elevated sample results occurred at or near bottom water sampling stations and likely were associated with sediment disturbance. The Pennsylvania Department of Environmental Protection has not issued a water quality standard for TSS.

3.2.8 Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD) is a measure of the oxygen-depleting burden imposed by organic material present in water. It measures the rate of oxygen uptake by organisms in the water sample over a period of time. It is an indicator of the quality of a water body and the degree of pollution by biodegradable organic matter can therefore be inferred. The five-day biochemical oxygen demand and commonly accepted water quality inferences are as follows:

- 1-2 mg/L is associated with very clean water and little biodegradable wastes;
- 3-5 mg/L is associated with moderately clean water with some biodegradable wastes;
- 6-9 mg/L is associated with fairly polluted water, many bacteria, and much biodegradable wastes;
- 10+ mg/L is associated with very polluted water and large amounts of biodegradable wastes.

Biochemical oxygen demand concentrations in the waters of Blue Marsh Reservoir were inconclusive in 2019 as a result of inconsistent laboratory reporting limits (Table 3-2). Measured results ranged from 1.0 mg/L to 13.0 mg/L. In considering the overall infrequency of samples showing higher readings in addition to historical sampling results, it is inferred that Blue Marsh Reservoir and its associated tributaries fluctuated between very clean water with little biodegradable organic wastes to moderately clean waters with some biodegradable wastes in 2019. The Pennsylvania Department of Environmental Protection does not issue a water quality standard for BOD.

3.2.9 Alkalinity

Alkalinity is a measure of the acid-neutralizing capacity of water. Waters that have high alkalinity values are considered undesirable because of excessive hardness and high concentrations of sodium salts. Water with low alkalinity has little capacity to buffer acidic inputs and is susceptible to acidification (low pH). The PADEP standard is a minimum concentration of 20-mg/L CaCO₃ except where natural conditions are less.

Throughout the monitoring period in 2019, concentrations at all stations and depths for Blue Marsh Reservoir ranged from 35.0 mg/L CaCO_3 to 243 mg/L CaCO_3 (Table 3-2). Upstream tributary station BM-5S maintained the highest seasonal mean concentration of 215 mg/L CaCO_3 . Concentrations of alkalinity measured at Blue Marsh Reservoir were in compliance with PADEP water quality standards for all samples collected during 2019.

3.2.10 Total Organic Carbon

Total organic carbon (TOC) is a measurement of the amount of dissolved and particulate carbon that is bound in organic compounds. TOC can be derived from decaying vegetation, bacterial growth, and metabolic activities of living organisms. The bulk of organic carbon in water is composed of humic substances and partly degraded animal and plant materials. Other sources of TOC can include agricultural chemicals such as herbicides and insecticides and also wastewater treatment plants. The amount of carbon in a freshwater stream is an indicator of the organic character of a water body. High organic content can increase the growth of microorganisms which contribute to the depletion of oxygen. Total organic carbon concentrations in the water column and tributaries of Blue Marsh Reservoir were low during 2019 (Table 3-1). Concentrations of TOC at all stations and depths ranged from 1.0 mg/L to 21.8 mg/L.

3.2.11 Chlorophyll a

Chlorophyll a is the measure of the plant chlorophyll "a" primary pigment which helps plants get energy from light. It is found in most plants, algae, and cyanobacteria. Chlorophyll a measures increase in relation to algal densities in a water body. Chlorophyll a is used as a measure of algal biomass. In 2019, the average concentration during the monitoring period for lake surface waters (<15 feet) at lake station BM-6 was 3.34 ug/L with the highest concentrations seen during early July and September (Appendix A). Upstream surface water stations BM-5S and BM-11S maintained lower concentrations throughout the sampling season. Algal productivity in tributary waters would be expected to be less than lake surface waters as a result of thermal warming, longer in lake water residence time, and increased nutrient concentrations and availability at lake stations.

3.3 TROPHIC STATE DETERMINATION

Carlson's (1977) trophic state index (TSI) is a method of quantitatively expressing the magnitude of eutrophication for a lake. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll a, and secchi disk depth. Index values for each parameter range on the same scale from 0 (least enriched) to 100 (most enriched). The resulting indices can also be compared to qualitative threshold values that correspond to levels of eutrophication: oligotrophic (TSI <40), mesotrophic (TSI >40), and eutrophic (TSI >50).

During 2019, TSI's calculated for measures of secchi disk depth classified Blue Marsh Reservoir as eutrophic in June (71.51), early July (63.22), late July (67.36), August (63.22) and September (56.78) (Fig. 3-7). TSIs calculated for measures of total phosphorus (Figure 3-7) classified Blue Marsh Reservoir as eutrophic in June (87.33), early July (53.20), mesotrophic in late July (47.35) and September (47.35), and oligotrophic in August (37.35). TSI's calculated for measures of chlorophyll a classified Blue Marsh Reservoir as mesotrophic in late July (49.11) and eutrophic in June (50.79), early July (53.73), August (50.14) and September (53.29).

Carlson (1977) warned against averaging TSI values estimated for different parameters, and instead suggested giving priority to chlorophyll a in the summer and to phosphorus in the spring, fall, and winter. The laboratory minimum detection limit for total phosphorus did not accurately reflect levels of total phosphorus in samples collected from Blue Marsh Reservoir in 2019 (see Section 3.2.4). With this in mind, the trophic state of the reservoir was predominantly eutrophic during the 2019 sampling season.

The EPA (1983) also provides criteria for defining the trophic conditions of lakes of the North Temperate Zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi depth (Table 3-3). Utilizing the EPA classification, Blue Marsh Reservoir fluctuated between being mesotrophic and eutrophic at different points in time during the 2019 sampling season. Taking into account the general agreement between the EPA classifications with that of the Carlson TSI's, the trophic condition of Blue Marsh Reservoir was predominantly eutrophic in 2019.

Table 3-3.EPA trophic classification criteria and average monthly measures for Blue Marsh Reservoir in 2019.											
Water Quality Variable	Oligo- trophic	Meso- trophic	Eutrophic	26 June	10 July	30 July	16 August	04 September			
Total phos. (ppb)	<10	10-20	>20	320	30	20	10	20			
Chlorophyll (ppb)	<4	4-10	>10	7.83	10.57	6.60	7.33	10.10			
Secchi depth (m)	>4	2-4	<2	0.45	0.80	0.60	0.80	1.25			

3.4 RESERVOIR COLIFORM BACTERIA MONITORING

Two forms of coliform bacteria contamination were monitored in the tributary and lake surface waters at Blue Marsh Reservoir during 2019 including total and fecal coliform (Table 3-4). Total coliform includes escherica coliform (E. coli) and related bacteria that are associated with fecal discharges. Fecal coliform bacteria are a subgroup of the total coliform and are normally associated with waste derived from human and other warm-blooded animals and indicate the presence of fecal contamination but not the associated risk.

Total coliform contamination of Blue Marsh Reservoir at all lake sampling stations during the 2019 monitoring period ranging in values from 190 colonies/100-ml to >20000 colonies/100-ml. Bacteria in natural waters are common and their presence in the sample is not necessarily a human health concern. No State or federal standards exist for total coliform for water contact recreation.

With respect to PADEP water quality standards, fecal coliform bacteria has been replaced with an recreational e-coli criteria. For purposes of the 2019 reservoir and tributary bacteria sampling, the previous fecal coliform state criteria was used. The previous standard for fecal coliform bacteria during the swimming season (from 1 May to 30 September) is a geometric mean not greater than 200 colonies/100-ml. Given that our regular monitoring was completed on one

day grab samples, single sample results were compared to the Pennsylvania Department of Health single sample standard of <1000 colonies/100-ml.

Fecal coliform contamination of Blue Marsh Reservoir was low at all lake body sampling stations during the 2019 monitoring period ranging in values from <1 colonies/100-ml to 47 colonies/100-ml. Elevated levels in all months sampled were seen at the upstream tributary stations BM-5S and BM-11S. Fecal coliform values for these two stations ranged from 270 colonies/100-ml to >6000 colonies/100-ml. The fecal coliform samples collected at Blue Marsh Reservoir did exceed the State single sample standard in 2019 on three occasions at the upstream tributary stations. Elevated counts at stations BM-5S and BM-11S are likely attributed to agricultural activities in those upstream watersheds. Water contact recreation, such as water skiing, is permitted at Blue Marsh Reservoir. No long term elevated bacteria counts were recorded in the main reservoir body. The Corps recreational public swimming beach area is monitored and managed separately from the monthly routine lake water quality sampling (see Section 3.5).

3.5 WEEKLY SWIMMING BEACH BACTERIA MONITORING

Weekly coliform bacteria monitoring was conducted at the public swimming beach of the Dry Brooks Day Use Area of Blue Marsh Reservoir to gauge compliance with Pennsylvania Department of Health and Unites States Environmental Protection Agency bathing beach water quality standards to ensure public safety for this water contact recreation area.

Escherichia coli is the most reliable indicator of fecal bacterial contamination of surface waters in the United States according to water quality standards set by the EPA (2000). The EPA recommendation for recreational water quality standards for E. coli is based on two criteria: a geometric mean of 126 organisms/ 100 ml (geometric mean of five samples collected over not more than a 30 consecutive day period) threshold and 235 organisms/ 100 ml (single water sample) threshold. Samples for E. coli analysis were collected twice weekly from 3 fixed beach area stations on each date in the regulated swimming area. During the 2019 recreation season, E. coli samples at the swimming beach area of Blue Marsh Reservoir exceeded the single sample criteria on seven occasions and the geometric mean criteria on four occasions (Table 3-5). Elevated bacteria and reservoir pool levels resulted in beach closure during the recreation season. High bacterial readings appeared to correlate with precipitation and subsequent runoff from the watershed and beach area which is populated with a resident Canada goose population.



Figure 3-7. Trophic state indices calculated from secchi disk depth and concentrations of total phosphorus and chlorophyll *a* at Blue Marsh Reservoir in 2019.

Table 3-4. Surface Water Stations Bacteria counts (colonies/100 ml) at Blue Marsh Reservoir
during 2019. Shaded values exceed the Pennsylvania Department of Health water quality
standard for bathing beach of 1,000 fecal coliform colonies/100-ml.
NS - Not Sompled AF - Apolycia Error

NS = Not San	npied AE = Analysis E	rror		1			
STATION	DATE	To	otal Coliform	Fee	cal Coliform (FC)	E	scherichia coli
	6/25/2019	>	20000		170		NS
[7/16/2019		AE		170		NS
BM-1S	7/30/2019	>	20000		29		NS
	8/20/2019	>	20000		30		NS
	9/10/2019	>	2000		2		NS
	6/25/2019		2900		24		NS
	7/16/2019	>	2000		1		NS
BM-2S	7/30/2019		5300	<	1		NS
	8/20/2019		9300		1		NS
	9/10/2019	>	200		1		NS
	6/25/2019		AE	>	6000		NS
	7/16/2019		AE	>	600		NS
BM-5S	7/30/2019	>	20000		440		NS
	8/20/2019	>	20000		270		NS
	9/10/2019		AE	>	600		NS
	6/25/2019		845		13		NS
	7/16/2019	>	2000	<	1		NS
BM-6S	7/30/2019		11700		7		NS
	8/20/2019	>	20000		4		NS
	9/10/2019	>	200		1		NS
	6/25/2019		2200		10		NS
	7/16/2019	>	2000		11		NS
BM-7S	7/30/2019		10600		6		NS
	8/20/2019		8300		5		NS
	9/10/2019	>	2000	<	1		NS
	6/25/2019		16200		24		NS
	7/16/2019		1400	<	1		NS
BM-8S	7/30/2019		3200		2		NS
	8/20/2019		260	<	1		NS
	9/10/2019		1380	<	1		NS
	6/25/2019		4500		20		NS
	7/16/2019	>	2000		4		NS
BM-9S	7/30/2019		12400		2		NS
	8/20/2019		2700		2		NS
	9/10/2019	>	2000		4		NS
	6/25/2019		14700		47		NS
	7/16/2019		6600		38		NS
BM-10S	7/30/2019		15200		5		NS
	8/20/2019		190		2		NS
	9/10/2019		930		1		NS
	6/25/2019	>	20000	>	600		NS
	7/16/2019	<u> </u>	AE	>	600		NS
BM-11S	7/30/2019	>	20000		1100		NS
	8/20/2019	>	20000		4400		NS
	9/10/2019		AE		310		NS

groutor than 2	33 colonies/100-mi	, 5-day geometric mear	i greater than 12	0 00011103/100-1	
		Single Maximum	Sampling Stat	tion 5-Day Geom	etric Means
Week	Date	Count	sb1	sb2	sb3
Waalt 1	5/13/2019	866	-	-	-
Week 1	5/16/2019	12	-	-	-
	5/20/2019	1730	-	-	-
Week 2	5/22/2019	23	-	-	-
WCCK 2	5/23/2019	13	25.42	24.30	78.77
	5/24/2019	30	31.07	32.82	35.00
	5/28/2019	10	34.41	26.35	28.59
Week 3	5/30/2019	411	23.50	20.67	21.45
	5/31/2019	93	32.63	30.79	26.32
Week 1	6/3/2019	25	30.32	36.98	24.85
WCCK 4	6/6/2019	31	21.97	38.01	28.35
Week 5	6/10/2019	37	23.16	42.52	44.23
WEEK J	6/13/2019	5	10.55	18.86	17.51
	6/17/2019	27	7.42	14.02	14.74
Week 6	6/20/2019	2420	19.74	31.41	48.93
	6/21/2019	2420	65.53	72.22	101.61
	6/24/2019	59	81.21	105.24	111.55
Week 7	6/25/2019	46	121.51	131.10	181.80
	6/26/2019	62	157.74	103.04	214.69
	6/27/2019	5	38.20	33.34	51.91
Week 8	7/1/2019	15	10.61	10.07	21.91
WEEK 0	7/3/2019	15	6.76	8.05	15.36
Week 0	7/8/2019	166	10.94	13.02	19.38
WCCK 9	7/11/2019	5	6.68	9.10	8.49
Week 10	7/15/2019	6	8.81	9.43	9.75
week 10	7/18/2019	29	10.79	10.84	11.13
Week 11	7/22/2019	10	10.18	7.24	11.13
WEEK II	7/25/2019	32	4.83	5.07	8.20
	7/29/2019	31	5.76	8.72	16.30
Week 12	8/1/2019	548	14.71	21.51	29.89
	8/2/2019	20	14.13	22.67	27.75
Week 12	8/5/2019	18	20.22	31.88	28.29
WEEK 13	8/8/2019	308	48.21	40.35	32.49
Week 14	8/12/2019	63	60.71	53.77	26.41
week 14	8/15/2019	36	35.08	24.60	22.35
Waalt 15	8/19/2019	24	35.82	27.81	21.10
week 15	8/22/2019	172	56.26	38.52	26.89
W. 1-16	8/26/2019	6	25.59	17.95	16.15
week 16	8/29/2019	60	21.25	17 77	12.45

3.6 ALGAE AND CYANOBACTERIA MONITORING

Cyanobacteria and algae are photosynthetic organisms found in aquatic environments. Cyanobacteria, formerly known as blue-green algae, are a group of bacteria. These bacteria were originally called blue-green algae because dense growths often turn the water pea green, brownish-green or blue-green. Dense growths of these organisms are often referred to as a "bloom". They are found in all lakes and are a natural part of the lake ecosystem.

The development and proliferation (intensity) of algal blooms result from a combination of environmental factors including available nutrients (quantity and quality), sunlight, air and water temperature, ecosystem disturbance (stable or wind mixing conditions, turbidity), hydrology (precipitation, river flow and water storage levels) and water chemistry. As photosynthetic organisms, high nutrient and light concentrations can promote a population explosion and result in blooms, especially during warm weather. In high densities, some species of these organisms produce potent natural toxins. Not all blue-green algae or algal blooms are toxic. Blooms with the potential to harm human health or aquatic ecosystems are referred to as harmful algal blooms or HABs. In freshwater systems, cyanobacteria can produce HABs and toxins that can harm people, animals, aquatic ecosystems, drinking water supplies, and recreational activities, including swimming and recreational fishing.

Algal blooms have historically been a concern at Blue Marsh Reservoir as the watershed is approximately 80% agriculture and tributary inflows contain elevated levels of nutrients. In the watershed, runoff and soil erosion from fertilized agricultural areas and lawns, runoff from animal husbandry agricultural areas, erosion from river banks, river beds, and sewage effluent are major sources of nutrients entering water ways and tributaries of Blue Marsh Reservoir. All of these pathways are considered external sources and promote and support the growth of algae and cyanobacteria within the lake. In addition to these external sources, internal origins of nutrients comes from the reservoir sediments. Phosphate attaches to sediments. When dissolved oxygen concentrations are low in the water (anoxic conditions), sediments release phosphate into the water column. Anoxic conditions are experienced annually within Blue Marsh Reservoir causing the release of nutrients from bottom sediments. These nutrients are then recycled back into the water column and support the growth of algae and cyanobacteria.

In early summer 2019, Blue Marsh Reservoir experienced heavy rainfall events in the watershed along with extended periods of warm and sunny weather. Soon after, U.S. Army Corps of Engineers staff began to observe dense algal blooms throughout the reservoir (Figures 3-8 and 3-9). In response to these observations, the Philadelphia District took the following steps:

- 1. Initiated coordination with the Pennsylvania Department of Environmental Protection and Pennsylvania Department of Health in regard to a response and monitoring plan;
- Initiated coordination with other Corps districts in regard to their response plans and criteria (Pennsylvania has no recreational criteria and the Environmental Protection Agency has a recommended recreational criteria (EPA 2019));
- Posted a Public Notice (in addition to social media postings with links to Centers for Disease Control and Prevention cyanobacteria website) of risks of potential harmful toxic algae and to pursue lake recreation at your own risk;
- 4. Initiated coordination with Delaware River Basin Commission (Warning Potential Hazard post on Early Warning System) and Western Berks Water Authority who has a raw water supply intake located downstream of the dam; and

5. Conducted a site/reservoir tour of the existing lake conditions for both Pennsylvania Department of Environmental Protection and Water Supply interests along the Schuylkill River downstream.

In cooperation with the Pennsylvania Department of Environmental Protection, the Philadelphia District conducted sampling and testing of algal blooms throughout the reservoir to include the recreational swimming beach area. Samples were collected weekly at the swimming beach area and as needed at other locations on the reservoir. Sampling and laboratory test results shown high cell densities of cyanobacteria within the lake during bloom conditions and a variety of potential toxigenic producing genera (Figure 3-10). Although cell densities were elevated, toxin levels remained low and stayed within Environmental Protection Agency (2019) recommended recreational water limits (Table 3-6). The Pennsylvania Department of Health required the Western Berks Water Authority to conduct sampling of their finished water product. The Western Berks Water Authority maintains a raw water intake downstream of the reservoir on the Tulpehocken Creek. Drinking water standards were not exceeded at the raw water intake but did exceed criteria (EPA child drinking water criteria) within the lake surface waters on at least one occasion. No lake/reservoir closures were initiated as a result of algal toxins.



Figure 3-8. Photographs of algal blooms at the Philadelphia District USACE Blue Marsh Reservoir during the 2019 recreational summer season.



Figure 3-9. Photographs of algal blooms at the Philadelphia District USACE Blue Marsh Reservoir during the 2019 recreational summer season.



Figure 3-10. Laboratory microscopic photographs of toxigenic cyanobacteria found in Blue Marsh Reservoir water samples collected during the summer 2019 recreational season.

TABLE 3-6											
	Blue Marsh Reservoir 2019 Algae Sampling Results										
PADEP Har	risburg Bureau of Laboratories, PA (BOL)	Hepatotoxins	– Liver Damage	Neurotoxins – Nerve Damage							
Green Wat	er Laboratories, FL (GW)	Microcystins /	Cylindrospermopsin	Anatoxin-a	Saxitoxin						
µg/L - micr	ograms per liter = ppb - part per billion	Nodularins									
ND – Not D	Detected or less than laboratory detection limit										
	PADEP Drinking Water Standard	0.3 ppb	0.7 ppb	NA	NA						
	Ohio Drinking Water- Child	0.3 ppb	0.7 ppb	20.0 ppb	0.3 ppb						
	EPA Drinking Water Health Advisories	0.3 - 1.6 ppb	0.7 - 3.0 ppb	NA	NA						
		(Child) – (Adult)	(Child) – (Adult)								
	Ohio Contact Recreational Standard	6.0 ppb	5.0 ppb	80.0 ppb	0.8 ppb						
	EPA Recommended Recreational Criteria	8.0 ppb	15.0 ppb	NA	NA						
Date	Site										
7/2/19	Swimming Beach - Surface	0.578 ppb (BOL)	0.060 ppb (BOL)	ND (BOL)	ND (BOL)						
		ND (GW)	ND (GW)	ND (GW)	ND (GW)						
7/2/19	Swimming Beach - Surface	0.702 ppb (BOL)	0.060 ppb (BOL)	ND (BOL)	ND (BOL)						
		ND (GW)	ND (GW)	ND (GW)	ND (GW)						
7/2/19	Church Road Overpass - Surface	0.658 ppb (BOL)	0.059 ppb (BOL)	ND (BOL)	ND (BOL)						
		ND (GW)	ND (GW)	ND (GW)	ND (GW)						
7/2/19	Main Reservoir Tower - Surface	0.661 ppb (BOL)	ND(BOL)	ND (BOL)	ND (BOL)						
		ND (GW)	ND (GW)	ND (GW)	ND (GW)						
7/16/19	Swimming Beach - Surface	ND (GW)	ND (GW)	0.37 ppb (GW)	0.14 ppb (GW)						
7/16/19	Swimming Beach - Composite	ND (GW)	ND (GW)	0.28 ppb (GW)	0.16 ppb (GW)						
7/16/19	Main Reservoir Tower - Surface	ND (GW)	ND (GW)	0.35 ppb (GW)	0.14 ppb (GW)						
7/16/19	Main Reservoir Tower - Bottom	ND (GW)	ND (GW)	ND (GW)	0.06 ppb (GW)						
7/16/19	Church Road Overpass - Surface	ND (GW)	ND (GW)	0.30 ppb (GW)	0.20 ppb (GW)						
7/16/19	Spring Creek Lake Arm - Surface	ND (GW)	ND (GW)	0.27 ppb (GW)	0.20 ppb (GW)						
7/22/19	Swimming Beach - Surface	ND (GW)	ND (GW)	1.91 ppb (GW)	0.12 ppb (GW)						
7/30/19	Swimming Beach - Surface	1.13 ppb (BOL)	2.238 ppb (BOL)	7.8 ppb (BOL)	0.25 ppb (BOL)						

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		ND (GW)	ND (GW)	7.4 ppb (GW)	0.25 ppb (GW)
7/30/19	Church Road Overpass - Surface	.880 ppb (BOL)	1.520 ppb (BOL)	5.29 ppb (BOL)	0.23 ppb (BOL)
		ND (GW)	ND (GW)	6.4 ppb (GW)	0.26 ppb (GW)
7/30/19	Main Reservoir Tower - Bottom	ND (BOL)	2.006 ppb (BOL)	2.060 ppb (BOL)	0.26 ppb (BOL)
		ND (GW)	ND (GW)	ND (GW)	ND (GW)
8/27/19	Swimming Beach - Surface	ND (GW)	ND (GW)	ND (GW)	0.05 ppb (GW)
9/10/19	Main Reservoir Tower - Surface	ND (GW)	ND (GW)	0.06 ppb (GW)	ND (GW)
9/10/19	Main Reservoir Tower - Bottom	ND (GW)	ND (GW)	ND (GW)	ND (GW)
9/10/19	Church Road Overpass - Surface	4.0 ppb (GW)	ND (GW)	0.11 ppb (GW)	ND (GW)

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APPENDIX A

STRATIFICATION DATA TABLES

Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L	•	mV	mV	NTU	ug/L	mS/cm
	6/25/2019	13:47:36	0.5	19.48	106.6	9.78	7.73	-50.1	179.5	13.6	3.5	0.286
	7/16/2019	7:25:43	0.5	20.82	85.6	7.65	7.67	-46.3	144	6.9	3.2	0.315
	7/30/2019	7:17:15	0.5	21.13	84.9	7.54	7.53	-38.4	201.4	2.4	2.8	0.360
BM-1	8/20/2019	7:26:13	0.5	22.35	87.1	7.56	7.7	-48.3	162.8	1.2	2.8	0.391
	9/10/2019	7:16:31	0.5	21.45	77	6.79	7.66	-45.9	210.7	0.7	1.8	0.389
		9:48:42	0.5	24.55	189	15.74	9.44	-152.2	142.9	41.2	8.9	0.240
		9:47:39	5.0	23.45	135.6	11.53	9.02	-126.7	158.2	15.1	6.7	0.242
		9:45:44	10.0	20.19	59.2	5.36	7.56	-39.8	188.2	11.2	4.3	0.237
BM-2		9:42:25	15.0	19.28	67.8	6.25	7.57	-40.2	187.3	12.0	3.5	0.244
	6/25/2019	9:40:59	20.0	18.91	61.5	5.71	7.57	-40.6	186.8	12.1	3.3	0.259
		9:40:10	25.0	18.63	65	6.07	7.59	-41.4	186.4	11.7	3.1	0.261
		9:39:10	30.0	18.19	70.9	6.68	7.65	-44.8	185.5	13.4	2.9	0.284
		9:37:02	35.0	18.04	72.1	6.82	7.67	-46.1	183.5	15.0	2.3	0.292
		9:34:52	40.0	17.78	71.4	6.78	7.69	-47.1	180.9	20.0	2.6	0.305
			┢━━━┩	┢╸╼╸╼╸┥	┢╺╼╴╼╴┥							┢╺╼╺╾╺┥
		0.27.51	0.5	28.5	213.6	16 56	0.66	167 /	06.2	10/	11 Q	0.228
		9.31.31	0.5	20.0	210.0	10.00	9.00	-107.4	90.Z	16.2	11.0	0.220
		9.30.22	10	21.0	20.2	12.04	9.41	-1JZ	90.0	10.5	14. i Q 1	0.200
RM.2		9.34.32 0.33.50	10	20.90	39.∠ 10.2	3.5 3.52	7.65	-02.0	118 3	4.0	0.1 1	0.214
DIN-2	7/16/2019	0.32.52	20	21.00	11.4	3.02	7.63	-40.4	115.8	0 <u>4</u>	37	0.278
	1/10/2015	9.32.32	25	20.75	44.4	4 28	7.0-	-49.0	111	9. - 9.1	29	0.270
		9:30:12	30	20.75	49.6	4.20	7.61	-42.0	104.9	12.3	3.4	0.230
		9.28:54	35	20.22	50	4 52	7 63	-44	96.1	16.1	3.2	0.361
		9:27:31	40	19.88	32.3	2.94	7.59	-41.5	78.2	13.3	2.8	0.344
		9:50:19	0.5	29.5	179.9	13.71	9.39	-151.8	116	6.5	5.7	0.242
		9:48:41	5	28.58	162.6	12.59	9.33	-147.7	115.4	8.7	8	0.241
		9:47:27	10	24.82	26.9	2.23	7.69	-48.1	142.2	2.1	5.4	0.335
BM-2		9:45:44	15	23.29	10.8	0.92	7.56	-40.3	140.6	0.9	4.5	0.362
	7/30/2019	9:44:54	20	22.57	12.8	1.11	7.53	-38.6	139.3	1.3	3.2	0.376
		9:43:43	25	21.83	16.3	1.43	7.49	-35.8	135.7	3.5	3	0.366
		9:42:22	30	21.36	21.8	1.93	7.46	-34.3	127.9	2.4	2.7	0.366
		9:41:15	35	20.98	13.7	1.22	7.42	-32.1	116.4	4.8	2.8	0.369
		9:39:19	40	20.89	14.6	1.3	7.48	-35.4	124.5	46.1	12.3	0.369
			┝━━━┛	┝╼╼┥	┢╺═╺═╺┛							<u> </u> -
		0.00.00	<u> </u>	07.05	440.7	0.00	0.04	400.7	00.4	F 4	0.0	0.000
		9:33:58	0.5	27.90	110.7	9.29	0.94	-123.1	ຽງ. I	5.4 5.7	ŏ.∠	0.292
DM 2		9:32:50	5	27.69	113.7	8.95	8.91	-121.7	15.1	5.7	9.4 5.0	0.291
BIN-2		9:31:00	10	20.10	35.1	2.ŏ4	7.89	-60.5	00.1	3.5 0.7	5.9	0.303
	0/20/2010	9:29:40	15	24.21	∠.ა 2.3	0.19	7.59	-4∠ 29./	2/.1	0.7	3.9 20	0.350
	0/20/2019	9.20.22	20	23.32	2.3	0.2	7.00	-30.4	49.0	0.5	2.9	0.304
		9:26:44	25	22.46	2.5	0.22	7.46	-34.3	44.9	0.8	Z.1	0.391
		9:25:47	30	22.07	2.7	0.24	7.40	-34	00.Z	1.2	1.4	0.411
		9:24:43	35	21.77	3.2	0.28	7.40	-34.2	70.5	1.8	1.1	0.417
		9.23.21	40	21.09	4.4	0.39	00.1	-39.9	04.4	13.0	1.0	0.419

Station	Date	Time	Depth	Temp	DO	DO	рΗ	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		9:24:02	0.5	23.81	128.2	10.82	8.92	-120.7	149.6	4.1	10.4	0.316
		9:23:03	5	23.76	125.3	10.59	8.9	-119.8	149.9	4.4	11.1	0.316
BM-2		9:21:29	10	23.42	96.1	8.17	8.55	-99.2	155.8	4.0	8	0.317
	9/10/2019	9:19:24	15	23.14	36.6	3.13	7.8	-54.2	164.8	1.6	4.7	0.332
		9:18:22	20	22.55	2.9	0.25	7.61	-43.2	168.4	0.7	3.6	0.363
		9:17:12	25	22.08	9.4	0.82	7.64	-44.7	169.3	1.2	2	0.367
		9:16:09	30	21.71	8.2	0.72	7.65	-45.7	168.9	2.8	1.4	0.386
		9:14:58	35	21.53	4.7	0.41	7.66	-46	168.7	5.8	1.8	0.393
		9:12:48	40	21.13	25.3	2.25	7.76	-51.6	166.7	11.4	2.3	0.391
		9:11:13	42	20.9	38.1	3.4	7.82	-55.1	164.6	15.7	2.7	0.397
	6/25/2019	13:05:21	0.5	18.03	94.8	8.96	7.95	-62.4	162.1	44.9	4.4	0.432
	7/16/2019	12:44:35	0.5	18.09	95.3	8.99	8.01	-65.9	178.1	6.9	1.1	0.48
BM-5	7/30/2019	13:07:19	0.5	20.29	104.9	9.47	8.18	-76.3	197.3	3.3	1.7	0.516
	8/20/2019	12:46:35	0.5	21.25	95.4	8.45	8.05	-69	170.7	5.1	1.6	0.521
	9/10/2019	12:23:25	0.5	18.82	97.4	9.05	8.22	-78.3	153.6	5.9	1.1	0.512
		8:58:46	0.5	25.6	202.1	16.51	9.37	-148.8	139.5	49.3	10.8	0.235
		8:57:54	5	24.89	143.4	11.87	9.11	-132.6	148.8	15.5	7.6	0.242
		8:56:37	10	20.49	60.2	5.42	7.6	-42.2	182.7	10.9	5.1	0.240
		8:55:45	15	19.7	58.1	5.31	7.56	-39.6	183.8	12.6	3.7	0.244
		8:55:07	20	19.19	58.5	5.4	7.54	-38.8	184.2	12.6	3.8	0.248
BM-6	6/25/2019	8:53:34	25	18.59	58.6	5.47	7.56	-39.8	184	11.1	3.3	0.268
		8:52:35	30	18.17	58.1	5.47	7.58	-41	183.9	11.6	2.2	0.297
Secchi		8:50:35	35	18.09	55.8	5.27	7.59	-41.7	182.1	13.8	2.7	0.296
0.45 M		8:49:51	40	18.09	47.5	4.48	7.58	-40.6	182.2	12.9	2.8	0.305
		8:47:39	45	17.71	25.6	2.43	7.54	-38.4	182.2	12.7	2.5	0.361
		8:45:47	50	17.63	15.2	1.45	7.5	-35.9	182.6	19.1	3.4	0.363
		9:13:12	0.5	28.17	190.6	14.87	9.53	-159.4	132.1	12.4	11.2	0.232
		9:11:44	5	27.61	139.9	11.02	9.23	-141.2	139.9	16	12.5	0.237
		9:09:20	10	23.82	11	0.93	7.64	-45.2	169.3	4.2	8	0.299
BM-6		9:06:16	15	22.42	32	2.77	7.64	-45	170.9	4.5	5.8	0.285
		9:04:59	20	22.19	38	3.31	7.65	-45.2	170.7	5.6	5.3	0.279
		9:03:03	25	21.35	40.3	3.56	7.63	-44.5	171.4	6.8	3.2	0.292
Secchi	7/16/2019	9:01:49	30	20.93	43.1	3.84	7.64	-44.6	171.9	6.6	2.4	0.311
0.80 M		9:00:04	35	20.33	41.5	3.74	7.62	-43.4	172	8.1	2.7	0.328
		8:58:34	40	20.12	35.6	3.22	7.58	-41.3	171.9	8.7	2	0.338
		8:56:48	45	20.2	38.4	3.48	7.57	-40.8	170.4	8.5	2.5	0.333
		8:55:33	50	19.79	23	2.1	7.5	-36.5	1/0.5	8	2.6	0.343
	<u> </u>	8:54:01	52	19.14	2.9	0.20	7.48	-34.9	107.8		<u> </u>	0.348
		0.10.07	0 F	20 56	170 1	10.05	0.20	151	102 5	70	5.0	0 007
		9.10.07	0.5	29.00	170.1	12.90	9.30	-101	103.3	1.3	5.Z	0.231
RM 6		9.00.37	- D - 10	29.07	130.3	0.40	9.13 7.70	-133.0	90 102 2	1.3 2.7	7.0 7	0.240
0-1910		9.00.40	10	20.00	0.0	0.71	7.61	-30.3	00	2.1 1	1	0.319
Sacchi	7/30/2010	9.04.49 0.03.36	20	23.74	2.1	0.10	7.56	-43.3	99 107 2	10	4.0 1	0.333
Occum	1100/2019	0.02.07	20	21.41	2.0 7.0	0.22	7.00	-36.2	110.2	0.6	-+ 3 1	0.314
0.60 M		9.02.07	20	21.73	13.0	1.03	7/0	-30.2	10.5	1.5	3.1	0.341
0.00 1		8.58.21	30	20.84	10.9 R	0.71	7 //	-30.1	00.0 00 5	2.8	20	0.360
		8.57.21	10	20.04	22	0.71	7/1	-33.1	81.1	2.0	2.3	0.309
		8.26.22	40	20.34	2.5	0.21	7 38	-29.5	73.2	4.8	2.4	0.370
		8:54:46	50	19.87	29	0.27	7.33	-26.4	57	5.6	2.5	0.391
		0.01110				J/			<u>,</u>	0.0	2.0	0.001

Station	Date	Time	Depth	Temp	DO	DO	рΗ	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	С	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		9:02:26	0.5	28.01	114.6	8.96	8.94	-123.7	103.6	5.0	6.5	0.290
		9:01:01	5	27.77	111.7	8.77	8.92	-122.3	98.8	6.2	9.3	0.290
BM-6		8:57:11	10	26.66	45.1	3.62	8.02	-68.3	84.6	3.7	6.2	0.302
		8:53:56	15	23.92	1.9	0.16	7.61	-43.2	56.7	0.4	3.4	0.350
Secchi		8:52:41	20	23.11	2.2	0.18	7.59	-42.1	55.8	0.2	3.5	0.369
	8/20/2019	8:51:54	25	22.77	3.2	0.28	7.61	-43	59.7	0.3	3.1	0.380
0.80 M		8:48:51	30	22.31	1.8	0.15	7.56	-40.4	52.8	0.6	2.4	0.392
		8:47:10	35	21.85	1.8	0.16	7.57	-40.8	53.9	1.0	1.5	0.407
		8:43:31	40	21.81	2.3	0.2	7.52	-37.6	54.5	0.8	1.7	0.409
		8:42:56	45	21.38	2.4	0.21	7.51	-37.1	53.3	1.9	0.9	0.421
		8:41:47	50	21.19	2.6	0.23	1.47	-35	51.9	2.6	1.8	0.424
DM C		0.51.17	0.5	22.77	110.1	0.47	0.60	106.7	110.0	2.50	10.6	0.224
DIVI-0		0.31.17	0.5	23.11	112.1	9.47	0.00	-100.7	112.2	3.50	10.0	0.324
		0.49.01	5 10	23.10	01.5	9.34	0.00	-104.9	107.0	3.20	0.6	0.325
		0.47.32 8·45·21	10	23.47	54.2	0.92	0.20	-62.6	01	3.10	6.5	0.327
Secchi	9/10/2019	8:42:42	20	22.02	20	0.17	7.59	-02.0	64.4	1.70	3.7	0.373
occom	5/10/2015	0.42.42	20	22.02	2.0	0.17	7.53	40.0	61.4	0.60	0.7	0.070
4.05 M		0.41.27	20	21.93	2.0	0.10	7.57	-40.0	01.4	0.60	2.5	0.379
1.25 M		8:40:43	30	21.7	2.0	0.18	1.57	-40.7	60	0.60	Z.4	0.384
		8:39:05	35	21.47	2.3	0.20	7.59	-42	56.4	0.40	2.6	0.391
		8:37:30	40	21.29	2.4	0.22	7.6	-42.6	50	1.50	2.7	0.397
		8:35:49	45	21.1	2.7	0.24	7.61	-42.7	36.7	2.70	2.2	0.400
		8:34:46	50	20.74	3.0	0.26	7.58	-41.3	22.7	5.20	1.8	0.408
			-	-		-	-					
						10.10				17.0	- 10	
		10:21:45	0.5	25.92	239.6	19.46	9.67	-166.7	125.3	45.3	12	0.240
DM 7		10:19:44	5.0	24.21	142.3	11.92	9.18	-130.8	152	13.1	6.4	0.237
BM-7	0/05/0040	10:18:59	10.0	20.25	70	6.33	7.59	-41.4	181.8	10.7	4.4	0.221
	6/25/2019	10:17:06	15.0	19.49	78.1	7.17	7.68	-46.7	180.8	11.1	3.1	0.260
		10:16:05	20.0	19.24	79.8	7.30	7.65	-47.9	180.2	12.3	2.3	0.270
		10.14.40	20.0	17.83	76.1	7.23	7.03	-44.0	170.6	28.0	2.0	0.277
		10.15.57	30.0	17.00	70.1	1.25	1.14	-30.2	179.0	20.0	2.1	0.520
		10.11.57	0.5	27 64	213.4	16 81	9.61	-164 2	127 2	24.3	24.3	0.23
		10:10:57	5	27.2	183.3	14.55	9.48	-155.8	131.7	23.3	15.6	0.231
		10:07:39	10	24.03	70.1	5.89	7.98	-65	164.3	6.6	7.1	0.253
BM-7		10:06:40	15	22.15	72.8	6.34	7.84	-56.5	168.3	7.5	4	0.278
	7/16/2019	10:05:38	20	21.31	61.9	5.48	7.7	-48.2	173.1	10.8	3.8	0.297
		10:04:22	25	21.15	62.3	5.53	7.75	-51	171.1	12.1	3.7	0.328
		10:03:20	30	20.34	60.2	5.43	7.82	-55.1	170.6	27.9	3.6	0.416
		10:02:18	32	20.31	60.4	5.46	7.83	-55.5	170.6	39.3	4.4	0.417
┌────												
		10:20:38	0.5	29.42	189.6	14.47	9.41	-152.7	151.1	7.6	8.7	0.241
		10:19:33	5	28.63	161.3	12.48	9.29	-144.9	160.5	8.1	10.6	0.241
		10:18:38	10	25.82	94.5	7.68	8.03	-68.3	186	3.4	7.8	0.281
BM-7	7/30/2019	10:17:28	15	23.42	55.6	4.73	7.71	-49.1	192.9	2.1	4.8	0.321
		10:15:39	20	22.24	45.5	3.96	7.65	-45.8	192.6	2.3	3.8	0.355
		10:14:30	25	21.71	41.6	3.66	7.63	-44.1	191	4.5	3.3	0.376
		10:12:25	30	21.27	22.6	2	7.63	-44.4	179.9	21.7	5.4	0.375
L						L		L	L		L	

Station Date Time Depth Temp DO DO pН pHmV ORP Turbidity Chloro. SpCond M/D/Y hh:mm:ss ft С % mg/L mV mV NTU ug/L mS/cm 10:11:01 27.85 130.8 -130.9 148.8 0.5 10.26 9.06 0.285 5.3 9.6 10:10:08 5 27.42 119.1 9.42 8.97 -125.3 151.6 5.2 11.5 0.283 10:08:44 10 26.17 26.9 2.17 7.81 -55.6 170.8 3.6 5.7 0.304 BM-7 10:06:50 15 24.25 2.5 0.21 7.57 -40.9 174.6 1.3 4.2 0.329 8/20/2019 10:05:47 20 23.21 3.2 0.27 7.55 -39.7 179.6 1.6 3.5 0.355 25 10:03:53 22.77 13.6 1.17 7.56 -40.4 182.4 4.9 0.396 1.8 22.34 7.52 0.421 10:02:46 30 0.75 -38 183.7 9.3 1.4 8.6 10:01:26 32 22.27 7.2 0.63 7.52 -37.6 182 12.8 0.425 2 0.5 23.69 123.1 10.42 8.84 9:47:17 -116 169 5.0 8.2 0.317 9:46:11 5 23.6 116.9 9.91 8.79 -113.3 172.4 4.5 10.8 0.316 BM-7 9/10/2019 9:45:25 10 23.39 94.8 8.07 8.5 -95.7 176.5 4.7 6.9 0.316 9:44:18 15 23.18 66.7 5.69 8.14 -74.4 182.1 3.1 4.6 0.321 9:43:12 20 22.7 59.6 5.13 8.02 -67.3 184 2.8 3.4 0.329 9:41:54 25 22.06 47.8 4.17 7.87 -58.2 188.2 5.4 2.9 0.353 9:40:39 30 21 63.4 5.65 7.91 -60.8 189 18.1 3.2 0.387 25.41 215.9 -157.6 12:08:08 0.5 17.7 9.52 132 20.0 8 0.227 12:06:46 5.0 23.2 145.1 12.39 8.96 -123.1 151.2 10.0 6.4 0.238 12:05:11 BM-8 6/25/2019 10.0 20.18 82.7 7.49 7.65 -45.2 169.9 9.9 4.2 0.206 12:03:22 15.0 7.89 -58.9 10.3 0.247 19.6 100.1 9.17 166.3 3 12:02:04 20.0 18.28 85.5 8.05 7.72 -49.3 168.5 15.1 3.1 0.262 12:00:36 22.0 17.4 89.1 8.54 7.78 -52.4 166.5 18.8 3.2 0.290 0.5 29.05 274.7 21.1 -182.7 13.1 10.8 0.230 11:40:03 9.91 139.6 11:38:42 26.92 9.97 9.09 -132.6 0.233 5 125 166.1 12.9 13.7 11:37:23 BM-8 7/16/2019 10 23.78 129.6 10.95 8.81 -114.7 169.3 7.7 8.3 0.260 181.5 11:36:16 15 22.24 90.9 7.9 8.04 -68.6 5.6 5 0.268 11:35:23 20 21.23 73.3 6.5 7.82 -55.1 183.8 9.8 4.8 0.280 11:34:24 22 20.68 64.6 5.79 7.79 -53.3 184.2 15.7 5.1 0.295 11:49:23 0.5 30.5 229.8 9.57 0.240 17.21 -163.3 141.6 8.2 6.6 11:48:08 5 28.23 178 13.87 9.25 -142.8 158 9.4 16.8 0.246 BM-8 7/30/2019 11:46:23 10 25.53 112.7 9.22 8.31 -85.5 180.6 5.2 10.3 0.287 11:45:02 15 23.41 67.1 5.71 7.79 -54.1 189.1 9.299999 5.6 0.331 11:43:24 20 22.27 1.09 7.63 -44.2 188.9 9.9 0.334 12.5 5 28.69 9.29 0.5 165.3 12.77 -145.3 9.3 0.274 11:42:25 159.1 4.5 11:41:46 27.92 154 12.06 9.24 -142 162.7 6.7 19.7 0.272 5 BM-8 8/20/2019 11:40:02 10 25.83 5.33 7.96 -64.4 189.9 0.293 65.6 4.3 6.1 11:39:01 15 24.18 51.5 4.32 7.79 -53.8 194.2 5.8 4.3 0.328 11:35:18 20 23.41 38.1 3.24 7.68 -47.1 192.8 10.4 4 0.332 9 11:22:10 0.5 24.17 141.5 11.86 -126.2186.4 5 6.7 0.315 23.77 9/10/2019 11:21:15 138.6 11.71 9 -125.6 189.8 12.4 0.312 BM-8 5 5.6 11:20:03 23.31 8.72 -104.6 197.2 5.7 10 102.3 8.65 3.6 0.311 11:18:41 15 23.08 87.6 7.49 8.45 -92.7 201 2.7 4.9 0.313 11:17:35 20 22.59 87.1 7.52 8.39 -89 202.6 4.7 4.5 0.317 232.4 0.239 10:55:51 0.5 25.76 18.93 9.63 -164.4 129.7 60.8 19.2 10:54:36 5 23.35 150.5 12.82 9.01 -126.5 152.5 11 7.3 0.235 10:52:47 10 20.52 84.3 7.58 7.73 -49.8 177.2 10.5 3.7 0.248 BM-9 6/25/2019 10:51:08 15 19.76 88.6 8.08 7.78 -53 175.8 11.6 2.5 0.279 10:49:18 20 8.06 7.79 -53 174.5 19.16 87.2 12.8 3.1 0.297 85 10:48:32 25 17.83 8.07 7.8 -53.5 174.4 19.3 2.6 0.340 7.78 10:47:30 30 17.7 82.1 7.81 -52.3 172 25.5 0.341 2 10:46:44 32 17.71 81.8 7.78 7.77 -52 170.3 30.3 3.3 0.341

Station	Date	Time	Depth	Temp	DO	DO	рН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	С	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		10:43:21	0.5	28.14	218.2	17.03	9.65	-166.5	116.5	14.9	13.5	0.234
		10:41:58	5	26.76	140.8	11.26	9.24	-141.2	128.2	13.7	13	0.240
		10:40:49	10	24.12	78.5	6.59	8.07	-70.8	146.5	7.4	7.4	0.247
BM-9	7/16/2019	10:38:59	15	22.5	82	7.1	7.98	-64.9	146.9	7.7	3.9	0.329
		10:36:01	20	21.69	87.5	7.69	8.03	-67.6	137.1	13.9	4.1	0.371
		10:33:20	25	20.18	70.1	6.34	7.83	-55.6	126	24.7	4.1	0.423
		10:31:57	30	19.98	66.4	6.03	7.87	-57.8	112.3	50.9	4.5	0.426
		40-40-50	0.5	00.00	405.0	44.07	0.40	4545	110.0	5.0	4.0	0.044
		10:49:50	0.5	30.28	195.2	14.07	9.43	-154.5	119.3	5.8	4.3	0.244
RM 0	7/30/2010	10:46:42	5 10	26.21	100.9	7 76	9.22	-140.6	123.2	1.2	7.6	0.240
DIVI-3	1/30/2019	10:40.30	10	23.22	94.3 74.2	6.21	7.00	-39.7	130.0	2.5	7.0	0.209
		10:43.12	20	20.01	63.0	5.52	7.70	-53	102.2	2.0	1.8	0.331
		10:44:00	20	22.30	52.9	4.62	7.70	-49.6	124.3	18	3.8	0.307
		10:43:04	30	21.54	22.0	1.02	7.66	-46	88.5	33.4	5	0.423
		10.41.20	50	21.7	22	1.34	7.00	-+0	00.0	00.4	5	0.424
		10:39:16	0.5	28.2	144 4	11 26	9 18	-138.3	107	5	10.1	0 279
		10:38:15	5	27.53	113.9	8.98	89	-121 1	107	53	13.3	0.283
		10:36:30	10	25.77	26.4	2 15	7 76	-52.6	117.9	2.3	3.6	0.308
		10:35:02	15	24.09	9.3	0.78	7.65	-45.8	116	1.7	2.8	0.340
BM-9	8/20/2019	10:33:29	20	23.42	29.2	2.48	7.75	-51.6	111.1	3.7	2.2	0.394
		10:32:07	25	22.9	29.5	2.53	7.71	-49.2	106.4	10.7	1.9	0.424
		10:30:56	30	22.57	23.9	2.07	7.64	-45.2	101.2	24.7	2	0.442
		10:29:08	32	22.26	9.4	0.82	7.59	-41.9	83.9	31.8	2.8	0.449
		10:13:32	0.5	23.6	123.9	10.5	8.84	-116.2	114	5.1	9.2	0.314
		10:12:35	5	23.5	113.5	9.64	8.75	-111.1	111.3	4.8	10.4	0.314
BM-9		10:11:42	10	23.27	89.9	7.67	8.42	-91.1	110.6	4.2	6.3	0.316
	9/10/2019	10:10:30	15	23.04	71.3	6.11	8.15	-75.4	106.8	2.7	4.2	0.319
		10:09:34	20	22.67	75	6.47	8.13	-74	102	4.5	3.5	0.330
		10:08:13	25	22.01	90.2	7.87	8.09	-71.2	92.9	12.6	5.4	0.347
		10:07:24	30	20.05	78.4	7.11	7.94	-61.9	79.2	72.4	6	0.428
		10:05:48	32	19.98	11.7	1.06	7.98	-64.7	176.6	0.0	0.2	0.431
		11:29:03	0.5	25.87	255.5	20.77	9.69	-167.5	114.7	141.4	26.7	0.234
		11:27:33	5	22.76	143.2	12.33	8.7	-107.5	142.9	10.2	5.8	0.240
BM-10	6/25/2019	11:26:33	10	21.12	117.3	10.43	8.43	-90.9	149.9	8.3	3.3	0.315
		11:25:30	15	18.21	88.5	8.33	7.91	-60.1	158.2	37.0	2.7	0.367
		11:24:23	20	18.17	88.7	8.36	7.92	-60.7	156.2	43.9	3.1	0.366
		11:11:58	0.5	29.22	292.2	22.38	9.94	-185	93.2	18.9	14.7	0.238
BM-10	7/16/2019	11:10:01	5	26	129.3	10.48	8.91	-121.4	114	10.8	12.2	0.245
		11:08:29	10	24.59	162.8	13.54	8.88	-118.7	107.6	8.2	8.4	0.304
		11:06:32	15	20.42	80.2	7.23	7.97	-63.9	125.4	44./	4.2	0.432
	┝╼╼╼┥	11:05:12	18	20.07	81.2	1.31	8.01	-00.3	131.2	0.08	11./	0.445
		11.15.00	05	20.54	220.0	17 44	0.05	167.0	120.0	0.0	11.0	0.005
DM 40		11:15:29	0.5	29.51	228.9	12 74	9.65	-10/.3	138.9	8.9 0.4	11.3	0.235
DIVI-10	7/20/0040	11:14:39	5 40	∠ŏ.5ŏ	1/1.4	13.74	9.44	-104.2	140.2	ŏ.4	10.4	0.232
	1/30/2019	11:13:25	10	23.99	138.1	0.02	0.0 0 00	-102.0	100.2	10.3	10	0.320
		11.12.17 11.11.08	20	23.30	97.1 80.1	0.23	8.09	-/ 1.5	175 3	20.5	4.0 6	0.420
	1	11.11.00	20	LL.1 L	00.1	1.01	0.00	-00.4	110.0	10.1		0.704

Station	Date	Time	Depth	Temp	DO	DO	рΗ	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	С	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		11:06:38	0.5	28.01	141.1	11.04	9.12	-134.5	157.7	4.7	17.4	0.279
BM-10		11:05:47	5	27.06	98.5	7.84	8.53	-99	168.5	5.4	11	0.303
	8/20/2019	11:04:13	10	25.87	97.1	7.89	8.34	-87.2	172.9	9.9	4.6	0.346
		11:02:55	15	25.17	83.4	6.87	8.13	-74.7	176.6	14.3	3.7	0.366
		11:01:42	20	22.85	73.8	6.34	7.88	-59.4	186.1	66.1	4.4	0.445
		10:44:13	0.5	23.88	139.9	11.8	8.97	-124.3	182	4.2	16.3	0.315
BM-10	9/10/2019	10:43:11	5	23.49	124.6	10.58	8.84	-115.9	186	5	11.7	0.315
		10:42:09	10	22.97	125.6	10.77	8.68	-106.6	190.1	3.8	8.4	0.324
		10:40:47	15	22.67	137.9	11.89	8.64	-104.2	194	4.8	8.7	0.332
		10:39:00	20	19.75	97.9	8.93	8.14	-73.8	206.4	97.3	7	0.447
	6/25/2019	13:02:17	0.5	19.36	105.1	9.68	7.87	-57.7	139.4	13.9	2.5	0.154
	7/16/2019	12:41:34	0.5	21.19	100.3	8.91	7.91	-60.7	137.1	4.9	1.3	0.198
BM-11	7/30/2019	13:04:39	0.5	22.25	98.5	8.57	8.08	-70.9	178.4	7.5	1.1	0.249
	8/20/2019	12:43:31	0.5	22.99	87.6	7.51	8.05	-68.9	140.8	10.9	2.2	0.235
	9/10/2019	12:26:16	0.5	19.49	88.6	8.13	8.08	-70.5	179.5	5.80	1.3	0.312

APPENDIX B

BACTERIA SAMPLING DATA TABLES



ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Lab ID: 9012531-01

Attention:

Sample Desc: SB-1

Certificate of Analysis

Laboratory No.: 9012531 Report: 05/14/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Sampled: 05/13/19 12:50

Received: 05/13/19 13:28 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	11	mpn/100ml	1	SM 9223 B/Quantitray	05/13/19 15:57		JMW
Total Coliform	116	mpn/100ml	1	SM 9223 B/Quantitray	05/13/19 15:57		JMW

Lab ID: 9012531-02 Sample Desc: SB-2

Collected By: Client

Collected By: Client

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 05/13/19 12:53

Received: 05/13/19 13:28 Sample Type: Grab

	Rep.						
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst
Microbiology							
Escherichia coli	6	mpn/100ml	1	SM 9223	05/13/19 15:57		JMW
Total Coliform	292	mpn/100ml	1	SM 9223 B/Quantitray	05/13/19 15:57		JMW

Lab ID: 9012531-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/13/19 12:56 **Received:** 05/13/19 13:28

Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	866	mpn/100ml	1	SM 9223 B/Quantitray	05/13/19 15:57		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/13/19 15:57		JMW



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M.J. Reider Associates, Inc.

107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com

WORK ORDER Chain of Custody

Client: US Army Corp of Engineers Project: 2019 Blue Marsh Beach 1,2,3



Report Template: wko4 workOrd

Project Manager: Richard A Wheeler

4092

Client Code:

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By: BOOMAC	Treichler	Comments:		
9012531-01 SB-1 EC (#) SM 9223B, TC (#) SM 9223B	- -	· .	Matrix: Non-Potable Water Type: Grab A - Sterile Pl 125ml	Date: <u>13 MAY 19</u> Time: <u>1250</u> NaThio
9012531-02 SB-2 EC (#) SM 9223B, TC (#) SM 9223B	C		Matrix: Non-Potable Water Type: Grab A - Sterile Pl 125ml	Date: <u>13 MAY 19</u> Time: <u>1253</u> NaThio
9012531-03 SB-3 EC (#) SM 9223B, TC (#) SM 9223B	R		Matrix: Non-Potable Water Type: Grab A - Sterile Pl 125ml 1	Date: <u>13 MAY19</u> Time: <u>1256</u> NaThio

.

	<u>BMAY 19 1328</u>		<u> </u>	<u> </u>	Sample Kit Prepared By:	Date/Time
	Date/Ime		Date/Time			
D.U. 11 1D		LIN	Mode 5.	-13-19 1328	Sample Temp (°C):	-10.2
Keinquished By	Date/Time	Received at Laboratory By	Date/Time	1	Samples on Ice?	(Yes No NA
The Client, by signing (or having the client's agent sign), agr	ees to MJRA's Terms and Conditions and	V		<i>.</i>	Approved By:	-29-
to pay for the above requested services including any additio	nal associated tees incurred.		Page 1 of 1	Printed: 4/16/2019 10:54:25	Entered By:	Page 2 of 3



MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9012532 Report: 05/20/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9012532-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 05/16/19 11:40

Received: 05/16/19 13:04 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	6	mpn/100ml	1	SM 9223 B/Quantitray	05/16/19 15:41		JMW
Total Coliform	143	mpn/100ml	1	SM 9223 B/Quantitray	05/16/19 15:41		JMW

Lab ID: 9012532-02 Sample Desc: SB-2

Collected By: Client

Sampled: 05/16/19 11:43

Received: 05/16/19 13:04 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	12	mpn/100ml	1	SM 9223 B/Quantitray	05/16/19 15:41		JMW
Total Coliform	435	mpn/100ml	1	SM 9223 B/Quantitray	05/16/19 15:41		JMW

Lab ID: 9012532-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/16/19 11:46 **Received:** 05/16/19 13:04

Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	11	mpn/100ml	1	SM 9223 B/Quantitray	05/16/19 15:41		JMW
Total Coliform	260	mpn/100ml	1	SM 9223 B/Quantitray	05/16/19 15:41		JMW



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WORK ORDER **Chain of Custody**



V

Client: US Army Corp of Engineers Project: 2019 Blue Marsh Beach 1,2,3

Project Manager: Richard A Wheeler

Client Code:

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Comments:				
Matrix: Non-Potable Water Type: Grab	Date: 16 MAY 19 Time: 1140			
A - Sterile Pl 125ml NaThio				
Matrix: Non-Potable Water Type: Grab	Date: <u>16 MAY 19</u> Time: <u>11 45</u>			
A - Sterile Pl 125ml NaThio				
Matrix: Non-Potable Water Type: Grab A - Sterile Pl 125ml N	Date: <u>16 MAY 19</u> Time: <u>1146</u> NaThio			
	Comments: Matrix: Non-Potable Water Type: Grab Matrix: Non-Potable Water Type: Grab A - Sterile Pl 125ml I Matrix: Non-Potable Water Type: Grab A - Sterile Pl 125ml I A - Sterile Pl 125ml I			

Relinquished By	<u>5-16-19130</u> Date/Time	H Received By	Date/Tim	e	Sample Kit Prepared By:	Date/Time
	i	_ <u>29</u>	end 5	16-19 1304	Sample Temp (°C):	15.4
Relinquished By	Date/Time	Received at Laboratory By	Date/Tim	e j	Samples on Ice?	Ves No NA
The Client, by signing (or having the client's agent sign), agre to pay for the above requested services including any addition	es to MJRA's Terms and Conditions and ad:associated fees incurred.	0	Page 1 of 1	Printed: 4/16/2019 10:54:30	Approved By: Entered By:	Templater w Page 2 of 3



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Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Lab ID: 9016693-01

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Attention:

Sample Desc: SB-1

Certificate of Analysis

Laboratory No.: 9016693 Report: 05/21/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Sampled: 05/20/19 08:23

Received: 05/20/19 08:56 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	687	mpn/100ml	1	SM 9223 B/Quantitray	05/20/19 15:57		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/20/19 15:57		JMW

Lab ID: 9016693-02 Sample Desc: SB-2

Collected By: Client

Collected By: Client

Sampled: 05/20/19 08:26

Received: 05/20/19 08:56 Sample Type: Grab

			Rep.			Analyte		
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	980	mpn/100ml	1	SM 9223	05/20/19 15:57		JMW	
Total Colifo rm	>2419.6	mpn/100ml	1	B/Quantitray SM 9223 B/Quantitray	05/20/19 15:57		JMW	

Lab ID: 9016693-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/20/19 08:29

Received: 05/20/19 08:56 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	1730	mpn/100ml	1	SM 9223 B/Quantitray	05/20/19 15:57		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/20/19 15:57		JMW



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Clie Pro Rep Inve	ent Code: ject Manager: port To: US Arm porce To: US Arm	M.J. Reider As 107 Angelica St, Read 610-374-5129 www 4092 Richard A Wheeler y Corp of Engineers - Scott Sun ny Corp of Engineers - Scott	sociates, Inc. ing PA, 19611 v.mjreider.com derland - 1268 Palisades D Sunderland - 1268 Palisad	BOTTI Chain Chain Or Leesport, PA 19533 es Dr Leesport, PA 19533	LE ORDER of Custody Client: US Army Project:2019 Blue	Corp of Engin e Marsh Beach	eers 1,2,3	9 US Arm 2019 Blu	016693 (Corp of Engineers Marsh Beach 1,2,3	PM: RAW
Col (Fall	lected By: Name) S	Justin Hardy		Com	nents:					
-01	SB-1 EC (#) SM	9223B, TC (#) SM 9223	B L				Matrix:Other Type: Grab A - S	Sterile Pl 125ml NaThi	Date: <u>5-20-19</u> Time: <u>0823</u>	
-02	SB-2 EC (#) SM	9223B, TC (#) SM 9223	в				Matrix:Other Type: Grab A - S	terile Pl 125ml NaThio	Date: <u>5-20-1</u> Time: <u>0826</u>	7
-03	SB-3 EC (#) SM	9223B, TC (#) SM 9223	в				Matrix:Other Type: Grab A - S	terile Pl 125ml NaThio	Date: <u>5-20-19</u> Time: <u>0829</u>	<u>-</u>
-										
Q ₁	stin Han	08"	56 5-20-19					Sample Kit Prenared R	/ Date/Time	
Relinqu Relinqu	ished By	Date/Tin Date/Tin Date/Tin	ne Rec	retived By <u>Tean</u> Vand retived at Laboratory By	Jure	erTime S- JO -l9 erTime	8:56	Sample Temp (°C): Samples on Ice? Approved By:	Yes No TSV	NA

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and
to pay for the above requested services including any additional associated fees incurred.

T.

Printed: 5/13/2019 1:31:42PM

Entered By:

Page 2 of 3



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9016976 Report: 05/24/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9016976-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 05/22/19 08:20

Received: 05/22/19 08:51 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	18	mpn/100ml	1	SM 9223 B/Quantitray	05/22/19 15:20		JMW
Total Coliform	816	mpn/100ml	1	SM 9223 B/Quantitray	05/22/19 15:20		JMW

Lab ID: 9016976-02 Sample Desc: SB-2

Collected By: Client

Sampled: 05/22/19 08:23

Received: 05/22/19 08:51 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	12	mpn/100ml	1	SM 9223 B/Quantitray	05/22/19 15:20		JMW
Total Coliform	328	mpn/100ml	1	SM 9223 B/Quantitray	05/22/19 15:20		JMW

Lab ID: 9016976-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/22/19 08:26

Received: 05/22/19 08:51 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	23	mpn/100ml	1	SM 9223 B/Quantitray	05/22/19 15:20		JMW
Total Coliform	517	mpn/100ml	1	SM 9223 B/Quantitray	05/22/19 15:20		JMW



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Client Code: Project Manager: Report To: US Army Invoice To: US Army Collected By:	M.J. Reider Associates 107 Angelica St, Reading PA, 19 610-374-5129 www.mjreider. 4092 Richard A Wheeler Corp of Engineers - Scott Sunderland - 120 Corp of Engineers - Scott Sunderland -	5. Inc. BO 611 Ch com 58 Palisades Dr Leesport, PA 195 1268 Palisades Dr Leesport, PA	TTLE ORDER ain of Custody Client: US Army Corp Project:2019 Blue Mar 333 .19533 Comments:	o of Engineers rsh Beach 1,2,3	9016976 US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3	ĄW
-01 SB-1	223B. TC (#) SM 9223B			Matrix:Other Type: Grab A - Ster	Date: <u>5-22-19</u> Time: <u>0320</u> ile Pl 125ml NaThio	-
-02 SB-2 EC (#) SM 92	223B, TC (#) SM 9223B			Matrix: Other Type: Grab A - Ster	Date: <u>5-22-19</u> Time: <u>0823</u> ile Pl 125ml NaThio	- -
-03 SB-3 EC (#) SM 92	223B, TC (#) SM 9223B			Matrix: Other Type: Grab A - Ster	Date: <u>5-22- ှ</u> Time: <u>0326</u> ile Pl 125ml NaThio	-
Ast Hand	0'85 5 Date/Time	-22-19 Received By			Sample Kit Prepared By: Date/Time Sample Temp (°C):	
Relinquished By The Client, by signing (or having the to pay for the above requested serv	Date/Time he client's agent sign), agrees to MJRA's Terms and Con vices including any additional associated fees incurred,	Received at Laboratory By	$\frac{\sum_{\text{Date/Time}} \sum_{\text{Date/Time}} \sum_$	2-1 1 200-5 1 Printed: 5/13/2019 1:31:24PM	Samples on Ice? Approved By: Entered By: Page 2 of 3 Report Template: bit COC is	



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9017130 Report: 05/24/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9017130-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 05/23/19 08:09

Received: 05/23/19 09:45 Sample Type: Grab

	Docult	Unit	Rep.	Drocodura	Incubated	Analyte	Analyst
	Result	UIIIt	LIIIII	Procedure	Incubated	Notes	Analyst
Microbiology							
Escherichia coli	13	mpn/100ml	1	SM 9223	05/23/19 14:53		JMW
				B/Quantitray			
Total Coliform	411	mpn/100ml	1	SM 9223	05/23/19 14:53		JMW
				B/Quantitray			

Lab ID: 9017130-02 Sample Desc: SB-2

Collected By: Client

Sampled: 05/23/19 08:07

Received: 05/23/19 09:45 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	10	mpn/100ml	1	SM 9223 B/Quantitray	05/23/19 14:53		JMW
Total Coliform	921	mpn/100ml	1	SM 9223 B/Quantitray	05/23/19 14:53		JMW

Lab ID: 9017130-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/23/19 08:11

Received: 05/23/19 09:45 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							= -
Escherichia coli	8	mpn/100ml	1	SM 9223 B/Ouantitray	05/23/19 14:53		JMW
Total Coliform	866	mpn/100ml	1	SM 9223 B/Quantitray	05/23/19 14:53		JMW



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M.J. Reider Associates, Inc. 107 Angelica St, Reading PA, 19611

BOTTLE ORDER Chain of Custody

Client: US Army Corp of Engineers

Project: 2019 Blue Marsh Beach 1,2,3

9017130 US Army Corp of Engine

1

PM: RAW

US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

Client Code: 4092

Project Manager: Richard A Wheeler

10

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

610-374-5129 www.mjreider.com

Colle (Full Nat	ected By: <u>Courtney</u> Mayer	Comments:	
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Steri	Date: 5-33 Time: <u>5-33</u> Time: <u>5-33</u> Time: <u>5-33</u>
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A-Steri	Date: <u>5-23</u> Time: <u>7:07</u> ile Pl 125ml NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Steri	Date: 5-23 Time: <u>Y 11</u> ile Pl 125ml NaThio
		, 	i

() v	A	5/23/19 0	945			Sample Kit Prepared By:	Date/Time
Relinquished By	O	Date/Time	Received By	······································	Date/Time		
			Sunady	Man	3/23/190945	Sample Temp (°C):	9
Relinquished By		Date Time	Received at Laboratory By	v. gene	Date/Time	Samples on Ice? Approved By:	(Yes) No NA
The Client, by signing (or hav to pay for the above requested	ng the client's agent sign), ag services including any additi	rees to MJRA's Terms and Cond onal associated fees incurred.	litions and	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Entered By:	Page 2 of 3


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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9017671 Report: 05/30/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9017671-01 Collected By: Client Sample Desc: SB-1 L

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 05/28/19 14:23

Received: 05/28/19 15:00 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	10	mpn/100ml	1	SM 9223 B/Quantitray	05/28/19 16:32		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/28/19 16:32		JMW

Lab ID: 9017671-02 Sample Desc: SB-2 C

Collected By: Client

Sampled: 05/28/19 14:26

Received: 05/28/19 15:00 Sample Type: Grab

		Rep.			Analyte			
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	05/28/19 16:32		JMW	
Total Colifo rm	1990	mpn/100ml	1	B/Quantitray SM 9223 B/Quantitray	05/28/19 16:32		JMW	

Lab ID: 9017671-03 Sample Desc: SB-3 R

Collected By: Client

Sampled: 05/28/19 14:29

Received: 05/28/19 15:00 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	4	mpn/100ml	1	SM 9223 B/Quantitray	05/28/19 16:32		JMW
Total Coliform	1300	mpn/100ml	1	SM 9223 B/Quantitray	05/28/19 16:32		JMW



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Clien Proje Repoi	M.J. Reider Associates, Inc. 107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com 4092 ct Manager: Richard A Wheeler rt To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport, the To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport,	BOTTLE ORDER Chain of Custody Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3 , PA 19533 port, PA 19533	9017671 PM: RAW US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3
Colle (Full Na	cted By: Olivia Roberton	Comments:	_
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A-Steri	$\begin{array}{r} \text{Date:} \underline{5/28/19} \\ \text{Time:} \underline{2:23} \\ 1423 \end{array}$
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A-Steri	Date: <u>5/28/19</u> Time: <u>2:26</u> le Pl 125ml NaThio <u>1426</u>
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Steri	Date: 5/28/19 Time: <u>2:29</u> 1429

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Mind Rolland	5/28/19_150	Recorded By	Dat	é Time	Sample Kit Prepared By:	Date/Time
Relinquished By	Date/Time .	Reprived at Laboratory By	. Hilden	5722449 1500 eTime	Sample Temp (°C): Samples on Ice?	13 (Yes) pNo/ NA
The Client, by signing (or having the client's agent sign), agrees to pay for the above requested services including any additiona	to MJRA's Terms and Conditions and associated fees incurred.	V	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Approved By: Entered By:	Page 2 of 3



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Richard A Wheeler Director of Field Services



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Certificate of Analysis

Laboratory No.: 9017959 Report: 06/03/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9017959-01 Collected By: Client

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sample Desc: SB-1

Attention:

Sampled: 05/30/19 08:08

Received: 05/30/19 09:02 Sample Type: Grab

	Rep.						
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst
Microbiology							
Escherichia coli	102	mpn/100ml	1	SM 9223	05/30/19 9:42		DRW
				B/Quantitray			
Total Coliform	2420	mpn/100ml	1	SM 9223	05/30/19 9:42		DRW
				B/Quantitray			

Lab ID: 9017959-02 Sample Desc: SB-2

Collected By: Client

Sampled: 05/30/19 08:10

Received: 05/30/19 09:02 Sample Type: Grab

	Rep.			Analyte			
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst
Microbiology							
Escherichia coli	291	mpn/100ml	1	SM 9223	05/30/19 9:42		DRW
				B/Quantitray			
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	05/30/19 9:42		DRW
				B/Quantitray			

Lab ID: 9017959-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/30/19 08:12

Received: 05/30/19 09:02 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	411	mpn/100ml	1	SM 9223 B/Quantitray	05/30/19 9:42		DRW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/30/19 9:42		DRW



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Project Manager:

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Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Richard A Wheeler

BOTTLE ORDER Chain of Custody

9017959

PM: RAW

Page 2 of 3

Client: US Army Corp of Engineers Project: 2019 Blue Marsh Beach 1,2,3



Invoi Colle (Full Na	ce To: US Army Corp of Engineers - Scott Sunde	rland - 1268 Palisades Dr Leesport,	PA 19533 Comments:	- -	
-01	\$B-'1		Matrix: Other Type: Grah	Date: Time:	5/30/19
	EC (#) SM 9223B, TC (#) SM 9223B		A - Steri	le Pl 125ml NaThio	1007
-02	SB-2	C	Matrix:Other Type: Grab	Date: Time:	5/30/19
	EC (#) SM 9223B, TC (#) SM 9223B		A - Steri	e Pl 125ml NaThio	51 2
-03	SB-3	0	Matrix: Other Type: Grab	Date: Time:	5/30/19 0812
	EC (#) SM 9223B, TC (#) SM 9223B	K	A - Steril	e Pl 125ml NaThio	
			,		• APPA

Ryan Schetrumff	5/30/19 09:02				Sample Kit Prepared By:	Date/Time
Relinquished By	Date/Time	Received By	Ch	$\frac{1}{2} \frac{1}{2} \frac{1}$	Sample Temp (°C):	<u> </u>
Reliaquished By	Date/Time	Received at Laboratory By	Ma		Samples on Ice? Approved By:	Yes No NA
The Client, by signing (or having the client's agent sign to pay for the above requested services including and a	n), agrees to MJRA's Terms and Conditions and		Page 1 of 1	Printed: 5/13/2010 1.21-24DM	Entered By:	

to pay for the above requested services including any additional associated fees incurred.

Page 1 of 1

Printed: 5/13/2019 1:31:24PM



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Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9018299 Report: 06/04/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9018299-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 05/31/19 12:25

Received: 05/31/19 12:54 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	93	mpn/100ml	1	SM 9223 B/Quantitray	05/31/19 16:28		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/31/19 16:28		JMW

Lab ID: 9018299-02 Sample Desc: SB-2

Collected By: Client

Sampled: 05/31/19 12:28

Received: 05/31/19 12:54 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	88	mpn/100ml	1	SM 9223 B/Quantitray	05/31/19 16:28		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/31/19 16:28		JMW

Lab ID: 9018299-03 Sample Desc: SB-3

Collected By: Client

Sampled: 05/31/19 12:31

Received: 05/31/19 12:54 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Analyte Notes	Analyst
Microbiology							
Escherichia coli	64	mpn/100ml	1	SM 9223 B/Quantitray	05/31/19 16:28		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	05/31/19 16:28		JMW



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BOTTLE ORDER Chain of Custody

> Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

9018299 US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

PM: RAW

Client Code: 4092 Project Managory Dish.

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Project Manager: Richard A Wheeler

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Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

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Colle (Full Na	ected By: Justin Hardy	Comments:				
-01	SB-1	Matrix:Other Type: Grab	Date: <u>5-31-19</u> Time: <u>1225</u>			
	EC (#) SM 9223B, TC (#) SM 9223B	A - Sterile Pl 125ml	A - Sterile Pl 125ml NaThio			
-02	SB-2	Matrix: Other Type: Grab	Date: $5^{-3}i^{-19}$ Time: 1228			
	EC (#) SM 9223B, TC (#) SM 9223B	A - Sterile Pl 125ml NaThio				
-03	SB-3	Matrix:Other	Date: 5-31-19			
	EC (#) SM 9223B, TC (#) SM 9223B	Type: Grab A - Sterile Pl 125ml	NaThio			

ast 1-task	1254 5-31-19				Sample Kit Prepared By:	Date/Time
	Date Thie	Received By		Date/Time		
		O(i)	0	5-21-10 (254	Sample Temp (°C):	3.10
Relinquished By	Date/Time	Received at Loors ory By	\times	Date/Time	Samples on Ice?	Yes No NA
The Client, by signing (or having the client's agent sign), agree	es to MJRA's Terms and Conditions and				Approved By: Entered By:	
to pay for the above requested services including any addition	al associated fees incurred.	V	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Lincica by.	Page 2 of 3



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Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9018482 Report: 06/05/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Leesport, PA 19533

Scott Sunderland

1268 Palisades Dr.

Reported To: US Army Corp of Engineers

Lab ID: 9018482-01 Collected By: Client Sample Desc: SB-1

Sampled: 06/03/19 09:56

Received: 06/03/19 10:30 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	25	mpn/100ml	1	SM 9223	06/03/19 15:16		JMW	
				B/Quantitray				
Total Coliform	649	mpn/100ml	1	SM 9223	06/03/19 15:16		JMW	
				B/Quantitray				

Lab ID: 9018482-02 Sample Desc: SB-2

Collected By: Client

Sampled: 06/03/19 09:59

Received: 06/03/19 10:30 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	6	mpn/100ml	1	SM 9223 B/Quantitray	06/03/19 15:16		JMW	
Total Coliform	313	mpn/100ml	1	SM 9223 B/Quantitray	06/03/19 15:16		JMW	

Lab ID: 9018482-03 Sample Desc: SB-3

Collected By: Client

Sampled: 06/03/19 10:02 **Received:** 06/03/19 10:30

Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223 B/Quantitray	06/03/19 15:16		JMW	
Total Coliform	411	mpn/100ml	1	SM 9223 B/Quantitray	06/03/19 15:16		JMW	



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107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com 4092

Client Code:

Λ

Project Manager: Richard A Wheeler

BOTTLE ORDER

Chain of Custody

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

PM: RAW 9018482 US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: Justin Hardy	Comments:	
-01	SB-1 EC (#) SM 9223B TC (#) SM 9223B	Matrix:Other Type: Grab A - Sterile P1 125r	Date: <u>6-3-19</u> Time: <u>0956</u> nl NaThio
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Sterile Pl 125r	Date: <u>6-3-19</u> Time: <u>6959</u> nl NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Sterile Pl 125n	Date: <u>6-3-19</u> Time: <u>1002</u> nl NaThio

Asti Hal	1030 6-3-19		f	Sample Kit Prepared By:	Date/Time
Komquished By	Date/Time	Received By Date Time	10/3/19/10:30	Sample Temp (°C):	20.4
Relinquished By	Date Time	Received at Laboratory By Date-Time		Samples on Ice? Approved By:	Yes No NA
The Client, by signing (or having the client's agent sign) to pay for the above requested services including any ad	, agrees to MJRA's Terms and Conditions and ditional associated fees incurred.	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Entered By:	Page 2 of 3



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Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9019123 Report: 06/10/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9019123-01 Collected By: Client Sample Desc: SB-1 L

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 06/06/19 08:09

Received: 06/06/19 09:02 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Notes	Analyst	
Microbiology							,	
Escherichia coli	6	mpn/100ml	1	SM 9223 B/Oueptitrey	06/06/19 10:00		JMW	
Total Coliform	2420	mpn/100ml	1	SM 9223 B/Quantitray	06/06/19 10:00		JMW	

Lab ID: 9019123-02 Sample Desc: SB-2 C

Collected By: Client

Sampled: 06/06/19 08:12

Received: 06/06/19 09:02 Sample Type: Grab

	Decult	Theit	Rep.	Descalaria	The surplus day of	Nata	A 1 4	
	Kesuit	Unit	LIIIIII	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	31	mpn/100ml	1	SM 9223	06/06/19 10:00		JMW	
				B/Quantitray				
Total Coliform	1050	mpn/100ml	1	SM 9223	06/06/19 10:00		JMW	
				B/Quantitray			-	

Lab ID: 9019123-03 Sample Desc: SB-3 R

Collected By: Client

Sampled: 06/06/19 08:16

Received: 06/06/19 09:02 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	29	mpn/100ml	1	SM 9223 B/Quantitray	06/06/19 10:00		JMW	
Total Coliform	1990	mpn/100ml	1	SM 9223 B/Quantitray	06/06/19 10:00		JMW	



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BOTTLE ORDER Chain of Custody

9019123

US Army Corp of Engineers

2019 Blue Marsh Beach 1,2,3

PM: RAW

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: Willow Shindge	Comments:	
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Sterile Pl 125n	Date: $6 - 6 - 16$ Time: $2 \cdot 60$
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type: Grab A - Sterile Pl 125m	Date: $G - G - IG$ Time: χ_{11}
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125m	Date: $6 - 6 - 19$ Time: $8:10$

WW aw Sha	Janue 2019 9:02	Received By 1 Data Time		Sample Kit Prepared By:	Date/Time
		Emply Cap is	6.19 902	Sample Temp (°C):	16
Reinquished By	Date/Time	Received at Laboratory By Date Time		Approved By:	Ves ONO NA
The Client, by signing (or having the client's agent sign), agri to pay for the above requested services including any additio	ees to MJRA's Terms and Conditions and nal associated fees incurred.	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Entered By:	



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9019568 Report: 06/12/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9019568-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 06/10/19 08:12

Received: 06/10/19 08:59 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	13	mpn/100ml	1	SM 9223	06/10/19 16:10		JMW	
				B/Quantitray				
Total Coliform	1730	mpn/100ml	1	SM 9223	06/10/19 16:10		JMW	
				B/Quantitray				

Lab ID: 9019568-02 Sample Desc: SB-2

Collected By: Client

Sampled: 06/10/19 08:15

Received: 06/10/19 08:59 Sample Type: Grab

Result	Unit	Rep. Limit	Procedure	Incubated	Notes	Analyst	
Rebuit	ome	Lillin	Tioccure	incubated	Hotes	7 mary 5t	
7	mpn/100ml	1	SM 9223	06/10/19 16:10		JMW	
			B/Quantitray				
1200	mpn/100ml	1	SM 9223	06/10/19 16.10		IMW	
1200		-	B/Quantitray	00/10/19 10:10		J112 ()	
	Result 7 1200	Result Unit 7 mpn/100ml 1200 mpn/100ml	ResultUnitRep. Limit7mpn/100ml11200mpn/100ml1	Result Rep. Result Unit Limit Procedure 7 mpn/100ml 1 SM 9223 B/Quantitray 1200 mpn/100ml 1 SM 9223 B/Quantitray B/Quantitray	ResultUnitLimitProcedureIncubated7mpn/100ml1SM 922306/10/1916:101200mpn/100ml1SM 922306/10/1916:10B/QuantitrayB/QuantitrayB/Quantitray16:10	Rep. Result Unit Limit Procedure Incubated Notes 7 mpn/100ml 1 SM 9223 06/10/19 16:10 B/Quantitray B/Quantitray B/Quantitray 06/10/19 16:10	Result Unit Limit Procedure Incubated Notes Analyst 7 mpn/100ml 1 SM 9223 06/10/19 16:10 JMW 1200 mpn/100ml 1 SM 9223 06/10/19 16:10 JMW B/Quantitray B/Quantitray 06/10/19 16:10 JMW

Lab ID: 9019568-03 Sample Desc: SB-3

Collected By: Client

Sampled: 06/10/19 08:18

Received: 06/10/19 08:59 Sample Type: Grab

	Result	Unit	Rep. Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	37	mpn/100ml	1	SM 9223 B/Quantitray	06/10/19 16:10		JMW	
Total Coliform	980	mpn/100ml	1	SM 9223 B/Quantitray	06/10/19 16:10		JMW	



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BOTTLE ORDER Chain of Custody

9019568

PM: RAW

US Army Corp of Engineers

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3



Project Manager: Richard A Wheeler

NI

4092

Client Code:

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: Justin Hardy	Comments:	
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125ml NaT	Date: <u>(10-19</u> Time: 0312 hio
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125ml NaTI	Date: 6-10-19 Time: 0815
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125ml NaTh	Date: <u>6-10-19</u> Time: 0818 nio

Asti Har	0859 6-10-1	9		Sample Kit Prepared By:	Date/Time
John Charles Contraction Contr	Date i me	Tom Mandberg	Date Time	Sample Temp (°C):	_14.8
Relinquished By The Client, by sjoning (or having the client's agent sign) agree	Date Time	Received at Laboratory By	Date Time	Samples on Ice? Approved By:	Yes No NA
to pay for the above requested services including any addition	al associated fees incurred.	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Entered By:	

5



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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Certificate of Analysis

Laboratory No.: 9020086 Report: 06/14/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9020086-01 Collected By: Client

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sample Desc: SB-1

Attention:

Sampled: 06/13/19 08:21

Received: 06/13/19 09:16 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223 B/Quantitray	06/13/19 13:57		JMW	
Total Coliform	866	mpn/100ml	1	SM 9223 B/Quantitray	06/13/19 13:57		JMW	

Lab ID: 9020086-02 Sample Desc: SB-2

Collected By: Client

Sampled: 06/13/19 08:24

Received: 06/13/19 09:16 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	5	mpn/100ml	1	SM 9223 B/Quantitray	06/13/19 13:57		JMW	
Total Coliform	980	mpn/100ml	1	SM 9223 B/Quantitray	06/13/19 13:57		JMW	

Lab ID: 9020086-03 Sample Desc: SB-3

Collected By: Client

Sampled: 06/13/19 08:26 **Received:** 06/13/19 09:16

Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223 B/Quantitray	06/13/19 13:57		JMW	
Total Coliform	1300	mpn/100ml	1	SM 9223 B/Quantitray	06/13/19 13:57		JMW	



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Clien Proje Repoi Invoid	t Code: ct Manager: rt To: US Army ce To: US Arm	M.J. Reid 107 Angelica S 610-374-5129 4092 Richard A Who Corp of Engineers - ty Corp of Engineer	er Associa it, Reading PA www.mjrei eeler Scott Sunderland rs - Scott Sunderl	ates, Inc. ., 19611 der.com - 1268 Palisade and - 1268 Pali	es Dr Leesport, P sades Dr Leespo	BOTTLE Chain of Clie Proj A 19533 rt, PA 19533	C ORDER Custody nt: US Army C ject:2019 Blue I	Corp of Engine Marsh Beach 1	eers 1,2,3	US 4 2019	9020086 Army Corp of Enginee Blue Marsh Beach 1	PM: RAW 2,3
Colle (Full Na	ected By:	Amanda /	Aulenback	<u>n.</u>		Commer	its:			· · · · · · · · · · · · · · · · · · ·		
-01	SB-1 EC (#) SM	9223B, TC (#) S	M 9223B	L					Matrix: O Type: G	ther rab A - Sterile Pl	Dat Tim 125ml NaThio	e: 0/13/19 e: 0821
-02	SB-2 EC (#) SM	9223B, TC (#) S	M 9223B	C					Matrix:O Type: Gr	ther rab A - Sterile Pl	Dat Tim 125ml NaThio	e: 0/13/19 e: 0824
-03	SB-3 EC (#) SM	9223B, TC (#) Si	M 9223B	R					Matrix: Of Type: Gi	ther rab A - Sterile P1 I	Dat Tim 125ml NaThio	= <u>0 13 19</u> = 0826
										\$		
	.*											
Relinquist	Un Om Hei By	hlul	<u>Jate Time</u>	0916	Received By	il.	Date Date	Time 2-13-19	916	Sampl Sam Sam	e Kit Prepared By: ple Temp (°C): ples on Ice?	Date/Time
The Client to pay for	t, by signing (or having the above requested s	g the client's agent sign), agre ervices including any addition	base rune es to MJRA's Terms an nal associated fees incur	d Conditions and rred.	received at Laboratory	P	Date" age 1 of 1	Time Printed: 5.	/13/2019 1:31:	App 24PM Ente	roved By: red By:	Page 2 of 3

V



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Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9020520 Report: 06/19/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9020520-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 06/17/19 08:18

Received: 06/17/19 08:56 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	06/17/19 14:02		JMW	
Total Coliform	>2419.6	mpn/100ml	1	B/Quantitray SM 9223 B/Quantitray	06/17/19 14:02		JMW	

Lab ID: 9020520-02 Sample Desc: SB-2

Collected By: Client

Sampled: 06/17/19 08:21

Received: 06/17/19 08:56 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	20	mpn/100ml	1	SM 9223 B/Quantitray	06/17/19 14:02		JMW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/17/19 14:02		JMW	

Lab ID: 9020520-03 Sample Desc: SB-3

Collected By: Client

Sampled: 06/17/19 08:24

Received: 06/17/19 08:56 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	27	mpn/100ml	1	SM 9223 B/Quantitray	06/17/19 14:02		JMW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/17/19 14:02		JMW	



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Client Code:

M.J. Reider Associates, Inc.

107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com **4092**ⁱ

BOTTLE ORDER Chain of Custody

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3 9020520 US Army Corp of Engineers

2019 Blue Marsh Beach 1,2,3

Report Template: btl COC

PM: RAW

Project Manager: Richard A Wheeler

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Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Coll (Full N	ected By: Justin Hardy	Comments:
-01	SB-1	Matrix: Other Date: $6-17-19$ Type: Grab Time: $09+9$
	EC (#) SM 9223B, TC (#) SM 9223B	A - Sterile Pl 125ml NaThio
-02	SB-2	Matrix: Other Date: $6 - 17 - 19$ Type: Conh Time: -923
	EC (#) SM 9223B, TC (#) SM 9223B	A - Sterile Pl 125ml NaThio
-03	SB-3	Matrix: Other Date: $6 - 17 - 19$
	EC (#) SM 9223B, TC (#) SM 9223B	A - Sterile Pl 125ml NaThio

Justi Hand	6-17-19				Sample Kit Prepared By:	Date/Time
Kalinquished By	Date-Time	Received By	Date/Time	157	Sample Temp (°C):	
Relinquished By	Date/Time	Received at Laboratory By	$\frac{10-1-1-17}{\text{DateTime}}$	جرن،	Samples on Ice? Approved By:	Yes No NA
to pay for the above requested services including any additional	to MJRA's Terms and Conditions and associated fees incurred.	Page 1 of 1	Printed: 5/13/2019	9 1:31:24PM	Entered By:	Page 2 of 3



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Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9021168 Report: 06/24/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9021168-01 Collected By: Client Sample Desc: SB-1 L

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 06/20/19 09:16

Received: 06/20/19 09:48 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	1200	mpn/100ml	1	SM 9223 B/Quantitray	06/20/19 14:44		JMW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/20/19 14:44		JMW	

Lab ID: 9021168-02 Sample Desc: SB-2 C

Collected By: Client

Sampled: 06/20/19 09:18

Received: 06/20/19 09:48 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	1410	mpn/100ml	1	SM 9223 B/Quantitray	06/20/19 14:44		JMW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/20/19 14:44		JMW	

Lab ID: 9021168-03 Sample Desc: SB-3 R

Collected By: Client

Sampled: 06/20/19 09:20

Received: 06/20/19 09:48 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	2420	mpn/100ml	1	SM 9223 B/Quantitray	06/20/19 14:44		JMW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/20/19 14:44		JMW	



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M.J. Reider Associates, Inc.

Client Code:

107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com **BOTTLE ORDER** Chain of Custody

> Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

9021168 US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

PM: RAW

Project Manager: Richard A Wheeler

4092

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: <u>Courtney Moyer</u>	Comments:	
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125ml	Date: <u>June 20, 2019</u> Time: <u>09:16</u> NaThio
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125ml	Date: UNN 20, 2619 Time: <u>09: 18</u> NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type: Grab A - Sterile Pl 125ml	Date: <u>Juve 28, 2019</u> Time: <u>09: 20</u> NaThio

COWFVEY MUYER	<u>(0/20/19 9:48</u> Date Time	Received By	Date: Time	Sample Kit Prepared By:	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	_ 6/20/19 9:44	Sample Temp (°C): Samples on Ice?	Yes No NA
The Client, by signing (or having the client's agent sign), agree to pay for the above requested services including any additione	s to MJRA's Terms and Conditions and associated fees incurred.	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Entered By:	Page 2 of 3



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Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

 Laboratory No.
 9021336

 Report
 06/25/19

 Lab Contact:
 Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID:9021336-01Collected By:ClientSample Desc:SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 06/21/19 13:12

Received: 06/21/19 13:50 **Sample Type:** Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	2420	mpn/100ml	1	SM 9223 B/Quantitray	06/21/19 17:00		DRW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/21/19 17:00		DRW	

Lab ID: 9021336-02 Sample Desc: SB-2 Collected By: Client

Sampled: 06/21/19 13:14

Received: 06/21/19 13:50 **Sample Type:** Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	1990	mpn/100ml	1	SM 9223 B/Quantitray	06/21/19 17:00		DRW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/21/19 17:00		DRW	

Lab ID: 9021336-03 Sample Desc: SB-3 Collected By: Client

Sampled: 06/21/19 13:16 Received: 06/2

Received: 06/21/19 13:50 **Sample Type:** Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	1120	mpn/100ml	1	SM 9223 B/Quantitray	06/21/19 17:00		DRW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/21/19 17:00		DRW	



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	M.J. Reider Associates, Inc. I 107 Angelica St, Reading PA, 19611	BOTTLE ORDER Chain of Custody	9021336 PM: RAW US Army Corp of Engineers 2019 Blue March Engineers
Client Code:	4092	Client: US Army Corp of Engineers	
Project Manager:	Richard A Wheeler	Project: 2019 Blue Marsh Boach 1 2 2	
Report To: US Army	Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport PA	10533	
Invoice To: US Army	Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesport	, PA 19533	
Collected By: (Full Name)	Jim Souder	comments: Email results 61 and verbal on DI	22/19 DRW

-01	SB-1		Matrix: Other	Date: JUNE 218, 2019
	EC (#) SM 9223B, TC (#) SM 9223B	L	A - Sterile Pl 125ml NaTh	io 137, 13-
-02	SB-2	r	Matrix: Other	Date: 11110 315+,2019
	EC (#) SM 9223B, TC (#) SM 9223B		A - Sterile Pl 125ml NaThi	io 13:14
-03	SB-3	\wedge	Matrix: Other	Date: JUML 2184, 2019
	EC (#) SM 9223B, TC (#) SM 9223B	K	A - Sterile Pl 125ml NaThi	io
			· ·	
-03	SD-5 EC (#) SM 9223B, TC (#) SM 9223B	R	Type: Grab A - Sterile Pl 125ml NaThi	Time: 13:16

An And	6-21-19 13:50	<u>)</u>		Sample Kit Prepared By:	Date/Time
Kenik u isuko By	Date/Time	Received By		Sample Temp (°C):	10.70
Relinquished By	Date/Time	Received at Laboratory By Date/Tim	<u>e</u>	Samples on Ice?	Yes No NA
The Client, by signing (or having the client's agent sign), agrees to pay for the above requested services including any additiona	to MJRA's Terms and Conditions and associated fees incurred.	Page 1 of 1	Printed: 5/13/2019 1:31:24PM	Entered By:	



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9021499 Report: 06/25/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9021499-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 06/24/19 08:11

Received: 06/24/19 08:52 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	38	mpn/100ml	1	SM 9223	06/24/19 16:09		JMW	
Total Coliform	1730	mpn/100ml	1	B/Quantitray SM 9223 B/Quantitray	06/24/19 16:09		JMW	

Lab ID: 9021499-02 Sample Desc: SB-2

Collected By: Client

Sampled: 06/24/19 08:14

Received: 06/24/19 08:52 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	46	mpn/100ml	1	SM 9223 B/Quantitray	06/24/19 16:09		JMW	
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	06/24/19 16:09		JMW	

Lab ID: 9021499-03 Sample Desc: SB-3

Collected By: Client

Sampled: 06/24/19 08:17

Received: 06/24/19 08:52 Sample Type: Grab

	Result	Unit	Rep Limit	Analysis Method	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	59	mpn/100ml	1	SM 9223 B/Quantitray	06/24/19 16:09		JMW	
Total Coliform	1730	mpn/100ml	1	SM 9223 B/Quantitray	06/24/19 16:09		JMW	



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The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.	Relinquished By Date/Time	Relinquished By Date Time	Justin Hord, 6-24-19 1253				EC (#) SM 9223B, TC (#) SM 9223B	-03 SB-3	-02 SB-2 EC (#) SM 9223B, TC (#) SM 9223B	EC (#) SM 9223B, TC (#) SM 9223B	-01 SB-1	Collected By: Justin Hardy	Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palis	Client Code: 4092 Project Manager: Richard A Wheeler	M.J. Keider Associates, Inc. 107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com
Page 1 of 1	Received at Laboratory By	Received By										Comments:	ades Dr Leesport, PA 19533 ades Dr Leesport, PA 19533	Client: US Arn Project:2019 Bl	BOTTLE ORDER Chain of Custody
Printed: 5/13/2019 1:31:24PM	6-24-19 08:52	Date/Time					A - St	Matrix: Other	Matrix:Other Type: Grab A - St	rybe: Orab A - St	Matrix: Other			ny Corp of Engineers lue Marsh Beach 1,2,3	
1 Entered By:	Sample Temp (°C);		Sample Kit Drawnod Bur Data The				erile Pl 125ml NaThio	Date: 6^2	Date: 6-20 Time: 0	erile Pl 125ml NaThio	Date: 6-2				9021499 US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3
mplate: btl COC hs	No NA		50		· ·			4-19			1-19		Pa	.ge 2 (PM: RAW



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Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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Attention:

Certificate of Analysis

Laboratory No.: 9021705 **Report:** 06/27/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9021705-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

Reported To: US Army Corp of Engineers 1268 Palisades Dr. Leesport, PA 19533

Sampled: 06/25/19 08:40

Received: 06/25/19 09:31 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	15	mpn/100ml	1	SM 9223	06/25/19 10:13		JMW	
				B/Quantitray				
Total Coliform	770	mpn/100ml	1	SM 9223	06/25/19 10:13		JMW	
				B/Quantitray				

Lab ID: 9021705-02 Sample Desc: SB-2

Collected By: Client

Sampled: 06/25/19 08:43

Received: 06/25/19 09:31 Sample Type: Grab

JMW

			Rep.					
	Result	Unit	Limit	Procedure	Incubated	Notes	Analyst	
Microbiology								
Escherichia coli	15	mpn/100ml	1	SM 9223	06/25/19 10:13		JMW	
				B/Quantitray				
Total Coliform	1300	mpn/100ml	1	SM 9223	06/25/19 10:13		JMW	
				B/Quantitray				

Lab ID: 9021705-03 Sample Desc: SB-3

Collected By: Client

640

mpn/100ml

1

Sampled: 06/25/19 08:46 **Received:** 06/25/19 09:31 Sample Type: Grab

06/25/19 10:13

Rep. Result Unit Limit Procedure Incubated Analyst Notes Microbiology Escherichia coli mpn/100ml46 1 SM 9223 06/25/19 10:13 JMW B/Quantitray

SM 9223

B/Quantitray



Total Coliform

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BOTTLE ORDER Chain of Custody

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3 9021705 PM: US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

pm: raw

Project Manager: Richard A Wheeler

Client Code:

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Coll (Full N	ected By: Taylor N Boyer	Comments:
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type:Date: $Grab$ \bigcirc \bigcirc 25 19 A - Sterile Pl 125ml NaThio
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: OtherDate: u 25 19 Type:GrabTime: $8:43$ A - Sterile Pl 125ml NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: OtherDate: 0 $25/19$ Type:GrabTime: $8:46$ A - Sterile Pl 125ml NaThio

Japp Bay	6/25/19 9:31				Sample Kit Prepared By:	Date/Time
Relinquished By	Date/Time	Received By	Date/Time			
		$\neg G$	ampa mi	25-19 9:21	Sample Temp (°C):	18.1
Relinquished By	Date/Time	Received at Laboratory By	LaterTime		Samples on Ice?	(Yes No NA
The Client, by signing (or having the client's agent sign), agree o pay for the above requested services including any additiona	s to MJRA's Terms and Conditions and l associated fees incurred.		Page I of 1	Printed: 5/13/2019 1:31:24PM	Approved By: Entered By:	
		•				Page 2 of 3


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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Certificate of Analysis

Laboratory No.: 9021934 Report: 06/27/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9021934-01 Collected By: Client

Reported To: US Army Corp of Engineers

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Sample Desc: SB-1 L

Attention:

Sampled: 06/26/19 08:08

Received: 06/26/19 08:55 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst	
Microbiology									
Escherichia coli	59	mpn/100ml	1	SM 9223	6/26/19	6/27/19		JMW	
				B/Quantitray	15:28	9:31			
Total Coliform	2420	mpn/100ml	1	SM 9223	6/26/19	6/27/19		JMW	
				B/Quantitray	15:28	9:31			

Lab ID: 9021934-02 Sample Desc: SB-2 C

Collected By: Client

Sampled: 06/26/19 08:11

Received: 06/26/19 08:55 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	6	mpn/100ml	1	SM 9223	6/26/19	6/27/19		JMW
				B/Quantitray	15:28	9:31		
Total Coliform	770	mpn/100ml	1	SM 9223	6/26/19	6/27/19		JMW
				B/Quantitray	15:28	9:31		

Lab ID: 9021934-03 Sample Desc: SB-3 R

Collected By: Client

Sampled: 06/26/19 08:14 Received: 06/26/19 08:55

Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	62	mpn/100ml	1	SM 9223 B/Quantitray	6/26/19 15:28	6/27/19 9:31		JMW
Total Coliform	2420	mpn/100ml	1	SM 9223 B/Quantitray	6/26/19 15:28	6/27/19 9:31		JMW



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M.J. Reider Associates, Inc.

Client Code:

107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com **BOTTLE ORDER Chain of Custody**

> Client: US Army Corp of Engineers Project: 2019 Blue Marsh Beach 1,2,3

9021934

PM: RAW

US Army Corp of Engineers

Sample Temp (°C):

Yes

No

(T)

NA

Page 2 of 3

Samples on Ice?

Approved By:

Entered By:



Project	Manager:	Richard	A	Wheeler

4092

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Collected (Full Name)	By: Justin Hardy		Comments:			
-01 SB- EC	-1 (#) SM 9223B, TC (#) SM 9223B	L		Matrix:O Type: G	ther Date: (rab Time: A - Sterile Pl 125ml NaThio	06-26-19 0808
-02 SB- EC	-2 (#) SM 9223B, TC (#) SM 9223B	C		Matrix:O Type: Gi	ther Date: rab Time: A - Sterile Pl 125ml NaThio	06-26-19 0811
-03 SB- EC	-3 (#) SM 9223B, TC (#) SM 9223B	R		Matrix: O Type: Gi A	ther Date: ab Time: A - Sterile Pl 125ml NaThio	06-26-19 0814
	· .	• • •			, , ,	
Justinguished By	Hand 6-26-19 Date/Time	0853 Received By	Date	Time	Sample Kit Prepared By:	ate/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Date/Time

Relinguished By

Page 1 of 1

6-26-1

Date/Time

ond3

ear

Received at Laboratory B

Printed: 5/13/2019 1:31:24PM

8:55



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9025847 Report: 07/30/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9025847-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 07/25/19 08:00

Received: 07/25/19 09:25 Sample Type: Grab

			Rep.						
	Result	Unit	Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst	
Microbiology									
Escherichia coli	4	mpn/100ml	1	SM 9223	7/25/19	7/26/19		DRW	
				B/Quantitray	10:48	11:21			
Total Coliform	914	mpn/100ml	1	SM 9223	7/25/19	7/26/19		DRW	
				B/Quantitray	10:48	11:21			

Lab ID: 9025847-02 Sample Desc: SB-2

Collected By: Client

Sampled: 07/25/19 08:03

Received: 07/25/19 09:25 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	28	mpn/100ml	1	SM 9223	7/25/19	7/26/19		DRW
Total Coliform	961	mpn/100ml	1	B/Quantitray SM 9223 B/Quantitray	10:48 7/25/19 10:48	11:21 7/26/19 11:21		DRW

Lab ID: 9025847-03 Sample Desc: SB-3

Collected By: Client

Sampled: 07/25/19 08:06 **Received:** 07/25/19 09:25

Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	32	mpn/100ml	1	SM 9223	7/25/19	7/26/19		DRW
				B/Quantitray	10:48	11:21		
Total Coliform	1730	mpn/100ml	1	SM 9223	7/25/19	7/26/19		DRW
				B/Quantitray	10:48	11:21		



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M.J. Reider Associates, Inc.

107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com **4092** **BOTTLE ORDER** Chain of Custody **9025847** US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

PM: RAW

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: Branna Trei	ichler Com	nments:	
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	L	Matrix: Other Type: Grab A - Sterile Pl 125ml NaThio	Date: $\frac{253U22019}{0800}$
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	C	Matrix: Other Type: Grab A - Sterile Pl 125ml NaThio	Date: <u>25JUL2019</u> Time: <u>0803</u>
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	R	Matrix: Other Type: Grab A - Sterile Pl 125ml NaThio	Date: <u>25 JUL 2019</u> Time: <u>0806</u>

BATA	25JUL19 0925				Sample Kit Prepared By:	Date/Time
Relinguished By	Date/Time	Received By	c l	Date/Time		1-900,
		Engla	(ogh	7.25.19 925	Sample Temp (°C):	11.
Relinquished By	Date/Time	Received at Laboratory By	<u> </u>	Date/Time	Samples on Ice?	Yes No NA
The Client, by signing (or having the client's agent sign), agen to pay for the above requested services including any additio	ees to MJRA's Terms and Conditions and nal associated fees incurred.		Page 1 of 1	Printed: 5/31/2019 12:58:32PM	Entered By:	Page 2 of 3



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Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

any L Mains

Amy L Morriss For Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9026271 Report: 07/30/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Reported To: US Army Corp of Engineers

Lab ID: 9026271-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Sampled: 07/29/19 07:59

Received: 07/29/19 08:43 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	12	mpn/100ml	1	SM 9223	7/29/19	7/30/19		JMW
				B/Quantitray	15:03	9:23		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	7/29/19	7/30/19		JMW
				B/Quantitray	15:03	9:23		

Lab ID: 9026271-02 Sample Desc: SB-2

Collected By: Client

Sampled: 07/29/19 08:02

Received: 07/29/19 08:43 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	15	mpn/100ml	1	SM 9223	7/29/19	7/30/19		JMW
				B/Quantitray	15:03	9:23		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	7/29/19	7/30/19		JMW
				B/Quantitray	15:03	9:23		

Lab ID: 9026271-03 Sample Desc: SB-3

Collected By: Client

Sampled: 07/29/19 08:05 Received: 07/29/19 08:43

Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	30	mpn/100ml	1	SM 9223	7/29/19	7/30/19		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	7/29/19 15:03	9.23 7/30/19 9:23		JMW



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M.J. Reider Associates, Inc. **BOTTLE ORDER Chain of Custody** 107 Angelica St, Reading PA, 19611

www.mjreider.com 610-374-5129 4092

US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3 **Client: US Army Corp of Engineers** Project:2019 Blue Marsh Beach 1,2,3

Project Manager: **Richard A Wheeler**

Client Code:

١

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: Justin Hardy	Comments:
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type:Date:7-29-19Type:GrabTime:0759A - Sterile Pl 125ml NaThioO759
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type:Date: Trime: $7-29-19$ 0802 A - Sterile Pl 125ml NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: OtherDate:Type:GrabA - Sterile Pl 125ml NaThio

Justin Hardy	0843 7-29-19			Sample Kit Prepared By:	Date/Time
Rølinquished By	Date/Time	Received Brown Azuna	Date/Time	Sample Temp (°C):	20.9
Relinquished By	Date/Time	Received at Laboratory By	Date/Time	Samples on Ice? Approved By:	Yes No NA
to pay for the above requested services including any additional	associated fees incurred.	Page 1 of 1	Printed: 5/31/2019 12:58:32PM	Entered By:	Page 2 of 3



9026271



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Reviewed and Approved by:

Rafael A Quijada For Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9027740 Report: 08/09/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9027740-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 08/08/19 08:24

Received: 08/08/19 08:58 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	308	mpn/100ml	1	SM 9223	8/8/19	8/9/19		JMW
				B/Quantitray	10:02	10:18		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	8/8/19	8/9/19		JMW
				B/Quantitray	10:02	10:18		

Lab ID: 9027740-02 Sample Desc: SB-2

Collected By: Client

Sampled: 08/08/19 08:27

Received: 08/08/19 08:58 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	91	mpn/100ml	1	SM 9223	8/8/19	8/9/19		JMW
				B/Quantitray	10:02	10:18		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	8/8/19	8/9/19		JMW
				B/Quantitray	10:02	10:18		

Lab ID: 9027740-03 Sample Desc: SB-3

Collected By: Client

Sampled: 08/08/19 08:29

Received: 08/08/19 08:58 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	64	mpn/100ml	1	SM 9223	8/8/19	8/9/19		JMW
				B/Quantitray	10:02	10:18		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	8/8/19	8/9/19		JMW
				B/Quantitray	10:02	10:18		



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BOTTLE ORDER Chain of Custody

9027740

PM: RAW

US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Colle (Full Na	ected By: Mitchell Cole	Comments:
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Date: Type: Grab Time: A - Sterile Pl 125ml NaThio
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:OtherDate:Type:GrabA - Sterile Pl 125ml NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:Other Type:Date: Grab A - Sterile Pl 125ml NaThioDate: B8919 O829

mitha Us	7/8/19 0757	3		Sample Kit Prepared By:	Date/Time
Relinquished By	Bate/Time	Received By	Date/Time		64
	_	Emply Cash	8.8.19 858	Sample Temp (°C):	2700
Relinquished By	Date/Time	Received at Laboratory By	Date/Time	Samples on Ice?	ves No NA
The Client, by signing (or having the client's agent sign), agree to pay for the above requested services including any additiona	s to MJRA's Terms and Conditions and l associated fees incurred.	Page 1 of 1	Printed: 5/31/2019 12:58:32PM	Approved By: Entered By:	Page 2 of 3



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9028159 Report: 08/15/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Reported To: US Army Corp of Engineers 1268 Palisades Dr. Leesport, PA 19533

Scott Sunderland

Lab ID: 9028159-01 Collected By: Client Sample Desc: SB-1

Sampled: 08/12/19 08:04

Received: 08/12/19 09:37 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst	
Microbiology				•				•	
Escherichia coli	38	mpn/100ml	1	SM 9223	8/12/19	8/13/19		JMW	
				B/Quantitray	14:00	9:39			
Total Coliform	2420	mpn/100ml	1	SM 9223	8/12/19	8/13/19		JMW	
				B/Quantitray	14:00	9:39			

Lab ID: 9028159-02 Sample Desc: SB-2

Collected By: Client

Sampled: 08/12/19 08:07

Received: 08/12/19 09:37 Sample Type: Grab

			Rep.					
	Result	Unit	Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	63	mpn/100ml	1	SM 9223	8/12/19	8/13/19		JMW
				B/Quantitray	14:00	9:39		
Total Coliform	2420	mpn/100ml	1	SM 9223	8/12/19	8/13/19		JMW
				B/Quantitray	14:00	9:39		

Lab ID: 9028159-03 Sample Desc: SB-3

Collected By: Client

Sampled: 08/12/19 08:11 Received: 08/12/19 09:37

Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	11	mpn/100ml	1	SM 9223 B/Quantitray	8/12/19 14:00	8/13/19 9:39		JMW
Total Coliform	1200	mpn/100ml	1	SM 9223 B/Quantitray	8/12/19 14:00	8/13/19 9:39		JMW



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M.J. Reider Associates, Inc.107 Angelica St, Reading PA, 19611 610-374-5129108 Client Code:Project Manager:Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesper Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr Leesper	BOTTLE ORDER Chain of Custody Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3 ort, PA 19533 eesport, PA 19533	DS Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3
Collected By: <u>OIIVIOL ROBANTSON</u>	Comments:	
-01 SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:O Type: G	ther Date: 12 14 19 19 rab Time: 0804 A - Sterile Pl 125ml NaThio
-02 SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:O Type: G	ther Date: <u>12 Hug 19</u> Time: <u>12 Hug 19</u> Date: <u>12 Hug 19</u> Date: <u>12 Hug 19</u> Date: <u>12 Hug 19</u>
-03 SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:O Type: G	ther Date: <u>12 MU019</u> Time: <u>0811</u> A - Sterile Pl 125ml NaThio

Mind RAMAT	8/12/19 <u>12/8/19</u> 093 Date/Time	7 Received By	Date/Time		Sample Kit Prepared By:	Date/Time
		$\int Q'$	la alequit	8-12-19	Sample Temp (°C): Samples on Ice?	Ves No NA
Relinquished By	Date/Time	Received at Laboratory ky	Date Time JSE	9:37	Approved By:	
The Client, by signing (or having the client's agent sign), agent to pay for the above requested services including any addition	ees to MJRA's Terms and Conditions and nal associated fees incurred.	\mathcal{V}	Page 1 of 1	Printed: 5/31/2019 12:58:32PM	Entered By:	Page 2 of 3
						Report reuppare, on LCA. 15



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Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

Attention:

Certificate of Analysis

Laboratory No.: 9029112 Report: 08/21/19 Lab Contact: Richard A Wheeler

Project Info: 2019 Blue Marsh Beach 1,2,3

Lab ID: 9029112-01 Collected By: Client Sample Desc: SB-1

Scott Sunderland

1268 Palisades Dr. Leesport, PA 19533

Reported To: US Army Corp of Engineers

Sampled: 08/19/19 08:24

Received: 08/19/19 09:55 Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	10	mpn/100ml	1	SM 9223	8/19/19	8/20/19		JMW
				B/Quantitray	13:16	9:15		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	8/19/19	8/20/19		JMW
				B/Quantitray	13:16	9:15		

Lab ID: 9029112-02 Sample Desc: SB-2

Collected By: Client

Sampled: 08/19/19 08:27

Received: 08/19/19 09:55 Sample Type: Grab

	Descript	Theit	Rep.		In only ot ord	Amalamad	Notos	A] 4
	Result	Unit	Limit	Analysis Method	incubated	Analyzeu	Notes	Analyst
Microbiology								
Escherichia coli	24	mpn/100ml	1	SM 9223	8/19/19	8/20/19		JMW
				B/Quantitray	13:16	9:15		
Total Coliform	>2419.6	mpn/100ml	1	SM 9223	8/19/19	8/20/19		JMW
				B/Quantitray	13:16	9:15		

Lab ID: 9029112-03 Sample Desc: SB-3

Collected By: Client

Sampled: 08/19/19 08:30 Received: 08/19/19 09:55

Sample Type: Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	15	mpn/100ml	1	SM 9223 B/Oueptitrey	8/19/19	8/20/19		JMW
Total Coliform	>2419.6	mpn/100ml	1	SM 9223 B/Quantitray	8/19/19 13:16	9:13 8/20/19 9:15		JMW



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Project Manager:

Client Code:

M.J. Reider Associates, Inc.

107 Angelica St, Reading PA, 19611 610-374-5129 www.mjreider.com 4092

Richard A Wheeler

.

BOTTLE ORDER Chain of Custody

9029112 US Army Corp of Engineers 2019 Blue Marsh Beach 1,2,3

Client: US Army Corp of Engineers Project:2019 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533 MILLIA ROBERTION Comments: _____ Collected By: (Full Name)

(I'un Iva		
-01	SB-1 EC (#) SM 9223B, TC (#) SM 9223B	Matrix:OtherDate: $8/19/19$ Type:GrabTime: 0824 A - Sterile Pl 125ml NaThio
-02	SB-2 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: OtherDate: $8/19/19$ Type:GrabTime: 0827 A - Sterile Pl 125ml NaThio
-03	SB-3 EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Other Type:Date: $8/19/19$ A - Sterile Pl 125ml NaThio 08.30

OMOL RAUTION	8/19/19 099 Date-Time	BB Received By	Date/Time	Sample Kit Prepared By:	Date/Time	
Relinquished By	Date/Time	Receiver at Laboratory By	<u>A</u> <u><i>Y</i>/19/19 9:55 Date:Time</u>	Sample Temp (°C): Samples on Ice? Approved By:	Ye No NA	
to pay for the above requested services including any additional	associated fees incurred.	Page 1 of 1	Printed: 5/31/2019 12:58:32PM	Entered By:	Page 2 of 3	



All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Richard A Wheeler Director of Field Services



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APPENDIX C

LABORATORY CUSTODY SHEETS



Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

08/01/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90585



Sampling Date: 06/25/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 42



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com

1 of 42 JC90585

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Sample Summary

USACE-Philadelphia District

Job No: JC90585

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC90585-1	06/25/19	13:50 GW	06/25/19	AQ	Surface Water	BM-1S
JC90585-2	06/25/19	09:15 GW	06/25/19	AQ	Surface Water	BM-2S
JC90585-3	06/25/19	09:15 GW	06/25/19	AQ	Surface Water	BM-2M
1000585 4	06/25/10	00.15 GW	06/25/10	10	Surface Water	DM 2D
JC70383-4	00/23/19	09.15 G W	00/23/19	ΑQ	Surface water	DM-2D
JC90585-5	06/25/19	13:10 GW	06/25/19	AQ	Surface Water	BM-5S
JC90585-6	06/25/19	08:45 GW	06/25/19	AQ	Surface Water	BM-6S
JC90585-7	06/25/19	08:45 GW	06/25/19	AQ	Surface Water	BM-6M
1000595 9	06/25/10	09.45 CW	06/25/10	10	Surface Water	DM (D
JC90303-0	00/23/19	08.43 GW	00/23/19	AQ	Surface water	DM-0D
JC90585-9	06/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7S
JC90585-10	06/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7M
JC90585-11	06/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7D
IC00585 12	06/25/10	11.50 GW	06/25/10	10	Surface Water	DM SC
JC70303-12	00/23/19	11.30 GW	00/23/19	ΑŲ	Surface water	DM-00
JC90585-13	06/25/19	11:50 GW	06/25/19	AQ	Surface Water	BM-8M
				-		



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC90585

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC90585-14	06/25/19	11:50 GW	06/25/19	AQ	Surface Water	BM-8D
JC90585-15	06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9S
JC90585-16	06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9M
JC90585-17	06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9D
JC90585-18	06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10S
JC90585-19	06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10M
JC90585-20	06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10D
JC90585-21	06/25/19	13:00 GW	06/25/19	AQ	Surface Water	BM-11S



CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	USACE-Philadelphia District	Job No	JC90585
Site:	Philadelphia District, Reservoir Sampling	Report Date	7/12/2019 9:36:54 AM

On 06/25/2019, 21 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC90585 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

General Chemistry By Method EPA 351.2/LACHAT

Matrix: AQ	Batch ID:	GP22245
All samples were prepared with	in the recommended metho	od holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC91084-1DUP, JC91084-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

Matrix: AQ	Batch ID: GP22246	
------------	-------------------	--

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90585-2DUP, JC90585-2MS were used as the QC samples for Nitrogen, Total Kjeldahl.

General Chemistry By Method EPA 353.2/LACHAT

Matrix: AQ	Batch ID:	GP22220
All samples were prepared within	1 the recommended metho	d holding time.
All method blanks for this batch	meet method specific crite	ria.
Sample(s) JC90585-21DUP, JC9	90585-21MS were used as	the OC samples for Nitrogen, Nitrate + Nitrite.

Matrix: AQ	Batch ID:	GP22263
------------	-----------	---------

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

- Sample(s) JC90585-1DUP, JC90585-1MS, JC90585-6MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike recovery indicates possible matrix interference.



General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ	Batch ID:	R179521
	The data for EPA353.2/SM4500NO2B mee	ts quality cont	trol requirements.
-	JC90585-21 for Nitrogen, Nitrate: Calculate	d as: (Nitroge	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R179575
-	The data for EPA353.2/SM4500NO2B mee	ets quality con	trol requirements.
-	JC90585-1 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179576
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
-	JC90585-2 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179577
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
	JC90585-3 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R179578
-	The data for EPA353.2/SM4500NO2B mee	ets quality con	trol requirements.
	JC90585-4 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R179579
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
	JC90585-5 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179581
-	The data for EPA353.2/SM4500NO2B mee	ts quality con	trol requirements.
	JC90585-7 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R179582
-	The data for EPA353.2/SM4500NO2B mee	ts quality con	trol requirements.
	JC90585-8 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179583
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
	JC90585-9 for Nitrogen, Nitrate: Calculated	as: (Nitrogen	, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179584
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
	JC90585-10 for Nitrogen, Nitrate: Calculate	d as: (Nitroge	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179585
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
-	JC90585-11 for Nitrogen, Nitrate: Calculate	d as: (Nitroge	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179586
-	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
	JC90585-12 for Nitrogen, Nitrate: Calculate	d as: (Nitroge	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179587
	The data for EPA353.2/SM4500NO2B mee	ets quality cont	trol requirements.
	JC90585-13 for Nitrogen, Nitrate: Calculate	d as: (Nitroge	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179588

The data for EPA353.2/SM4500NO2B meets quality control requirements.

Friday, July 12, 2019

Page 2 of 6

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General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ	Batch ID:	R179588
	JC90585-14 for Nitrogen, Nitrate: Ca	lculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179589
-	The data for EPA353.2/SM4500NO2	2B meets quality cont	rol requirements.
-	JC90585-15 for Nitrogen, Nitrate: Ca	lculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179590
-	The data for EPA353.2/SM4500NO2	2B meets quality cont	rol requirements.
-	JC90585-16 for Nitrogen, Nitrate: Ca	lculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R179591
-	The data for EPA353.2/SM4500NO2	2B meets quality cont	rol requirements.
	JC90585-17 for Nitrogen, Nitrate: Ca	alculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179592
	Matrix: AQ The data for EPA353.2/SM4500NO	Batch ID: 2B meets quality cont	R179592 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-18 for Nitrogen, Nitrate: Ca	Batch ID: 2B meets quality cont alculated as: (Nitroger	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID:	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO2	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO JC90585-19 for Nitrogen, Nitrate: Ca	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-19 for Nitrogen, Nitrate: Ca Matrix: AQ	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID:	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179595
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-19 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO2	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179595 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-19 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO2 JC90585-20 for Nitrogen, Nitrate: Ca	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179595 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO: JC90585-18 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO: JC90585-19 for Nitrogen, Nitrate: Ca Matrix: AQ The data for EPA353.2/SM4500NO: JC90585-20 for Nitrogen, Nitrate: Ca Matrix: AQ	Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: 2B meets quality cont alculated as: (Nitroger Batch ID: Batch ID: Batch ID:	R179592 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179593 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179595 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179595 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179596

JC90585-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

Friday, July 12, 2019

SGS

General Chemistry By Method SM2320 B-11

	Matrix: AQ Batch ID:	GN97197
-	All samples were analyzed within the recommended method	od holding time.
-	All method blanks for this batch meet method specific crit	eria.
-	Sample(s) JC90559-1DUP were used as the QC samples	for Alkalinity, Total as CaCO3.
-	JC90585-1 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
	Matrix: AQ Batch ID:	GN97260
-	All samples were analyzed within the recommended method	od holding time.
-	All method blanks for this batch meet method specific crit	eria.
-	Sample(s) JC90585-2DUP were used as the QC samples	for Alkalinity, Total as CaCO3.
-	JC90585-3 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
=	JC90585-6 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
=	JC90585-8 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
	JC90585-5 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
=	JC90585-2 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
	JC90585-4 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
	JC90585-7 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
	Matrix: AQ Batch ID:	GN97287
=	All samples were analyzed within the recommended method	od holding time.
-	All method blanks for this batch meet method specific crit	eria.
-	Sample(s) JC90585-9DUP were used as the QC samples	for Alkalinity, Total as CaCO3.
-	JC90585-10 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-11 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-13 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-9 for Alkalinity, Total as CaCO3: Sample was tit	trated to a final pH of 4.5.
-	JC90585-18 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-12 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-21 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-19 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-14 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-17 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-16 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-15 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.
-	JC90585-20 for Alkalinity, Total as CaCO3: Sample was t	itrated to a final pH of 4.5.

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General Chemistry By Method SM2540 C-11

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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90585-1DUP, JC90585-2DUP were used as the QC samples for Solids, Total Dissolved.

Matrix: AQ	Batch ID:	GN97041

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90649-1DUP were used as the QC samples for Solids, Total Dissolved.

General Chemistry By Method SM2540 D-11

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	Matrix: AQ	Batch ID:	GN96961
-	All samples were analyzed with	in the recommended metho	od holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90585-1DUP, JC90585-2DUP were used as the QC samples for Solids, Total Suspended.

Matrix: AQ	Batch ID: GN96973	

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC90620-3DUP were used as the QC samples for Solids, Total Suspended.

General Chemistry By Method SM4500NH3 H-11LACHAT

	Matrix: AQ	Batch ID:	GP22290
-	All samples were prepared within the rec	ommended metho	d holding time.
	All method blanks for this batch meet me	thod specific crite	eria.
	Sample(s) JC90514-2DUP, JC90514-2M	1S, JC90514-2MS	SD were used as the QC samples for Nitrogen, Ammonia.
	Matrix: AQ	Batch ID:	GP22313
-	All samples were prepared within the rec	ommended metho	d holding time.
-	All method blanks for this batch meet me	thod specific crite	eria.
-	Sample(s) JC90623-1DUP, JC90623-1N	1S, JC90623-1MS	SD were used as the QC samples for Nitrogen, Ammonia.
	Matrix: AQ	Batch ID:	GP22314

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	All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC90585-14DUP, JC90585-14MS, JC90585-14MSD were used as the QC samples for Nitrogen, Ammonia.

General Chemistry By Method SM4500NO2 B-11

Ма	trix: AQ	Batch ID:	GN96868
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90585-1DUP, JC90585-1MS were used as the QC samples for Nitrogen, Nitrite.



General Chemistry By Method SM5210 B-11

Matrix: AQ	Batch ID:	GP22026
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- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90585-1DUP, JC90585-21DUP were used as the QC samples for BOD, 5 Day.

General Chemistry By Method SM5310 B-11

Matrix: AQ	Batch ID:	GP22197

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC90561-2MS, JC90561-2MSD were used as the QC samples for Total Organic Carbon.

Matrix: A	AQ Batch ID:	GP22198

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC90585-8MS, JC90585-8MSD were used as the QC samples for Total Organic Carbon.

Matrix: AQ	Batch ID:	GP22236

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC90595-4MS, JC90595-4MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

Friday, July 12, 2019





Job Number:	JC90585
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	06/25/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC90585-1	BM-1S					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss	as CaCO3 ^a ^b + Nitrite Sjeldahl solved	110 3.9 3.9 0.043 0.80 216	10 0.11 0.10 0.010 0.20 10		mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11
Solids, Total Susp Total Organic Ca	pended rbon	11.0 2.3	4.0 1.0		mg/l mg/l	SM2540 D-11 SM5310 B-11
JC90585-2	BM-2S					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susj Total Organic Ca	as CaCO3 ^a ^b + Nitrite Gjeldahl solved pended rbon	80.5 2.4 2.5 0.054 2.8 165 19.0 3.5	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-3	BM-2M					
Alkalinity, Total Nitrogen, Ammon Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a nia b + Nitrite Gjeldahl solved pended rbon	90.0 0.24 4.0 0.026 0.69 165 7.8 2.4	$5.0 \\ 0.20 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-4	BM-2D					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a ^b + Nitrite Gjeldahl solved pended rbon	114 5.3 5.3 0.039 0.48 226 21.9 1.7	$5.0 \\ 0.31 \\ 0.30 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

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Job Number:	JC90585
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	06/25/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC90585-5	BM-5S					
Alkalinity, Total a Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a ^b + Nitrite Geldahl solved pended rbon	179 6.6 0.017 0.35 304 40.3 1.8	5.0 0.31 0.30 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-6	BM-6S					
Alkalinity, Total a Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a ^b + Nitrite Gjeldahl solved pended rbon	75.0 2.3 2.4 0.080 1.4 164 21.4 11.1	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-7	BM-6M				0	
Alkalinity, Total Nitrogen, Ammor Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Car	as CaCO3 ^a nia b + Nitrite Cjeldahl solved pended rbon	95.0 0.21 3.6 3.6 0.041 0.47 174 9.3 2.5	$5.0 \\ 0.20 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-8	BM-6D					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a ^b + Nitrite Gjeldahl solved pended rbon	118 4.2 4.3 0.053 0.70 220 9.4 2.2	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0 $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

Job Number:	JC90585
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	06/25/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method	
JC90585-9 BM-7S						
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kieldahl	92.0 2.2 2.3 0.060 3.7	10 0.11 0.10 0.010 0.20		mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351 2/LACHAT	
Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	171 25.1 4.2	10 4.0 1.0		mg/l mg/l mg/l	SM2540 C-11 SM2540 D-11 SM5310 B-11	
JC90585-10 BM-7M						
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon JC90585-11 BM-7D Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl	90.0 4.3 4.3 0.022 0.72 174 16.0 2.4 110 4.4 4.4 0.032 0.65	$ \begin{array}{c} 10\\ 0.11\\ 0.00\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ 1.0\\ 1.0\\ 1.0\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11 SM5310 B-11 SM2520 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT	
Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	186 9.9 2.1	10 4.0 1.0		mg/l mg/l mg/l	SM2540 C-11 SM2540 D-11 SM5310 B-11	
JC90585-12 BM-8S						
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	79.0 2.2 2.2 0.035 1.6 140 13.1 3.2	10 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11	





Job Number:	JC90585
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	06/25/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC90585-13	BM-8M					
Alkalinity, Total a Nitrogen, Nitrate Nitrogen, Nitrate	as CaCO3 ^a b + Nitrite	80.0 3.3 3.3	10 0.11 0.10		mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT
Nitrogen, Nitride Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Car	jeldahl olved pended tbon	0.48 173 8.2 1.9	0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l	EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-14	BM-8D					
Alkalinity, Total a Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Car	as CaCO3 ^a ^b + Nitrite jeldahl olved bended tbon	81.0 3.6 3.6 0.024 0.42 172 10.2 1.6	10 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-15	BM-9S				-	
Alkalinity, Total a Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Car	as CaCO3 ^a ^b + Nitrite [jeldahl olved bended tbon	85.0 2.2 2.3 0.057 5.5 174 30.8 4.4	$ \begin{array}{c} 10\\ 0.11\\ 0.10\\ 0.010\\ 0.60\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC90585-16	BM-9M					
Alkalinity, Total a Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Car	as CaCO3 ^a ^b + Nitrite jeldahl olved pended tbon	100 4.1 4.1 0.40 176 8.2 2.4	10 0.11 0.10 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11



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Job Number:	JC90585
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	06/25/19

Lab Sample ID Client Sam Analyte	ple ID Result/ Qual	RL	MDL	Units	Method		
JC90585-17 BM-9D							
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved	135 6.0 6.0 0.028 0.53 227	10 0.31 0.30 0.010 0.20 10		mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11		
Solids, Total Suspended Total Organic Carbon	76.3 1.2	4.0 1.0		mg/l mg/l	SM2540 D-11 SM5310 B-11		
JC90585-18 BM-10S							
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	83.0 2.3 2.4 0.056 1.9 170 51.6 7.9	$ \begin{array}{c} 10\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11		
JC90585-19 BM-10M							
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	115 5.5 5.5 0.042 0.72 223 31.8 1.7	$ \begin{array}{c} 10\\ 0.31\\ 0.30\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11		
JC90585-20 BM-10D							
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	125 5.6 5.6 0.019 0.28 222 26.5 1.3	$ \begin{array}{c} 10\\ 0.31\\ 0.30\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11		



Job Number:	JC90585
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	06/25/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JC90585-21 BM-11S					
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended	35.0 3.5 3.5 0.012 0.33 99.0 12.9	10 0.11 0.10 0.010 0.20 10 4.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11
Total Organic Carbon	2.0	1.0		mg/l	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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Dayton, NJ

Section 4

Sample Results

Report of Analysis



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Client Sample ID:	BM-1S		
Lab Sample ID:	JC90585-1	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	110	10	mg/l	1	07/05/19 17:11	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:23	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:45	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.9	0.11	mg/l	1	07/09/19 15:23	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.9	0.10	mg/l	1	07/09/19 15:23	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.043	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.80	0.20	mg/l	1	07/09/19 11:48	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	216	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	11.0	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	07/05/19 23:27	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2S		
Lab Sample ID:	JC90585-2	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	80.5	5.0	mg/l	1	07/08/19 13:52	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:28	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:46	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.4	0.11	mg/l	1	07/09/19 15:24	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.5	0.10	mg/l	1	07/09/19 15:24	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.054	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	2.8	0.20	mg/l	1	07/09/19 11:53	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	165	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	19.0	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	3.5	1.0	mg/l	1	07/05/19 23:39	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2M		
Lab Sample ID:	JC90585-3	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	90.0	5.0	mg/l	1	07/08/19 13:52	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:31	RI	SM5210 B-11
Nitrogen, Ammonia	0.24	0.20	mg/l	1	07/10/19 13:48	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.0	0.11	mg/l	1	07/09/19 15:25	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.0	0.10	mg/l	1	07/09/19 15:25	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.026	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20	mg/l	1	07/09/19 11:53	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	165	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	7.8	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	07/05/19 23:50	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-2D		
Lab Sample ID:	JC90585-4	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	114	5.0	mg/l	1	07/08/19 13:52	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:48	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:49	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.3	0.31	mg/l	1	07/09/19 16:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.3	0.30	mg/l	3	07/09/19 16:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.039	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20	mg/l	1	07/09/19 11:54	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	226	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	21.9	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	07/06/19 00:24	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-5S		
Lab Sample ID:	JC90585-5	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	179	5.0	mg/l	1	07/08/19 13:52	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:52	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:54	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	6.6	0.31	mg/l	1	07/09/19 16:30	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	6.6	0.30	mg/l	3	07/09/19 16:30	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.017	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.35	0.20	mg/l	1	07/09/19 11:57	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	304	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	40.3	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	1.8	1.0	mg/l	1	07/06/19 00:36	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6S		
Lab Sample ID:	JC90585-6	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

RL = Reporting Limit

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	75.0	5.0	mg/l	1	07/08/19 13:52	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:55	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:55	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.3	0.11	mg/l	1	07/09/19 15:30	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	07/09/19 15:30	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.080	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.4	0.20	mg/l	1	07/09/19 11:58	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	164	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	21.4	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	11.1	1.0	mg/l	1	07/06/19 00:47	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6M		
Lab Sample ID:	JC90585-7	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	95.0	5.0	mg/l	1	07/08/19 13:52	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 15:59	RI	SM5210 B-11
Nitrogen, Ammonia	0.21	0.20	mg/l	1	07/10/19 13:56	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.6	0.11	mg/l	1	07/09/19 15:32	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10	mg/l	1	07/09/19 15:32	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.041	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.47	0.20	mg/l	1	07/09/19 11:59	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	174	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	9.3	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.5	1.0	mg/l	1	07/06/19 00:58	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-6D		
Lab Sample ID:	JC90585-8	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	118	5.0	mg/l	1	07/08/19 13:59	MP	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:06	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:58	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.2	0.11	mg/l	1	07/09/19 15:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.3	0.10	mg/l	1	07/09/19 15:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.053	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.70	0.20	mg/l	1	07/09/19 11:59	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	220	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	9.4	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.2	1.0	mg/l	1	07/06/19 01:33	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-7S		
Lab Sample ID:	JC90585-9	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	92.0	10	mg/l	1	07/08/19 20:30	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:09	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/10/19 13:59	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.2	0.11	mg/l	1	07/09/19 15:34	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.3	0.10	mg/l	1	07/09/19 15:34	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.060	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	3.7	0.20	mg/l	1	07/09/19 12:00	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	171	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	25.1	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	4.2	1.0	mg/l	1	07/06/19 02:14	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-7M		
Lab Sample ID:	JC90585-10	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	90.0	10	mg/l	1	07/08/19 20:30	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:33	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 14:59	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.3	0.11	mg/l	1	07/09/19 15:35	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.3	0.10	mg/l	1	07/09/19 15:35	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.022	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.72	0.20	mg/l	1	07/09/19 12:01	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	174	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	16.0	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	07/06/19 02:47	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-7D		
Lab Sample ID:	JC90585-11	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	110	10	mg/l	1	07/08/19 20:30	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:35	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:01	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.4	0.11	mg/l	1	07/09/19 15:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.4	0.10	mg/l	1	07/09/19 15:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.032	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.65	0.20	mg/l	1	07/09/19 12:02	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	186	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	9.9	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.1	1.0	mg/l	1	07/06/19 02:58	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8S		
Lab Sample ID:	JC90585-12	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	79.0	10	mg/l	1	07/08/19 20:30	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:38	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:05	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.2	0.11	mg/l	1	07/09/19 15:37	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10	mg/l	1	07/09/19 15:37	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.035	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.6	0.20	mg/l	1	07/09/19 12:03	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	140	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	13.1	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	3.2	1.0	mg/l	1	07/06/19 03:10	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8M		
Lab Sample ID:	JC90585-13	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	80.0	10	mg/l	1	07/08/19 20:30	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:41	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:07	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.3	0.11	mg/l	1	07/09/19 15:38	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.3	0.10	mg/l	1	07/09/19 15:38	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.024	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20	mg/l	1	07/09/19 12:04	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	173	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	8.2	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	07/06/19 03:21	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)





RL = Reporting Limit

Client Sample ID:	BM-8D		
Lab Sample ID:	JC90585-14	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	81.0	10	mg/l	1	07/08/19 20:30	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:43	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:15	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.6	0.11	mg/l	1	07/09/19 15:39	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10	mg/l	1	07/09/19 15:39	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.024	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.42	0.20	mg/l	1	07/09/19 12:05	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	172	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	10.2	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	07/06/19 03:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-9S		
Lab Sample ID:	JC90585-15	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	85.0	10	mg/l	1	07/08/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 100	100	mg/l	1	06/26/19 16:47	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:17	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.2	0.11	mg/l	1	07/09/19 15:41	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.3	0.10	mg/l	1	07/09/19 15:41	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.057	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	5.5	0.60	mg/l	3	07/09/19 12:14	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	174	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	30.8	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	4.4	1.0	mg/l	1	07/06/19 03:43	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9M		
Lab Sample ID:	JC90585-16	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	100	10	mg/l	1	07/08/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 16:48	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:18	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.1	0.11	mg/l	1	07/09/19 15:44	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.1	0.10	mg/l	1	07/09/19 15:44	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	1	07/09/19 12:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	176	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	8.2	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	07/06/19 03:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9D		
Lab Sample ID:	JC90585-17	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

						-	
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method
Alkalinity, Total as CaCO3 ^a	135	10	mg/l	1	07/08/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 17:02	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:23	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	6.0	0.31	mg/l	1	07/09/19 16:31	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	6.0	0.30	mg/l	3	07/09/19 16:31	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.028	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.53	0.20	mg/l	1	07/09/19 12:09	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	227	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	76.3	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	1.2	1.0	mg/l	1	07/06/19 04:05	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-10S		
Lab Sample ID:	JC90585-18	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Bv	Method
•					2	U	
Alkalinity, Total as CaCO3 ^a	83.0	10	mg/l	1	07/08/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 17:04	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:24	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.3	0.11	mg/l	1	07/09/19 15:46	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	07/09/19 15:46	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.056	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.9	0.20	mg/l	1	07/09/19 12:10	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	170	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	51.6	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	7.9	1.0	mg/l	1	07/08/19 16:37	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-10M		
Lab Sample ID:	JC90585-19	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

CHAT
)2B
CI)2

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-10D		
Lab Sample ID:	JC90585-20	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Bv	Method
<u>-</u>					J	-5	
Alkalinity, Total as CaCO3 ^a	125	10	mg/l	1	07/08/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 17:07	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:27	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.6	0.31	mg/l	1	07/09/19 16:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.6	0.30	mg/l	3	07/09/19 16:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.019	0.010	mg/l	1	06/26/19 12:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	1	07/09/19 12:11	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	222	10	mg/l	1	06/29/19 10:44	RC	SM2540 C-11
Solids, Total Suspended	26.5	4.0	mg/l	1	06/28/19 10:46	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	07/08/19 17:01	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-11S		
Lab Sample ID:	JC90585-21	Date Sampled:	06/25/19
Matrix:	AQ - Surface Water	Date Received:	06/25/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	35.0	10	mg/l	1	07/08/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 33	33	mg/l	1	06/26/19 17:11	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 15:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.5	0.11	mg/l	1	07/08/19 10:44	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.5	0.10	mg/l	1	07/08/19 10:44	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.012	0.010	mg/l	1	06/26/19 12:42	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	1	07/09/19 12:12	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	99.0	10	mg/l	1	06/30/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	12.9	4.0	mg/l	1	06/28/19 17:53	RC	SM2540 D-11
Total Organic Carbon	2.0	1.0	mg/l	1	07/08/19 17:12	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.











Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



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SGS	၄ က် CI ۲E	HAIN OF CUSTOD SGS North America Inc Dayto 2235 Route 130, Dayton, NJ 06810 - 732-329-0200 FAX: 732-329-3499/	Y n 3480	FED-EX Tracking #	Page 1 of 2
Client / Reporting Information	1	www.sgs.com/ehsusa			SUS 100 J(90585
Company Name:	Project Name:	ect Information		Requested	Analysis Makix Codes
U.S. ARMY CORPS of Engineers	Street	irs - Blue MAR	sh	Lap	DW - Drinking Weber
100 Penn Sr. East	Chy	Billing Information (If different from Report	to)	2 5 5	WW - Water WW - Water SW - Surface Water
Phila. PA 19107	Reading PA	Company Name		12 28 29	SO - Soli SL - Studge
Jee Loeper	Protect#	Straet Address		N Z A L	SED-Sodment OI-06
Phone #	Client Purchase Order #	City .	tale Zip		AIR - Air SOL - Other Solgit
Sampler(s) Name(s) (010 - Phone #	Project Manager	Attention		34000	WP - Wipe 'FB - Field Blank
Greg Wacik 597.9780	TAMMY McCloskey				EB-Equipment Blank 78 - Rinse Blank 78 - Tric Blank
			Number of preserved Bobios	9 2 9 2 2	ITO DESK
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1F BM - 15	6/25/19/55	MTG SW 10 X	X	XXXXX	
2F Bm.as	945	G SW YI X	X	XXXXX	1917
3F BM-2M	- 1 945	POG SW 11 X	X	XXXXX	
HE BUSE	9:15	G SW 11 X	X	XXXXX	SUR
SF 6/1-55	1.10 70	G SW 1/ X		XXXXX	
7F Bm (am	845	C G DW I X		XXXXX	
SE BM - GD		A G BUL II X		XXXXX	
9F BM . 75	1005	G SWI II X		XXXXX	
INF BM.7M	1005	W GSW II X		XXXXX	Revenue and
IF BM-7D	V 1005	ROGSW hX		XXXXX	INITIAL ASESSMENT DE
Turn Around Time (Brs	siness Dave)				LABEL VERIFICATION
	Approved By (SGS Phil): / Date:	Commercial "A" (I event 1)	Deliverable		Comments / Special Instructions
10 Businese Days		Commercial "B" (Level 2)	NYASP Category B	DOD-QS445 TCF/	FCF SAMPLES TO
3 Business Days*		Full Tier i (Level 3)	MA MCP Critoria	- Eurof	ins lab
2 Businese Days		Commercial "C"	State Forms	- DOU	TO MIT Reeidy
Other		Commercial "A" = Result	EDØ Format		
Al dau avaitable via Lablink Appre	ovel needed for 1-3 Business Day TAT Stapple Custory n	Commercial "C" = Re	suits + OC Summag+ Partial Rue	w data	http://www.sgs.com/en/terms-and-conditions
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JC90585: Chain of Custody Page 1 of 3



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US NUCHNY CARDS 64: Exg USACE K02.5 CM2 (S - Blv. March March Solution Soluti	Company Name:	Project Name:		· · · · · · · · · · · · · · · · · · ·	Requeste	ed Analysis Matrix Codes
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JC90585: Chain of Custody Page 2 of 3



5.1



SGS Sample Receipt Summary

Job Number:	JC90585	Client:	USACE-PHILADELPHI		oject: PHILADELPHIA D	STRICT, RI	ESERVO	IR SAMPL
Date / Time Received:	6/25/2019 5	5:50:00 PM	Delivery Method:	A	irbill #'s:			
Cooler Temps (Raw Mea Cooler Temps (Corr	sured) °C: rected) °C:	Cooler 1: (2.8); Cooler 1: (2.4);	Cooler 2: (3.1); Cooler Cooler 2: (2.7); Cooler	r 3: (3.4); Cooler 4: (2.9); r 3: (3.0); Cooler 4: (2.5);	Cooler 5: (3.4); Cooler 6: (Cooler 5: (3.0); Cooler 6: (3.7); Cooler 3.3); Cooler	[·] 7: (3.8); 7: (3.4);	
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature 1. Temp criteria achieved: 2. Cooler temp verification 3. Cooler media: 4. No. Coolers:	Y or N ♥ [♥ [Y • • • •	. 3. COC P 4. Smpl Date or N	Y or N resent: v □ s/Time OK v □	Sample Integrity - 1. Sample labels pre: 2. Container labeling 3. Sample container Sample Integrity - 1. Sample Integrity - 1. Sample recvd with 2. All containers acco 3. Condition of samp	Documentation sent on bottles: complete: label / COC agree: Condition in HT: pounted for: le:	Y or V V Y or V	N	
Quality Control Preserv 1. Trip Blank present / coo 2. Trip Blank listed on COC 3. Samples preserved prop 4. VOCs headspace free:	ration Y ler: □ C: □ perly: ☑	or N N/A		Sample Integrity - 1. Analysis requeste 2. Bottles received fr 3. Sufficient volume 4. Compositing instr 5. Filtering instructio	Instructions d is clear: or unspecified tests recvd for analysis: uctions clear: ns clear:	<u>Y or</u> <u>Y</u> <u>Y</u> <u>Y</u> <u>Y</u>		 _N/A
Test Strip Lot #s:	рН 1-12:	229517	pH 12+:	208717	Other: (Specify)			
Comments								

SM089-03 Rev. Date 12/7/17

> JC90585: Chain of Custody Page 3 of 3

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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

07/18/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90585XA



Sampling Date: 06/25/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 28



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Table of Contents

Section 1: Sample Summary	3
Section 2: Subcontract Lab Data	7
Section 3: Misc. Forms	25
3.1: Chain of Custody	26

Sample Summary

USACE-Philadelphia District

Job No: JC90585XA

Sample Number	Collected Date	Time By	Received	Matri Code	іх Туре	Client Sample ID
JC90585-1F	06/25/19	13:50 GW	06/25/19	AQ	Surface H2O Filtered	BM-1S
JC90585-1XA	06/25/19	13:50 GW	06/25/19	AQ	Surface Water	BM-1S
JC90585-2F	06/25/19	09:15 GW	06/25/19	AQ	Surface H2O Filtered	BM-2S
JC90585-2XA	06/25/19	09:15 GW	06/25/19	AQ	Surface Water	BM-2S
JC90585-3F	06/25/19	09:15 GW	06/25/19	AQ	Surface H2O Filtered	BM-2M
JC90585-3XA	06/25/19	09:15 GW	06/25/19	AQ	Surface Water	BM-2M
JC90585-4F	06/25/19	09:15 GW	06/25/19	AQ	Surface H2O Filtered	BM-2D
JC90585-4XA	06/25/19	09:15 GW	06/25/19	AQ	Surface Water	BM-2D
JC90585-5F	06/25/19	13:10 GW	06/25/19	AQ	Surface H2O Filtered	BM-5S
JC90585-5XA	06/25/19	13:10 GW	06/25/19	AQ	Surface Water	BM-5S
JC90585-6F	06/25/19	08:45 GW	06/25/19	AQ	Surface H2O Filtered	BM-6S
JC90585-6XA	06/25/19	08:45 GW	06/25/19	AQ	Surface Water	BM-6S
JC90585-7F	06/25/19	08:45 GW	06/25/19	AQ	Surface H2O Filtered	BM-6M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC90585XA

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC90585-7XA	06/25/19	08:45 GW	06/25/19	AQ	Surface Water	BM-6M
JC90585-8F	06/25/19	08:45 GW	06/25/19	AQ	Surface H2O Filtered	BM-6D
JC90585-8XA	06/25/19	08:45 GW	06/25/19	AQ	Surface Water	BM-6D
JC90585-9F	06/25/19	10:05 GW	06/25/19	AQ	Surface H2O Filtered	BM-7S
JC90585-9XA	06/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7S
JC90585-10F	06/25/19	10:05 GW	06/25/19	AQ	Surface H2O Filtered	BM-7M
JC90585-10X	A06/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7M
JC90585-11F	06/25/19	10:05 GW	06/25/19	AQ	Surface H2O Filtered	BM-7D
JC90585-11X	406/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7D
JC90585-12F	06/25/19	11:50 GW	06/25/19	AQ	Surface H2O Filtered	BM-8S
JC90585-12X	406/25/19	11:50 GW	06/25/19	AQ	Surface Water	BM-8S
JC90585-13F	06/25/19	11:50 GW	06/25/19	AQ	Surface H2O Filtered	BM-8M
JC90585-13X	406/25/19	11:50 GW	06/25/19	AQ	Surface Water	BM-8M



Sample Summary (continued)

USACE-Philadelphia District

Job No:

JC90585XA

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC90585-14F	06/25/19	11:50 GW	06/25/19	AQ	Surface H2O Filtered	BM-8D
JC90585-14X	A06/25/19	11:50 GW	06/25/19	AQ	Surface Water	BM-8D
JC90585-15F	06/25/19	10:35 GW	06/25/19	AQ	Surface H2O Filtered	BM-9S
JC90585-15X	A06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9S
JC90585-16F	06/25/19	10:35 GW	06/25/19	AQ	Surface H2O Filtered	BM-9M
JC90585-16X	A06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9M
JC90585-17F	06/25/19	10:35 GW	06/25/19	AQ	Surface H2O Filtered	BM-9D
JC90585-17X	A06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9D
JC90585-18F	06/25/19	11:15 GW	06/25/19	AQ	Surface H2O Filtered	BM-10S
JC90585-18X	A06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10S
JC90585-19F	06/25/19	11:15 GW	06/25/19	AQ	Surface H2O Filtered	BM-10M
JC90585-19X	A06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10M
JC90585-20F	06/25/19	11:15 GW	06/25/19	AQ	Surface H2O Filtered	BM-10D



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC90585XA

Sample Number	Collected Date	Time By	Received	Matr Code	іх Туре	Client Sample ID
JC90585-20X	A06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10D
JC90585-21F	06/25/19	13:00 GW	06/25/19	AQ	Surface H2O Filtered	BM-11S
JC90585-21X	A06/25/19	13:00 GW	06/25/19	AQ	Surface Water	BM-11S



Section 2

Subcontract Lab Data

Report of Analysis





Attention: Tammy McCloskey Reported To: SGS North America 2235 US Highway 130 Dayton, NJ 08810

Lab ID:	9022156-01	Collected By:	Client
Sample Desc:	BM-1S		

Certificate of Analysis

Laboratory No.: 9022156 Report: 07/03/19 Lab Contact: Richard A Wheeler

Project: Army Corp Reservoirs

Sampled: 06/25/19 13:50 Received: 06/27/19 09:50 Sample Type: Grab

				Rep.				
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist	ry							
Phosphorus as P, Dissolved	0.03	mg/l	0.007	0.05	SM 4500-P E	06/27/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.08	mg/l	0.01	0.01	SM 4500-P E	06/27/19		JCL

Lab ID: 9022156-02 Collected By: Client Sample Desc: BM-2S

Sampled: 06/25/19 09:15 Received: 06/27/19 09:50

Sample Type: Grab

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.04	mg/l	0.007	0.05	SM 4500-P E	06/27/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.08	mg/l	0.01	0.01	SM 4500-P E	06/27/19		JCL	

Lab ID: 9022156-03 Collected By: Client Sample Desc: BM-2M

Sampled: 06/25/19 09:15

Received: 06/27/19 09:50 Sample Type: Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemistr	ry								
Phosphorus as P, Dissolved	0.11	mg/l	0.007	0.05	SM 4500-P E	06/27/19	G-11	JCL	
General Chemistry									
Phosphorus as P, Total	0.12	mg/l	0.01	0.01	SM 4500-P E	06/27/19		JCL	



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Lab ID: 9022156 Sample Desc: BM-2D	04 Col	lected By:	Client		Sampled: 06/2	25/19 09:15	Received: Sample Type:	06/27/19 09:50 Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes A	nalyst
Dissolved General Chemistr Phosphorus as P, Dissolved	у 0.06	mg/l	0.007	0.05	SM 4500-P E	06/27/19	G-11	JCL
Phosphorus as P, Total	0.10	mg/l	0.01	0.01	SM 4500-P E	06/27/19		JCL
Lab ID: 9022156 Sample Desc: BM-55	05 Col l	lected By:	Client		Sampled: 06/2	25/19 13:10	Received: Sample Type:	06/27/19 09:50 Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes A	nalyst
Dissolved General Chemistr Phosphorus as P, Dissolved Conseral Chemistry	у 0.07	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11	JCL
Phosphorus as P, Total	0.18	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL
Lab ID: 9022156 Sample Desc: BM-6S	06 Col l	lected By:	Client		Sampled: 06/2	25/19 08:45	Received: Sample Type:	06/27/19 09:50 Grab
Lab ID: 9022156- Sample Desc: BM-6S	06 Coll	lected By:	Client MDL	Rep. Limit	Sampled: 06/2 Procedure	25/19 08:45 Analyzed	Received: Sample Type: Notes A	06/27/19 09:50 Grab nalyst
Lab ID: 9022156- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved	06 Coll Result	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E	25/19 08:45 Analyzed 06/28/19	Received: Sample Type: Notes A G-11	06/27/19 09:50 Grab nalyst JCL
Lab ID: 9022156- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	06 Col Result Y 0.09 0.32	ected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	25/19 08:45 Analyzed 06/28/19 06/28/19	Received: Sample Type: <u>Notes</u> A G-11	06/27/19 09:50 Grab nalyst JCL JCL
Lab ID: 9022156- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-6M	06 Coll <u>Result</u> 9 0.09 0.32 07 Coll	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2	25/19 08:45 Analyzed 06/28/19 06/28/19 25/19 08:45	Received: Sample Type: Notes A G-11 G-11 Received: Sample Type:	06/27/19 09:50 Grab nalyst JCL JCL 06/27/19 09:50 Grab
Lab ID: 9022156- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-6M	06 Coll Result 9 0.09 0.32 07 Coll Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure	25/19 08:45 Analyzed 06/28/19 06/28/19 25/19 08:45 Analyzed	Received: Sample Type: Notes A G-11 Received: Sample Type: Notes A	06/27/19 09:50 Grab JCL JCL 06/27/19 09:50 Grab
Lab ID: 9022156- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-6M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	06 Coll <u>Result</u> 9 0.09 0.32 07 Coll 9 0.10	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 0.01 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit 0.05	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure SM 4500-P E	25/19 08:45 Analyzed 06/28/19 06/28/19 25/19 08:45 Analyzed 06/28/19	Received: Sample Type: Aotes A G-11 Sample Type: Sample Type: Aotes A	06/27/19 09:50 Grab JCL 06/27/19 09:50 Grab 09:50 JCL



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Lab ID: 9022156 Sample Desc: BM-6D	-08 Col	lected By:	Client		Sampled: 06/2	25/19 10:05	Received Sample Type	d: 06/27/19 09:50 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved	0.07	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11	JCL
Phosphorus as P, Total	0.09	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL
Lab ID: 9022156 Sample Desc: BM-7S	-09 Col	lected By:	Client		Sampled: 06/2	25/19 10:05	Received Sample Type	d: 06/27/19 09:50 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry	0.06	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11	JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL
Lab ID: 9022156 Sample Desc: BM-7M	-10 Col	lected By:	Client		Sampled: 06/2	25/19 11:50	Received Sample Type	d: 06/27/19 09:50 e: Grab
Lab ID: 9022156 Sample Desc: BM-7M	-10 Col	lected By: Unit	Client MDL	Rep. Limit	Sampled: 06/2 Procedure	25/19 11:50 Analyzed	Received Sample Type Notes	d: 06/27/19 09:50 e: Grab
Lab ID: 9022156 Sample Desc: BM-7M Dissolved General Chemist Phosphorus as P, Dissolved	-10 Col Result	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E	25/19 11:50 Analyzed 06/28/19	Received Sample Type Notes	d: 06/27/19 09:50 e: Grab Analyst
Lab ID: 9022156 Sample Desc: BM-7M Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	-10 Col <u>Result</u> try 0.05 0.10	lected By: Unit mg/l	Client	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	25/19 11:50 Analyzed 06/28/19 06/28/19	Received Sample Type Notes G-11	d: 06/27/19 09:50 e: Grab Analyst JCL JCL
Lab ID: 9022156 Sample Desc: BM-7M Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156 Sample Desc: BM-7D	-10 Col Result try 0.05 0.10 -11 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	25/19 11:50 Analyzed 06/28/19 06/28/19 25/19 11:50	Received Sample Type Onotes G-11 Received Sample Type	 d: 06/27/19 09:50 e: Grab Analyst JCL JCL d: 06/27/19 09:50 e: Grab
Lab ID: 9022156 Sample Desc: BM-7M Dissolved General Chemisu Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156 Sample Desc: BM-7D	-10 Col Result 0.05 0.10 -11 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure	25/19 11:50 Analyzed 06/28/19 06/28/19 25/19 11:50 Analyzed	Received Sample Type Onotes G-11 Received Sample Type Notes	 d: 06/27/19 09:50 e: Grab Analyst JCL JCL d: 06/27/19 09:50 e: Grab Analyst
Lab ID: 9022156 Sample Desc: BM-7M Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156 Sample Desc: BM-7D Dissolved General Chemist Phosphorus as P,	-10 Col Result 0.05 0.10 -11 Col Result try 0.07	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client	Rep. Limit 0.05 0.01 Rep. Limit 0.05	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure SM 4500-P E	25/19 11:50 Analyzed 06/28/19 06/28/19 25/19 11:50 Analyzed 06/28/19	Received Sample Type G-11 G-11 Sample Type Notes G-11	d: 06/27/19 09:50 e: Grab Analyst JCL JCL d: 06/27/19 09:50 e: Grab Analyst JCL



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Lab ID: 9022156- Sample Desc: BM-8S	-12 Col	lected By:	Client		Sampled: 06/2	25/19 11:50	Receive Sample Typ	d: 06/27/19 09:50 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved	ry 0.04	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11, J	JCL
Phosphorus as P, Total	0.06	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL
Lab ID: 9022156- Sample Desc: BM-8M	-13 Col	lected By:	Client		Sampled: 06/2	25/19 11:50	Receive Sample Typ	d: 06/27/19 09:50 be: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry	ry 0.02	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11, J	JCL
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL
Lab ID: 9022156- Sample Desc: BM-8D	-14 Col l	lected By:	Client		Sampled: 06/2	25/19 11:50	Receive Sample Typ	d: 06/27/19 09:50 pe: Grab
Lab ID: 9022156- Sample Desc: BM-8D	-14 Coll Result	lected By: Unit	Client	Rep. Limit	Sampled: 06/2 Procedure	25/19 11:50 Analyzed	Receive Sample Typ Notes	d: 06/27/19 09:50 pe: Grab
Lab ID: 9022156 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved	14 Col Result ry 0.03	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E	25/19 11:50 Analyzed 06/28/19	Receive Sample Typ Notes G-11, J	d: 06/27/19 09:50 pe: Grab Analyst JCL
Lab ID: 9022156 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	-14 Col Result ry 0.03 0.04	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E	25/19 11:50 Analyzed 06/28/19 06/28/19	Receive Sample Typ Notes G-11, J	ed: 06/27/19 09:50 pe: Grab Analyst JCL JCL
Lab ID: 9022156- Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-98	-14 Col <u>Result</u> TY 0.03 0.04 -15 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2	25/19 11:50 Analyzed 06/28/19 06/28/19 25/19 10:35	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 06/27/19 09:50 pe: Grab Analyst JCL JCL d: 06/27/19 09:50 pe: Grab
Lab ID: 9022156- Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-9S	-14 Col <u>Result</u> TY 0.03 0.04 -15 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 0.01 Client MDL	Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure 06/2	25/19 11:50 Analyzed 06/28/19 06/28/19 25/19 10:35 Analyzed	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 06/27/19 09:50 pe: Grab Analyst JCL JCL d: 06/27/19 09:50 pe: Grab Analyst
Lab ID: 9022156- Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-9S Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry	-14 Coll Result TY 0.03 0.04 -15 Coll Result TY 0.10	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL 0.007	Rep. Limit 0.05 0.01 Rep. Limit 0.05	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Gampled: Sampled: 06/2 Procedure SM 4500-P E	25/19 11:50 Analyzed 06/28/19 06/28/19 25/19 10:35 Analyzed 06/28/19	Receive Sample Type Onotes G-11, J Receive Sample Type Sample Type Onotes	ed: 06/27/19 09:50 pe: Grab Analyst JCL JCL d: 06/27/19 09:50 pe: Grab Analyst JCL



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Lab ID: 9022156- Sample Desc: BM-9M	16 Col l	lected By:	Client		Sampled: 06/2	25/19 10:35	Received: 06/27/19 09:50 Sample Type: Grab
	D li	TT 1.		Rep.	D		
Dissolved General Chemistr Phosphorus as P, Dissolved	y 0.06	mg/l	0.007	0.05	SM 4500-P E	Analyzed 06/28/19	G-11 JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P E	06/28/19	JCL
Lab ID: 9022156- Sample Desc: BM-9D	17 Col l	lected By:	Client		Sampled: 06/2	25/19 10:35	Received: 06/27/19 09:50 Sample Type: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	y 0.04	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11, J JCL
Phosphorus as P, Total	0.06	mg/l	0.01	0.01	SM 4500-P E	06/28/19	JCL
Lab ID: 9022156- Sample Desc: BM-10S	18 Coll	lected By:	Client		Sampled: 06/2	25/19 11:15	Received: 06/27/19 09:50 Sample Type: Grab
Lab ID: 9022156- Sample Desc: BM-10S	18 Coll	lected By: Unit	Client	Rep. Limit	Sampled: 06/2 Procedure	25/19 11:15 Analyzed	Received: 06/27/19 09:50 Sample Type: Grab
Lab ID: 9022156- Sample Desc: BM-108 Dissolved General Chemistr Phosphorus as P, Dissolved	18 Coll Result	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E	25/19 11:15 Analyzed 06/28/19	Received: 06/27/19 09:50 Sample Type: Grab
Lab ID: 9022156- Sample Desc: BM-108 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	18 Coll <u>Result</u> y 0.02 0.20	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E	25/19 11:15 Analyzed 06/28/19 06/28/19	Received: 06/27/19 09:50 Sample Type: Grab
Lab ID: 9022156- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-10M	18 Coll <u>Result</u> y 0.02 0.20 19 Coll	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 06/2	25/19 11:15 Analyzed 06/28/19 06/28/19 25/19 11:15	Receive: 06/27/19 09:50 Sample Type: Grab Notes Aulyst G-11, J JCL JCL JCL
Lab ID: 9022156- Sample Desc: BM-108 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-10M	18 Coll <u>Result</u> 9 0.02 0.20 19 Coll Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure	25/19 11:15 Analyzed 06/28/19 06/28/19 25/19 11:15 Analyzed	Receive: 06/27/19 09:50 Sample Type: Grab Notes Aulyst G-11, J JCL JCL JCL Receive:: 06/27/19 09:50 Grab O9:50
Lab ID: 9022156- Sample Desc: BM-10S Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9022156- Sample Desc: BM-10M Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry	Result y 0.02 0.20 0.20 19 Coll y 0.04	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL 0.007	Rep. 0.05 0.01	Sampled: 06/2 Procedure SM 4500-P E SM 4500-P E Sampled: 06/2 Procedure SM 4500-P E	25/19 11:15 Analyzed 06/28/19 06/28/19 25/19 11:15 Analyzed 06/28/19	Receive: 06/27/19 09:50 Notes Grab G-11, J JCL JCL JCL Receive: 06/27/19 09:50 Sample Type: 06/27/19 09:50 G-11, J JCL JCL JCL Sample Type: 06/27/19 09:50 JCL JCL



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Lab ID: 9022156- Sample Desc: BM-10D	20 Co l	lected By:	Client		Sampled: 06	5/25/19 11:15 S	Receive Sample Typ	ed: 06/27/19 09:50 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr	y							
Phosphorus as P, Dissolved	0.06	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11	JCL
General Chemistry								
Phosphorus as P, Total	0.06	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL
Lab ID: 9022156- Sample Desc: BM-11S	21 Co l	lected By:	Client		Sampled: 06	/25/19 13:00	Receive Sample Typ	ed: 06/27/19 09:50 De: Grab
_	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst

	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemistry									
Phosphorus as P, Dissolved	0.04	mg/l	0.007	0.05	SM 4500-P E	06/28/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P E	06/28/19		JCL	



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M.J. Reider Associates, Inc.

Quality Control

General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9F1573								
MB (B9F1573-BLK1)				Prepared & Ana	alyzed: 06/27/20)19		
Phosphorus as P, Total	<0.01	0.01	mg/l					U
Batch B9F1624								
MB (B9F1624-BLK1)				Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Total	< 0.01	0.01	mg/l					U
MB (B9F1624-BLK2)				Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Total	< 0.01	0.01	mg/l					U
LFB (B9F1624-BS1)				Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Total	1.01	0.01	mg/l	101	80-120			
LFM (B9F1624-MS1)		Source: 9022156-21		Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Total	1.03	0.01	mg/l	98.7	80-120			
LFMD (B9F1624-MSD1)		Source: 9022156-21		Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Total	1.04	0.01	mg/l	100	80-120	1.35	20	
		Dissol	ved Gen	eral Chemistr	y			
	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9F1574								
MB (B9F1574-BLK1)				Prepared & Ana	alyzed: 06/27/20)19		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					G-11, U
LFB (B9F1574-BS1)				Prepared & Ana	alyzed: 06/27/20)19		
Phosphorus as P, Dissolved	1.01	0.05	mg/l		80-120			G-11
LFM (B9F1574-MS1)		Source: 9022156-04		Prepared & Ana	alyzed: 06/27/20)19		
Phosphorus as P, Dissolved	1.06	0.05	mg/l	99.6	80-120			
LFMD (B9F1574-MSD1)		Source: 9022156-04		Prepared & Ana	alyzed: 06/27/20)19		
Phosphorus as P, Dissolved	1.06	0.05	mg/l	99.1	80-120	0.473	20	
Batch B9F1625								
MB (B9F1625-BI K1)				Prepared & An	alvzed: 06/28/20)19		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l		,,,			G-11, U
L FB (B9F1625-BS1)				Prepared & An	alvzed: 06/28/20)19		
Phosphorus as P, Dissolved	1.02	0.05	mg/l	r repared et rin	80-120			G-11
LFM (B9F1625-MS1)		Source: 9022156-05		Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Dissolved	1.06	0.05	mg/l	99.4	80-120			
LEND (BOE1625 MSD1)								
LI WD (D91 1023-W3D1)		Source: 9022156-05		Prepared & Ana	alyzed: 06/28/20)19		
Phosphorus as P, Dissolved	1.07	Source: 9022156-05 0.05	mg/l	Prepared & Ana 100	alyzed: 06/28/20 80-120	0.749	20	



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JC90585XA



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Preparation Methods

Specific Method	Preparation Method	Prepared Date	Prepared By
9022156-01			
SM 4500-P E	SM 4500-P B	06/27/2019	JCL
9022156-02			
SM 4500-P E	SM 4500-P B	06/27/2019	JCL
9022156-03			
SM 4500-P E	SM 4500-P B	06/27/2019	JCL
9022156-04			
SM 4500-P E	SM 4500-P B	06/27/2019	JCL
9022156-05			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-06			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-07			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-08			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-09			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-10			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-11			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-12			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-13			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-14			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-15			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL



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9022156-16			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-17			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-18			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-19			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-20			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL
9022156-21			
SM 4500-P E	SM 4500-P B	06/28/2019	JCL

Notes and Definitions

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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	S S S S S				CHAI SGS NG 2235 RJ 7EL. 732-329	NOI Nrth Ame Pozoo F	CU rica Inc. Dayton, N AX: 732-3	STOD - Dayton JJ 08810 329-3499/348	≻ ≋	<u>u 1</u> 00	ED-EX Tracking GS Quote #	74		Bottle Order C	age 1 o	f 4				
<u> </u>	Client / Reporting Information				Drolog	+ Information	com/ehsu	sa		2	# aloon on			# 000 050	JC9058	5XA	-			
	Company Name:	Pro-	ject Name:				lon				\vdash	_	Kequesteo	Analysis	_	Mat	TIX Codes			
	Street Address	Strei	et	Istrict, Keser	voir sampling											- M9	Sround Water N - Water			
	City State	Zip City			State	Billing In Company	formation (If Name	different from	Report to)							8- MS	Surface Water SO - Solt Sludge			
	Project Contact E-mail tammy.mccloskey@sgs.com	Pro	viect #			Street Ad.	Iress										J-Sediment OI - Oil Other Liquid AIR - Air			
	Phone #	Gie	ent Purchase O	tdar #		City		Stat	0	dīZ						SOL.	- Other Solid P - Wipe			
	Sampler(s) Name(s) GW	Phone Pro.	riect Menager			Attention:				Τ	, 1 09T,					199 199 199 199 199	lipment Blank Rinse Blank Trin Riant			
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, ,	4F BM-2D			6/25/19	9:15:00 AN	N GW	AQ	_			×		-		_		-			
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4	6XA BM-6S			6/25/19	8:45:00 AN	4 GW	AQ				×									
r P	6F BM-6S			6/25/19	8:45:00 AN	4 GW	AQ				×									
	Turnaround Time (Business days)							Data Deliverat	ole Information					omments / Spec	al Instructions					
	 Standard 10 Business Days 5 Business Days RUSH 	Appr	roved By (SGS I	M): / Date:			ommercial ", ommercial "; fLLT1 (Lev	A" (Level 1) B" (Level 2) 3 3+4)	¥¥# 000	'ASP Categor) 'ASP Categor) ate Forms	A B	FILTERGEN per client ins filtered).	≂ MJ Reide tructions. (E	r to filter prior Each sample s	to TPO4 analy hould be TPO	sis on sample: 4 total and TP	s noted O4 lab	av	•	
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CHAIN OF CUSTODY Ses North America Inc. - Dayton 2535 Rotet 30, Dayton, MI MORT 3L, 7232 Ruth

Page 2 of 4	Bottle Order Control #
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L	Client / Reporting Information			Project	Inform	ation							Dec	nated Analys			Mateir Codes		
ŏ	ompany Name:	Project Name															INIALITY COURS		
		Philadelphis	a District, Reserv	oir Sampling										-			W - Drinking Water		
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۱ <u>۶</u>	roiect Contact E-mail tammy.mccloskey@sgs.com	Prolect #			Street A	vddress					- <u>1</u>						OI - OII LIQ - Other Liquid AIR - Air		
đ	hone #	Client Purchas	ie Order#		City			State		dız							SOL - Other Solid WP - Wipe		
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¥	0XA BM-7M		6/25/19	11:50:00 AM	GW	Å						×							
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5	1XA BM-7D		6/25/19	11:50:00 AN	GW	β			-			×							
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	Turnaround Time (Business days)						Data D	fiverable	Information					Comments	/ Special Instru	ctions			
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CHAIN OF CUSTODY SGS North America Inc. - Dayton

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Page 3 of 4	Bottle Order Control #
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13	3XA BM-8M		6/25/19	11:50:00 AM	GW	AQ				×						-	
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4	4XA BM-8D		6/25/19	11:50:00 AM	вW	AQ				×						1	
÷ ~	4F BM-8D		6/25/19	11:50:00 AM	GW	AQ				×							
15	5XA BM-9S		6/25/19	10:35:00 AM	мө	AQ	-			×							
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CHAIN O	SGS North An	2235 Route 130	TEL. 732-329-0200

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Page 4 of 4	Bottle Order Control #	SGS Job# ICODERSYA
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JC90585XA.xls Rev. Date: 4/10/18

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Date / Time: 6/26/2019 12:26:19 PM

CSR: TAMMY Job #: JC90585XA Client Project: Philadelphia District, Reservoir Sampling Deliverable: REDT2

TAT: Due 7/9/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories Zip: 19611 Address: 107 Angelica Street City: Reading State: PA

Contact: Sample Receiving / Rich Wheeler Phone: 610-374-5129

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<u> JC90585-9F</u>	<u> JC90585-10XA</u>	<u> JC90585-10F</u>	<u>JC90585-11XA</u>	<u> JC90585-11F</u>	<u> JC90585-12XA</u>	<u> JC90585-12F</u>	<u>JC90585-13XA</u>	<u> JC90585-13F</u>	<u> JC90585-14XA</u>	<u> JC90585-14F</u>	<u>JC90585-15XA</u>	<u> JC90585-15F</u>	<u> JC90585-16XA</u>	<u> JC90585-16F</u>	<u> JC90585-17XA</u>	JC90585-17F	<u> JC90585-18XA</u>	<u> JC90585-18F</u>	<u> JC90585-19XA</u>	<u>JC90585-19F</u>	JC90585-20XA	<u> JC90585-20F</u>	<u>JC90585-21XA</u>	JC90585-21F

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Page 16 of 17 N Comments: FILTERGEN = MJ Reider to filter prior to TPO4 analysis on samples noted per client instructions. (Each sample should be TPO4 total and TPO4 lab filtered). 9022156 Date: Sample Management Receipt:

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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

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MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Richard A Wheeler Director of Field Services



107 Angelica Street O Reading, PA 19611 O www.mjreider.com O (610) 374-5129 O fax (610) 374-7234

This certificate shall not be reproduced except in full without the written approval of M.J. Reider Associates, Inc. NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes. Additional accreditations by CT (PH-0210), MD (261), NY(12094)





Section 3 😀

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



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Phila. PA 19107	Keadi	Ng	PA							14	3	ड							SL-Sludge
Joe Loeder	Protect #	-	St	neet Address						15	Š	Ĵ.							OI-OE
Phone #	Client Purchas	io Order #	c	ày			State		710		D (- T	2		1				AiR - Air
215-656-6545	TM-00	01819-	33						4		t I	S	6						SOL - Other Solfst WP - Wipe
	Project Maneo	Mac	All	lention:							1-2	C	3						FB - Flett Blank EB-Equipment Blank
Dieg wach Official	AMM	y mee	Callection							19	1,2	1	7		1				RB - Rinse Stank TB - Trip Slank
				1		H	Number	preserved	Bettes	15	J	0	ທີ					•	
Barnate # Field ID / Point of Collection	MEOH/DI Vial #	Data	Si Time Si	ampled Grab (Grab (Grap	4400tr b	ser D	NO.	of a solution	HO P	Ιġ	Ě I	2	S						
12F BM-85		125/19	1150 17	PAG	Cul	11 14			2 0		4	124	-		·				LAB USE ONLY
JE BM SM		11.11	100 H	8 S	500	n X	+++	<u>N</u>	+++	X	12	X	X						
WC 20 80		1	150 1	0 G	SW	u X	- + +	XI		X	X	X	×		1.				
			11501	6G	50	X		X L		X	$ \mathbf{x} $	X	K					1	
ISP BM-95			1035 1	JG-	SW	(X		$\langle \rangle$		×	$ \star $	×	<	1				-	
16F BM-YM			1035	GG	SN	K X		K	ПТ	X	X		1	+					·
ITE BM-9D			10351	\$ 5	SWI	11 ×		N		X	X		1-						
18F BM-105			1115 1	GG	SWI	1 1			H	N	S	51		+	$\left - \right $				
19F BM-10M			1115 1	(I)G	SN 1	1 1		11	+++		÷.	CH			-			+	
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			1.00 /1					4-1-1	+ +	X	X	X Z	:						
								$\left \right $											
Turn Around Time (Bus	iness Days)				<u>t</u>			<u>L</u> L				•							
	Approved By (SG	S PM): / Date:		Comm	ercial "A" (Le	rval 1)		erable								Comme	nts / Spec	ial Instr	uctions
10 Business Days				Comm	ercipi "B" (Le	vel 2)		IYASP Ca	lagory B		ப	00-0544	TO	2 F/	FO	F	To .:	Eur	ofive 1
3 Business Days	······			NJ Res	juced (Lovel 3	9		мамср с	Sritteria				10	Ь.					
2 Business Days*					ri (Leval 4)			TRCP	Criteria				1-1	n ii	~	N	1	Dot	4
1 Business Day*					QP	~		tate Form	18				11+	04	- 12	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5	rec i	mr
All date availent for via Lablink	numf man da d f	-	-		Commerci	sí "A" = Re:	uits only; Co	mmercial	"B" = Res		mmany	•	10	Ь.					
	ver needed for	Simple (Custody must b	documente	Comme ad below eac	h time sau	Results + O	C Summar	y + Partial	Rawdata				•	htto:	lhower, s	gs.com/e	n/terms	-and-conditions
VERTAR WEST	9 800	sociated By:		1	/	Roller	isted By:	- Popola	a-510 R, B	cuding co	urler deli	Very.	Timo:						SIEE
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Retinguighed by:	19 3	6	\sim	\angle	N	4	mented By:					Date /	Time:	T	Received B	hy:	1		
5	5	Convociety:				Custod	y Saal #		0	Intaci Not estact	Pres	verved when	applicable	· ·	•	0	n ice	Cooler 1	emp. °C

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JC90585XA: Chain of Custody Page 2 of 3



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27 of 28 JC90585XA

SGS Sample Receipt Summary

Job Number: JC90585	Client:	USACE-PHILADELPHIA DISTRICT	Project: PHILADELPHIA DI	STRICT, RESERVOIR SAMPL
Date / Time Received: 6/25/2019	5:50:00 PM	Delivery Method:	Airbill #'s:	
Cooler Temps (Raw Measured) °C: Cooler Temps (Corrected) °C:	Cooler 1: (2.8); Cooler 1: (2.4);	Cooler 2: (3.1); Cooler 3: (3.4); Cooler 4: Cooler 2: (2.7); Cooler 3: (3.0); Cooler 4:	(2.9); Cooler 5: (3.4); Cooler 6: (3 (2.5); Cooler 5: (3.0); Cooler 6: (3	3.7); Cooler 7: (3.8); 3.3); Cooler 7: (3.4);
Cooler Security Y or N 1. Custody Seals Present: ☑ □ 2. Custody Seals Intact: ☑ □ Cooler Temperature Y Y 1. Temp criteria achieved: ☑ □ 2. Cooler temp verification: ☑ □ 3. Cooler media: □ □ 4. No. Coolers: □ □		Y or N resent: ✓ □ s/Time OK ↓ S/Time OK ↓ S	grity - Documentation bels present on bottles: labeling complete: ntainer label / COC agree: egrity - Condition cvd within HT: ers accounted for: f sample:	Y or N ✓ □ ✓ □ ✓ □ Y or N ✓ □
Quality Control Preservation Y 1. Trip Blank present / cooler: 2. Trip Blank listed on COC: 3. Samples preserved properly: 4. VOCs headspace free:	or N N/A	5. Contributor Sample Inte 1. Analysis r 2. Bottles rec 3. Sufficient 4. Compositi 5. Filtering ir	equested is clear: ceived for unspecified tests volume recvd for analysis: ing instructions clear: instructions clear:	<u>Y or N N/A</u> <u>V</u> U <u>V</u> U
Test Strip Lot #s: pH 1-12: Comments	229517	pH 12+:208717	Other: (Specify)	

SM089-03 Rev. Date 12/7/17

> JC90585XA: Chain of Custody Page 3 of 3



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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

07/24/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90585X



Sampling Date: 06/25/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 16



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS. Test results relate only to samples analyzed.

SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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3.1: Chain of Custody	14

Sample Summary

USACE-Philadelphia District

Job No: JC90585X

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC90585-1X	06/25/19	13:50 GW	06/25/19	AQ	Surface Water	BM-1S
JC90585-2X	06/25/19	09:15 GW	06/25/19	AQ	Surface Water	BM-2S
JC90585-5X	06/25/19	13:10 GW	06/25/19	AQ	Surface Water	BM-5S
JC90585-6X	06/25/19	08:45 GW	06/25/19	AQ	Surface Water	BM-6S
JC90585-9X	06/25/19	10:05 GW	06/25/19	AQ	Surface Water	BM-7S
JC90585-12X	06/25/19	11:50 GW	06/25/19	AQ	Surface Water	BM-8S
JC90585-15X	06/25/19	10:35 GW	06/25/19	AQ	Surface Water	BM-9S
JC90585-18X	06/25/19	11:15 GW	06/25/19	AQ	Surface Water	BM-10S
JC90585-21X	06/25/19	13:00 GW	06/25/19	AQ	Surface Water	BM-11S



3 of 16 JC90585X



Section 2

Subcontract Lab Data

Report of Analysis







Serialized: 07/10/2019 07:37pm QC36

Regarding:

US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA, PA 19107

PROJECT ID:

W08688

LABORATORY REPORT NUMBER:

L7138041

DENM

Authorized by: Douglas J. Gump Client Services Manager



5 of 16 JC90585X

US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA,PA 19107

JOSEPH M. LOEPER

Analytical Report Printed 07/10/19 19:37 QC36

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JOSEPH M. LOEPER US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA, PA 19107

Regarding: JOSEPH M. LOEPER US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA, PA 19107

Account No: W08688, US AF Project No: W08688, US AF	RMY CORPS OF ENG RMY CORPS OF ENG	INEERS INEERS		P.O. No:		Inv. No: PWSID No:	1982733 PI
Sample ID Sample Descri L7138041-1 BM-1S Received Da Exceeds red	ption ate/Time/Temp 06/2 commended temper	25/19 03:20 r ature for	Opm 22.1 C microbiolo	lced (Y/N): Y ogical testing.(T)	Samp. D 06/25/19 (ate/Time/Temp 01:50pm NA C	Sampled by Customer
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONMENTAL MICRO	OBIOLOGY BM-	15					
Total Coliform, MF Fecal Coliform, MF	>20000 170 E		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 10	100 10	06/25/19 06:22PM LK 06/25/19 05:14PM ZS
	_						

Sample ID Sample Description L7138041-2 BM-2S Received Date/Time/Temp 06/25/19 03:20pm 22.1 C Iced (Y/N): Y Exceeds recommended temperature for microbiological testing.(T)				Samp. Da	te/Time/Temp	Sampled by		
				06/25/19 09	9:15am NA C	Customer		
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-2S						
Total Coliform	, MF	2900		cfu/100ml	SM 9222B	1	100	06/25/19 05:09PM LK
Fecal Coliform	1. MF	24		cfu/100ml	SM 9222D	100	1	06/25/19 05:14PM ZS

PIN: 17757

Serial Number: 6525671



JC90585X

Analytical Report Printed 07/10/19 19:37

Account No: Project No:	W08688, US ARMY CC W08688, US ARMY CC	RPS OF ENGINE RPS OF ENGINE	ERS ERS		P.O. No:		Inv. No: PWSID No:	1982733 PI	
Sample ID L7138041-3	Sample Description BM-5S Received Date/Tim Exceeds recomme	e/Temp 06/25/1 nded temperati	9 03:2 J re fo r	0pm 22.1 C • microbiolo	lced (Y/N): Y gical testing.(T)	Samp. Da 06/25/19 0	tte/Time/Temp 1:10pm NA C	Sampled by Customer	
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time,	Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-5S							
Total Coliform Fecal Coliform	, MF I, MF	CONFLUENT G >6000	ROWT	⊓ ld fu/100ml cfu/100ml	SM 9222B SM 9222D	1 1	100 100	06/25/19 05:09PM 06/25/19 05:14PM	LK ZS
Sample ID L7138041-4	Sample Description BM-6S Received Date/Tim Exceeds recomme	e/Temp 06/25/1 nded temperati	9 03:2 ure for	0pm 22.1 C • microbiolo	lced (Y/N): Y gical testing.(T)	Samp. Da 06/25/19 0	t te/Time/Temp 8:45am NA C	Sampled by Customer	
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time,	Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-6S							
Total Coliform Fecal Coliform	, MF , MF	845 13		cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	06/25/19 04:18PM 06/25/19 04:21PM	JG2 ZS
Sample ID L7138041-5	Sample Description BM-7S Received Date/Tim Exceeds recomme	e/Temp 06/25/1 nded temperati	9 03:2 J re fo r	0pm 22.1 C • microbiolo	lced (Y/N): Y gical testing.(T)	Samp. Da 06/25/19 1	t e/Time/Temp 0:05am NA C	Sampled by Customer	
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time,	Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-7S							
Total Coliform Fecal Coliform	, MF a, MF	2200 10		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	06/25/19 05:09PM 06/25/19 05:14PM	LK ZS
Sample ID L7138041-6	Sample Description BM-8S Received Date/Tim Exceeds recomme	e/Temp 06/25/1 nded temperati	9 03:2 Jre for	0pm 22.1 C • microbiolo	lced (Y/N): Ƴ gical testing.(T)	Samp. Da 06/25/19 1	t e/Time/Temp 1:50am NA C	Sampled by Customer	
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time,	Analyst

PIN: 17757

Serial Number: 6525671

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Page 3 of 8

Analytical Report Printed 07/10/19 19:37

Account No: Project No:	: W08688, US ARMY CC W08688, US ARMY CC	ORPS OF ENGINI ORPS OF ENGINI	EERS EERS		P.O. No:		Inv. No: PWSID No:	1982733 PI
Sample ID L7138041-6	Sample Description BM-8S Received Date/Tim Exceeds recomme	ne/Temp 06/25/1 ended temperation	19 03:2 ure fo r	0pm 22.1 C • microbiolc	lced (Y/N): Y ogical testing.(T)	Samp. Da 06/25/19 1	ate/Time/Temp 1:50am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-8S						
Total Coliform Fecal Coliforn	n, MF n, MF	16200 E 24		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	06/25/19 06:22PM LK 06/25/19 05:14PM ZS
Sample ID L7138041-7	Sample Description BM-9S Received Date/Tim Exceeds recomme	ne/Temp 06/25/1 ended temperation	19 03:2 ure for	0pm 22.1 C • microbiolc	Iced (Y/N): Y ogical testing.(T)	Samp. Da 06/25/19 1	ate/Time/Temp 0:35am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-9S						
Total Coliform Fecal Coliforn	n, MF n, MF	4500 20		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	06/25/19 05:09PM LK 06/25/19 05:14PM ZS
Sample ID L7138041-8	Sample Description BM-10S Received Date/Tim Exceeds recomme	ne/Temp 06/25/*	19 03:2 ure fo r	0pm 22.1 C • microbiolc	Iced (Y/N): Y ogical testing.(T)	Samp. Da 06/25/19 1	ate/Time/Temp 1:15am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-108	5					
Total Coliform Fecal Coliforn	n, MF n, MF	14700 E 47		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	06/25/19 06:22PM LK 06/25/19 05:14PM ZS
Sample ID L7138041-9	Sample Description BM-11S Received Date/Tim Exceeds recomme	ne/Temp 06/25/1 ended temperation	19 03:2 ure for	0pm 22.1 C microbiolo	Iced (Y/N): Y ogical testing.(T)	Samp. Da 06/25/19 (ate/Time/Temp 11:00pm NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 17757

Serial Number: 6525671

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JC90585X

Page 4 of 8

Analytical Report

Printed 07/10/19 19:37

Account No: W08688, US ARMY CORPS OF ENGINEERS Project No: W08688, US ARMY CORPS OF ENGINEERS				P.O. No:		Inv. No: PWSID No:	1982733 PI
Sample ID Sample Description L7138041-9 BM-11S Received Date/Time/Temp 06/25/19 03:20pm 22.1 C Exceeds recommended temperature for microbiologi				lced (Y/N): Y gical testing.(T)	Samp. Dat 06/25/19 01	e/Time/Temp :00pm NA C	Sampled by Customer
Parameter		Result C	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-11S					
Total Coliform, Fecal Coliform	, MF , MF	>20000 >600	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 10	100 10	06/25/19 05:09PM LK 06/25/19 05:14PM ZS

Sample Comments | Result Qualifiers:

L7138041-1:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7138041-2:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

L7138041-3:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

L7138041-4:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

L7138041-5:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

L7138041-6:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7138041-7:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10

PIN: 17757

Serial Number: 6525671

Page 5 of 8



Analytical Report Printed 07/10/19 19:37

Account No:	W08688,	US ARMY CORPS OF ENGINEERS	
Project No:	W08688,	US ARMY CORPS OF ENGINEERS	

P.O. No:

Inv. No: 1982733 PI PWSID No:

degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

L7138041-8:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7138041-9:

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.



PIN: 17757

Serial Number: 6525671

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JC90585X





DEFINITIONS

The following terms or abbreviations are used in this report:

QC

Less than: In conjunction with a numerical value, < indicates a concentration less than RL / MDL Greater than: In conjunction with a numerical value, > indicates a concentration greater than RL / MDL CFU Colony Forming Unit Dilution Factor (For Microbiology, DF = volume of DF sample tested) DRY Result was reported on a dry weight basis MCL EPA recommended "Maximum Contaminant Level" MDL Method Detection Limit MF Membrane Filtration MPN Most Probable Number For odor test: No Odor Observed ND For all other tests: Analyte concentration Not ND Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

Data Qualifiers

J	Estimated value MDL, but < RL
Т	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
Е	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

Warranties, Terms, and Conditions

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
 - "ERF" = field staff performs tests under NJ State certification # 02015.
 - "VL" = field staff performs tests under NJ State certification # 06005.
 - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- · All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Jordan Thorngren (Water Microbiology).

EQC Accreditations

Horsham Facility	NELAP/State IDs-	PA:	46-05499	NJ:	PA093	NY:	12080	MD:	357
East Rutherford Facility Vineland Facility Wind Gap Facility	State ID- State ID- State ID-	NJ: NJ: NJ:	02015 06005 PA001						

Eurofins QC, LLC (EQC)





SGS



ယ Section 3

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



3. '							
SGS	မက် င၊	HAIN OF CUS SGS North America Inc 2235 Route 130, Dayton, NJ 732-330 0200 CAV, 700 a	Dayton 08810	FED-EX Tracking #		Page	e_l of_2
			.9-3499/3480	SGS Quale #		\$65.1mb f	Transor
Ctient / Reporting Information	Pro . Pro	ject Information				_ <u></u> ~	2690585
U.S. ARMY CORPS of Engineers	USACE Reservo	irs - Blue M	1ARSH	() a	Requested		Matrix Codes
100 Peno Se East							GW - Ground Wate WW - Water
Phila PA 19107	Reading PA	Company Name	Im Report to)	DATE R	S		SW - Surface Wate SO - Soil SL - Sludge
Protect Contact E-mail	Protect#	Street Address	· · · · · · · · · · · · · · · · · · ·	1 2 2 3	Ľ		SED-Sediment OI - OS
Phone #	Client Purchase Order #	Cau		ASI	5		LIQ - Other Liquid AIR - Air
215-056-6545 Sempler(s) Name(s) (010 - Phone #	TM-061819-33	Allerion	State Ztp	dog 1	000		SOL - Other Solid WP - Wipe 'FB - Field Blank
Greg Wacik 597.9780	TAMMY McCloskey	son I I	human damage to	1	103		EB-Equipment Blan 78 - Rinse Blank 18 - Trip Blank
505 Semants of Collection	MECH/DIVial# Data Time	Sempled Sea i6 # of	A Marke C Parter Month	PIK0 301	ž ×		
1F BM - 15	0/25/19/1:52	AFIG GULA					LAB USE ONLY
2F BM. 25	01/1	Sw W		XXX	XX		032
26 0.0.20	110	FOR G SWII	1× ×	XXX	xx		1943
		FOG SW /	XX	XXX	XX		++++102
HE BILLER	7.15	G SW 1	XX	XXXX	KX		Sur
SF 60-55	1.10 75	KG SW 1	XX	XXXX	v X		++
6r 8m-65	845	G G G W II	XX	XXXX		+-+-+-	
7F BM-6M	845	G G SW 11	XX	XXX	XX	+ + +	+++
81 BM - 6D	845	G G GW 11	XX	XXXX	XX	┼─┼─┼─	+++
9F BM . 75	1005	GSWI	XX	XXX			+++
IDF BM.7M	1005	G G SW 11	XXX				- kna
11F BM-70	V 1005	RO GSW h				INITIAL ASE	SSMENT SP
					<u>× X </u>	I NOT VER	TICATION
Turn Around Time (Bus	iness Days)					EABEL YOR	
	Approved By (SGS Phil); / Date:	Commercial "A" (Level	1) NYASP Category A	DOD-QSM	5	Comments	/ Special Instructions
5 Business Days		Commercial "B" (Level 2) NYASP Category B		TCF/	FCF SA	mples to
3 Business Days*		Full Tier I (I evol 4)	. MA MCP Crittoria	- .	EUroF	ins lat	.
2 Business Days"		Commercial "C"	State Forme		L		Pool
1 Business Day			ED0 Format		TPOY	10 MIG	s rundur
All data available via Labilink Appro	ovel needed for 1-3 Business Day TAT	Commercial *A	" = Results only, Commercial "B" = Result	ts + QC Summary	lab		1
(Refinuished by	Stepple Custory m	nust be documented below each th	ne samples bange porsession, loci	uding courler delivery.		http://www.sos	s.com/en/terms-and-conditions
1 ats	19 2.00 /)	Relinquistic By:	Dote	/ Timo:	Torongod p:	15155
Quelinducted by:	Raceived By:		Rollingulated By:			2Kabin Re	mpl-15-19
Relinglished by: Dette / Time	r Received By:	1	4	Outa	/ Time;	Received By: 4	,
5	5		2 3 4 56 70 .	Nact Preserved whe	re applicable	Onk	re Coolor Temp. "C
		71	111X		Them. ID		
		10-31	(SHICED)	- 3,7CIP	·OCF		
		docy Ip	- 2,9C' - 3.4C	IP '			
		v	T				

JC90585X: Chain of Custody Page 1 of 3



JC90585X

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SGS		CHAIN OF CUS SGS North America Inc. 2235 Route 130, Dayton, N	TODY - Dayton N 06810	FED-EX Tracking #	Pag.	2 2 of 2
		IEL 732-329-0200 FAX: 732-3	29-3499/3480	SGS Quide #	SGS Job #	700000
Client / Reporting Information		Project Information				5670585
Company Name:	Project Name:		· · · · · · · · · · · · · · · · · · ·		equested Analysis	Matrix Codes
Street Address	USACE P	reservoirs - Blue	Marsh	0 1 2 1		DW - Drinking Waler
100 Penn Sa East				201		GW - Ground Water WW - Water
City State Zip	3	State Company Name	rom Report to)	a s l		SW - Surface Water
Phila. PA 19107	Keading	PA				SL- Studge
Joe Loeper	Protect #	Street Address				OI - OZ
Phone #	Client Purchase Order #	Cây .	State 76			AIR - Alt
215-656-6545	TM-001819-	-33	4			SOL - Other Solfat WP - Wipe
Green Warik 597,9780	To same Maria	Attention				FB - Flett Blank EB-Equipment Blank
Steg wach Off-1780	TAMMY MCC	Consection				R8 - Rinse Stanit TB - Trip Blank
1.7e			Number of preserved Bobles	10 0 0		
Barryan # Field ID / Point of Collection	MEOH/DI Vial # Data	Time Dy Comp (C) Made both		0 1 2 2 2		
12F BM-85	1025/19	1150 Part G Gui 11		H CH P		LAB USE ONLY
JE BM- 8M		NON POCKUL I		XXXX		
WE BM SD	1			XXXX		
	+	113016 6 50 11	XX	XXXX		
USP BM-95	┼──┼┼──	1035 16 G SW 11	XX	XXXX		+++
16F BM-9M		1035 16 G SN 11	XX	XXXX		+-+
ITE BM-YD	<u> </u>	10357 6 GSW 11	XX	XXXX		+-+
18F BM-105		1115 16 G SW 11	XX	XXXX	-+-+-+-	+
19P BM-10M		115 WG 3N 11	XX	2225	-+	++++
WE BA. IOD		115 P5 G SW 11	XX			+
ZE BM-115	V	1:00 PUG SW 11		XXX	╶┼╧┼╼┼╸┼	
		CO DE O SUL		XXXX		
			┼┼┼┼┼┼┼┤			
Turn Around Time (Bu	siness Days)	<u></u>				
	Approved By (SGS PH): / Date:	Commercial "A" (Leve	11) NYASP Category A		Comments	/ Special Instructions
5 Business Days		Commercial "B" (Level	2) NYASP Category B	T	CF/FCF 4	O. EUROFINS
3 Business Days*		NJ Reduced (Lovel 3)	MA MCP Critteria	10	ab.	
2 Business Days"		Commercial "C"	CT RCP Criteria		DAY. TA M	* Rolder
1 Business Day*		NJ DKQP	EDB Format	l .		
All dats avgulatoff via Lablink ^ App	rovel needed for 1-2-Dustries -	Commercial	A" = Results only; Commercial "B" = Result	s + QC Summary	as.	
Bellingthebuster	Simple	Custody must be documented below each t	ima samples shange popsession, Inch	w data	http://www.sos	.com/en/terms-and-conditions
VENK KAS	9 8:00 1 Sy		Reflectisted By:	Doto / Time:	prograder:	15:55
Reinflater of Date / Firm	a: VLO QRocelved By:	\sim	Rolinguished By:		2Kokintie	mp6-25-14
Relinguistics by:	a: Received By:	- to 1	4 Cristodu Saul #	Date / Time:	Received By: 4	,
5	5			tact Preserved where applica of intent Absent	Distrim (D	e Coolar Temp. "C

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JC90585X: Chain of Custody Page 2 of 3



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SGS Sample Receipt Summary

Job Number: JC90585	Client:	USACE-PHILADELPHIA DISTRICT	Project: PHILADELPHIA DI	STRICT, RESERVOIR SAMPL
Date / Time Received: 6/25/2019	5:50:00 PM	Delivery Method:	Airbill #'s:	
Cooler Temps (Raw Measured) °C: Cooler Temps (Corrected) °C:	Cooler 1: (2.8); Cooler 1: (2.4);	Cooler 2: (3.1); Cooler 3: (3.4); Cooler 4: Cooler 2: (2.7); Cooler 3: (3.0); Cooler 4:	(2.9); Cooler 5: (3.4); Cooler 6: (3 (2.5); Cooler 5: (3.0); Cooler 6: (3	3.7); Cooler 7: (3.8); 3.3); Cooler 7: (3.4);
Cooler Security Y or N 1. Custody Seals Present: ☑ □ 2. Custody Seals Intact: ☑ □ Cooler Temperature Y Y 1. Temp criteria achieved: ☑ □ 2. Cooler temp verification: ☑ □ 3. Cooler media: □ □ 4. No. Coolers: □ □		Y or N resent: ✓ □ s/Time OK ↓ S/Time OK ↓ S	grity - Documentation bels present on bottles: labeling complete: ntainer label / COC agree: egrity - Condition cvd within HT: ers accounted for: f sample:	Y or N ✓ □ ✓ □ ✓ □ Y or N ✓ □
Quality Control Preservation Y 1. Trip Blank present / cooler: 2. Trip Blank listed on COC: 3. Samples preserved properly: 4. VOCs headspace free:	or N N/A	5. Contributor Sample Inte 1. Analysis r 2. Bottles rec 3. Sufficient 4. Compositi 5. Filtering ir	equested is clear: ceived for unspecified tests volume recvd for analysis: ing instructions clear: instructions clear:	<u>Y or N N/A</u> <u>V</u> U <u>V</u> U
Test Strip Lot #s: pH 1-12: Comments	229517	pH 12+:208717	Other: (Specify)	

SM089-03 Rev. Date 12/7/17

JC90585X: Chain of Custody Page 3 of 3



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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

08/20/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91700



Sampling Date: 07/16/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 43



King

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Sample Summary

USACE-Philadelphia District

Job No: JC91700

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC91700-1	07/16/19	07:20 GW	07/16/19	AQ	Surface Water	BM-1S
JC91700-2	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2S
JC91700-3	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2M
JC91700-4	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2D
JC91700-5	07/16/19	12:45 GW	07/16/19	AQ	Surface Water	BM-5S
JC91700-6	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6S
JC91700-7	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6M
JC91700-8	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6D
JC91700-9	07/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7S
JC91700-10	07/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7M
JC91700-11	07/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7D
JC91700-12	07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8S
JC91700-13	07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC91700

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC91700-14	07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8D
JC91700-15	07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9S
JC91700-16	07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9M
JC91700-17	07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9D
JC91700-18	07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10S
JC91700-19	07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10M
JC91700-20	07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10D
JC91700-21	07/16/19	12:45 GW	07/16/19	AQ	Surface Water	BM-11S

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	USACE-Philadelphia District	Job No	JC91700
Site:	Philadelphia District, Reservoir Sampling	Report Date	7/24/2019 4:01:29 PM

On 07/16/2019, 21 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.9 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC91700 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

General Chemistry By Method EPA 351.2/LACHAT

Matrix: AQ	Batch ID:	GP22470

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91700-1DUP, JC91700-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.
- Matrix Spike Recovery(s) for Nitrogen, Total Kjeldahl are outside control limits. Spike recovery indicates possible matrix interference.

Matrix: AQ	Batch ID:	GP22539
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- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91893-1DUP, JC91893-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.
- Matrix Spike Recovery(s) for Nitrogen, Total Kjeldahl are outside control limits. Spike recovery indicates possible matrix interference.

General Chemistry By Method EPA 353.2/LACHAT

Matrix: AQ	Batch ID:	GP22524
All samples were prepared within	the recommended metho	od holding time

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91330-26DUP, JC91330-26MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix: AQ	Batch ID:	GP22525

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91700-3DUP, JC91700-8MS, JC91700-3MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike recovery indicates possible matrix interference.



General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ Batch ID:	R179882
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ Batch ID:	R179883
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ Batch ID:	R179885
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ Batch ID:	R179886
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC91700-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179887
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC91700-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179888
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC91700-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179889
	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC91700-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179890
	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC91700-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179891
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC91700-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179892
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179893
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179894
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R179895
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC91700-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ Batch ID:	R179896

The data for EPA353.2/SM4500NO2B meets quality control requirements.

Wednesday, July 24, 2019

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General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ	Batch ID:	R179896
	JC91700-14 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179897
-	The data for EPA353.2/SM4500NO2	B meets quality cont	rol requirements.
-	JC91700-15 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179898
-	The data for EPA353.2/SM4500NO2	B meets quality cont	rol requirements.
-	JC91700-16 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179899
-	The data for EPA353.2/SM4500NO2	B meets quality cont	rol requirements.
	JC91700-17 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R179900
	Matrix: AQ The data for EPA353.2/SM4500NO2	Batch ID: B meets quality cont	R179900 rol requirements.
L 	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal	Batch ID: B meets quality cont culated as: (Nitroger	R179900 rol requirements. a, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ	Batch ID: B meets quality cont culated as: (Nitroger Batch ID:	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2	Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-19 for Nitrogen, Nitrate: Cal	Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-19 for Nitrogen, Nitrate: Cal Matrix: AQ	Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger Batch ID:	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179902
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-19 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2	Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179902 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-19 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-20 for Nitrogen, Nitrate: Cal	Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179902 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-18 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-19 for Nitrogen, Nitrate: Cal Matrix: AQ The data for EPA353.2/SM4500NO2 JC91700-20 for Nitrogen, Nitrate: Cal Matrix: AQ	Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger Batch ID: B meets quality cont culated as: (Nitroger Batch ID:	R179900 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179901 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179902 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179902 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R179903

JC91700-21 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

N



General Chemistry By Method SM2320 B-11

	Matrix: AQ Batch ID: GN97808			
	All samples were analyzed within the recommended method holding time.			
-	All method blanks for this batch meet method specific criteria.			
-	Sample(s) JC91700-1DUP were used as the QC samples for Alkalinity, Total as CaCO3.			
-	JC91700-3 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-4 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-7 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-13 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-12 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-11 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-5 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-16 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-2 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-1 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-15 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-10 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-14 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-6 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-8 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-9 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
	JC91700-17 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
Γ	Matrix: AQ Batch ID: GN97809			
-	All samples were analyzed within the recommended method holding time.			
-	All method blanks for this batch meet method specific criteria.			
-	Sample(s) JC91790-2DUP were used as the QC samples for Alkalinity, Total as CaCO3.			
-	JC91700-20 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-19 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-18 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
-	JC91700-21 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.			
G	eneral Chemistry By Method SM2540 C-11			

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Matrix: AQ	Batch ID:	GN97633
All samples were analyzed within	n the recommended metho	d holding time.
All method blanks for this batch	meet method specific crite	eria.
Sample(s) JC91700-1DUP, JC9	1700-2DUP were used as	the QC samples for Solids, Total Dissolved.

Matrix: AQ	Batch ID:	GN97675

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC91795-1DUP were used as the QC samples for Solids, Total Dissolved.



General Chemistry By Method SM2540 D-11

Matrix: AQ	Batch ID:	GN97669
All samples were analyzed within the	ne recommended metho	od holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91674-1DUP were used as the QC samples for Solids, Total Suspended.

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	Matrix: AQ	Batch ID:	GN97756	
-	All samples were analyzed within the recom	mended metho	od holding time.	

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91700-6DUP were used as the QC samples for Solids, Total Suspended.

Matrix: AQ Batch ID	GN97790
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91845-1DUP were used as the QC samples for Solids, Total Suspended.

General Chemistry By Method SM4500NH3 H-11LACHAT

Matrix: AQ	Batch ID:	GP22560
All samples were prepared within	the recommended metho	od holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91665-1DUP, JC91665-1MS, JC91665-1MSD were used as the QC samples for Nitrogen, Ammonia.

Matrix: AQ	Batch ID:	GP22561

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91700-17DUP, JC91700-17MS, JC91700-17MSD were used as the QC samples for Nitrogen, Ammonia.

General Chemistry By Method SM4500NO2 B-11

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	Matrix: AQ	Batch ID:	GN97619	
	All samples were analyzed within	n the recommended metho	od holding time.	

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91700-1DUP, JC91700-1MS, JC91700-21DUP, JC91700-21MS were used as the QC samples for Nitrogen, Nitrite.

General Chemistry By Method SM5210 B-11

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Matrix: AQ	Batch ID:	GP22444

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC91700-1DUP, JC91700-21DUP were used as the QC samples for BOD, 5 Day.

General Chemistry By Method SM5310 B-11

Matrix: AQ	Batch ID:	GP22465
All samples were prepared within	n the recommended metho	od holding time.
All method blanks for this batch	meet method specific crite	eria.
Sample(s) JC91625-40MS, JC9	1625-40MSD were used as	as the QC samples for Total Organic Carbon.
Matrix: AQ	Batch ID:	GP22466

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC91700-1MS, JC91700-1MSD were used as the QC samples for Total Organic Carbon.

Matrix: AQ	Batch ID:	GP22467

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC91700-13MS, JC91700-13MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

Job Number:	JC91700
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/16/19

Lab Sample ID Client Analyte	Sample ID Result/ Qual	RL	MDL Units	Method
JC91700-1 BM-15	\$			
Alkalinity, Total as CaCo Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitr	D3 ^a 135 4.0 ite 4.0	5.0 0.11 0.10	mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT
Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	0.045 0.65 221 5.7 2.9	0.010 0.20 10 4.0 1.0	mg/l mg/l mg/l mg/l	SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-2 BM-25	5		U	
Alkalinity, Total as CaCo Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitr Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	D3 a 74.0 1.9 ite 1.9 0.031 1.4 156 12.5 21.8	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$	mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-3 BM-2N	И			
Alkalinity, Total as CaCo Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitr Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	D3 a 140 0.27 4.0 ite 4.0 0.036 0.69 209 12.0 2.6	$ \begin{array}{c} 10\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $	mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-4 BM-2I)			
Alkalinity, Total as CaCo Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitr Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	D3 a 160 0.52 4.2 ite 4.2 0.044 3.1 233 224 2.0	$5.0 \\ 0.20 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$	mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11



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11 of 43 JC91700

Job Number:	JC91700
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/16/19

JC91700-5 BM-5S Alkalinity, Total as CaCO3 ^a 243 10 mg/1 SM2320 B-11 Nitrogen, Nitrate ^b 7.4 0.41 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate ^b 7.4 0.40 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 7.4 0.40 mg/1 SM2540 C-11 Solids, Total Dissolved 346 10 mg/1 SM2540 C-11 Total Organic Carbon 1.0 1.0 mg/1 SM5240 C-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 ^a 70.0 5.0 mg/1 SM2320 B-11 Nitrogen, Nitrate + Nitrite 2.0 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/1 EPA353.2/LACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 C-11 JC91700-7 BM-6M SM2540 C-11 JC91700-7	Lab Sample ID Client Sample IE Analyte) Result/ Qual	RL	MDL	Units	Method
JC91700-5 BM-5S Alkalinity, Total as CaCO3 a 243 10 mg/1 SM2320 B-11 Nitrogen, Nitrate b 7.4 0.40 mg/1 EPA 353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 7.4 0.40 mg/1 EPA 353.2/SM4500NO2B Solids, Total Dissolved 3.46 10 mg/1 SM2540 C-11 Solids, Total Suspended 6.6 4.0 mg/1 SM5310 B-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 a 70.0 5.0 mg/1 SM2320 B-11 Nitrogen, Nitrate + Nitrite 2.0 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/1 EPA353.2/LACHAT Nitrogen, Nitrate + Nitrite 2.0 0.0 mg/1 EPA 353.2/LACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/1 SM4500NH31 H-11LACHAT JC91700-7 BM-6M 25 0.20 mg/1 <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th></t<>						
Alkalinity, Total as CaCO3 a 243 10 mg/1 SM2320 B-11 Nitrogen, Nitrate b 7.4 0.40 mg/1 EPA 353.2/SM4500NO2B Solids, Total Dissolved 346 10 mg/1 SM2540 C-11 Solids, Total Suspended 6.6 4.0 mg/1 SM2540 D-11 Total Organic Carbon 1.0 1.0 mg/1 SM2320 B-11 JCP1700-6 BM-6S Alkalinity, Total as CaCO3 a 70.0 5.0 mg/1 SM2320 B-11 Nitrogen, Nitrate + Nitrite 2.0 0.11 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate b 2.0 0.10 mg/1 SM2320 B-11 Nitrogen, Nitrate + Nitrogen, Nitrate +	JC91700-5 BM-5S					
Nitrogen, Nitrate b 7.4 0.41 mg/1 EPA353.2/SM4500N02B Nitrogen, Nitrate + Nitrite 7.4 0.40 mg/1 EPA 353.2/LACHAT Solids, Total Dissolved 346 10 mg/1 SM2540 C-11 Solids, Total Suspended 6.6 4.0 mg/1 SM2540 D-11 Total Organic Carbon 1.0 1.0 mg/1 SM2540 D-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 ^a 70.0 5.0 mg/1 EPA353.2/SM4500N02B Nitrogen, Nitrate b 2.0 0.11 mg/1 EPA353.2/SM4500N02B Nitrogen, Nitrate b 2.0 0.10 mg/1 EPA353.2/LACHAT Nitrogen, Nitrate b 2.0 0.10 mg/1 EPA353.2/LACHAT Nitrogen, Total Kjeldahl 1.2 0.20 mg/1 EPA351.2/LACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM4500N02B JC91700-7 BM-6M BM-6M	Alkalinity, Total as CaCO3 ^a	243	10		mg/l	SM2320 B-11
Nitrogen, Nitrate + Nitrite 7.4 0.40 mg/l EPA 353.2/LACHAT Solids, Total Dissolved 346 10 mg/l SM2540 C-11 Solids, Total Suspended 6.6 4.0 mg/l SM2540 C-11 Total Organic Carbon 1.0 1.0 mg/l SM2540 D-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 ^a 70.0 5.0 mg/l SM2320 B-11 Nitrogen, Nitrate ^b 2.0 0.11 mg/l EPA 353.2/SM4500N02B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/l EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/l EPA 353.2/LACHAT Solids, Total Suspended 149 10 mg/l SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/l SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/l SM2540 C-11 Solids, Total Suspended 11.8 5.0 mg/l SM4500NH3 H-11LACHAT JC91700-7 BM-6M M40 mg/l SM4500NO2B 11 Nitrogen, Nitrate + Nitrite	Nitrogen, Nitrate ^b	7.4	0.41		mg/l	EPA353.2/SM4500NO2B
Solids, Total Dissolved 346 10 mg/l SM2540 C-11 Solids, Total Suspended 6.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 1.0 1.0 mg/l SM5310 B-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 a 70.0 5.0 mg/l SM2320 B-11 Nitrogen, Nitrate b 2.0 0.11 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/l EPA 353.2/LACHAT Nitrogen, Total Kjeldahl 1.2 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 149 10 mg/l SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/l SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/l SM2540 D-11 JC91700-7 BM-6M BM-6M SM2540 D-11 SM5310 B-11 JC91700-7 BM-6M 118 5.0 mg/l SM2540 D-11 Nitrogen, Nitrate + Nitrite 3.5 0.11 mg/l EPA353.2/SM4500N02B Nitrogen, Nitrate + Nitrite 3.5	Nitrogen, Nitrate + Nitrite	7.4	0.40		mg/l	EPA 353.2/LACHAT
Solids, Total Suspended Total Organic Carbon 6.6 1.0 4.0 1.0 mg/l mg/l SM2540 D-11 SM5310 B-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 a Nitrogen, Nitrate b 70.0 2.0 5.0 0.11 mg/l mg/l SM2320 B-11 EPA353.2/SM4500N02B Nitrogen, Nitrate b 2.0 0.11 mg/l EPA353.2/SM4500N02B Nitrogen, Nitrate + Nitrite 2.0 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 149 10 mg/l SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/l SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/l SM2540 D-11 JC91700-7 BM-6M BM-6M SM2540 D-11 SM2540 D-11 JC91700-7 BM-6M SM2520 B-11 SM4500N13 H-11LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/l EPA353.2/SM4500N02B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l EPA 351.2/LACHAT Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.59 0.20 mg/l EPA 35	Solids, Total Dissolved	346	10		mg/l	SM2540 C-11
Total Organic Carbon 1.0 1.0 mg/l SM5310 B-11 JC91700-6 BM-6S Alkalinity, Total as CaCO3 a 70.0 5.0 mg/l SM2320 B-11 Nitrogen, Nitrate b 2.0 0.11 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 149 10 mg/l SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/l SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/l SM5310 B-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a 118 5.0 mg/l SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/l SM4500NH3 H-11LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l SM4500NO2B B-11 Nitrogen, Nitrate + Nitrite 0.45 0.010 mg/l SM4500NO2B B-	Solids, Total Suspended	6.6	4.0		mg/l	SM2540 D-11
JC91700-6 BM-6S Alkalinity, Total as CaCO3 a 70.0 5.0 mg/1 SM2320 B-11 Nitrogen, Nitrate b 2.0 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 2.0 0.20 mg/1 EPA 353.2/LACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM5310 B-11 JC91700-7 BM-6M BM-6M M4500NN13 H-11LACHAT mg/1 SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/1 SM4500NN2B Nitrogen, Nitrate b 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate b 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate b 0.50 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.50 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissol	Total Organic Carbon	1.0	1.0		mg/l	SM5310 B-11
Alkalinity, Total as CaCO3 a 70.0 5.0 ng/1 SM2320 B-11 Nitrogen, Nitrate b 2.0 0.11 ng/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 ng/1 EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 2.0 0.20 ng/1 EPA 353.2/LACHAT Nitrogen, Total Kjeldahl 1.2 0.20 ng/1 EPA 351.2/LACHAT Solids, Total Dissolved 149 10 ng/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 ng/1 SM2320 B-11 Total Organic Carbon 3.1 1.0 ng/1 SM2540 D-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a Nitrogen, Nitrate b 3.5 0.20 mg/1 SM2320 B-11 Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 ng/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate + Nitrite 3.5 0.10 ng/1 EPA353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.59 0.20 ng/1	JC91700-6 BM-6S					
Alkalinity, Total as CaCO3 a 10.0 5.0 ing/1 SM2520 B-11 Nitrogen, Nitrate b 2.0 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/1 EPA353.2/LACHAT Nitrogen, Total Kjeldahl 1.2 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/1 SM2320 B-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a 118 5.0 mg/1 SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.045 0.010 mg/1 EPA 351.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/1	Alkalinity Total as CaCO2 a	70.0	5.0		mg/l	SM2220 D 11
Nitrogen, Nitrate 2.0 0.11 Ing/1 EPA 353.2/3/H-300(002B Nitrogen, Nitrate + Nitrite 2.0 0.10 mg/1 EPA 353.2/JACHAT Nitrogen, Nitrate + Nitrite 2.0 0.20 mg/1 EPA 353.2/JACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/1 SM2540 D-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a Alkalinity, Total as CaCO3 a 118 5.0 mg/1 SM2320 B-11 Nitrogen, Nitrate b 3.5 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/1 EPA353.2/LACHAT Nitrogen, Total Kjeldahl 0.59 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/1	Nitrogan Nitrota b	70.0	0.11		mg/1	SW2520 D-11 EDA 252 2/SM4500NO2D
Nitrogen, Nutate + Nitrite 2.0 0.10 Ing/1 EPA 353.2/LACHAT Nitrogen, Total Kjeldahl 1.2 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/1 SM2320 B-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a 118 5.0 mg/1 SM2320 B-11 Nitrogen, Nitrate b 3.5 0.20 mg/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/1 EPA 351.2/LACHAT Nitrogen, Total Kjeldahl 0.59 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/1 SM2540 C-11 Solids, Total Suspended <td>Nitrogen, Nitrote - Nitrite</td> <td>2.0</td> <td>0.11</td> <td></td> <td>mg/1</td> <td>EPA355.2/SIM4500INO2D</td>	Nitrogen, Nitrote - Nitrite	2.0	0.11		mg/1	EPA355.2/SIM4500INO2D
Nitrogen, Total Njeldani 1.2 0.20 Ing/1 EFA 351.2/EACHAT Solids, Total Dissolved 149 10 mg/1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/1 SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/1 SM2540 D-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a 118 5.0 mg/1 SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate ^b 3.5 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.045 0.010 mg/1 SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/1 SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/1 SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/1 SM5310 B-11	Nitrogen, Total Kieldehl	2.0	0.10		mg/1	EFA 555.2/LACHAT
Solids, Total Dissolved 149 10 ing1 SM2540 C-11 Solids, Total Suspended 11.8 4.0 mg/l SM2540 D-11 Total Organic Carbon 3.1 1.0 mg/l SM2540 D-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a 118 5.0 mg/l SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/l SM4500NH3 H-11LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.045 0.010 mg/l SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Solida Total Dissolved	1.2	0.20		mg/1	EFA 551.2/LACHAT
Solids, Total Suspended 11.8 4.0 Ing/1 SM2340 D-11 Total Organic Carbon 3.1 1.0 mg/1 SM5310 B-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 ^a 118 5.0 mg/1 SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate ^b 3.5 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/1 SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/1 SM2540 C-11 Solids, Total Dissolved 5.6 4.0 mg/1 SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/1 SM5310 B-11	Solids, Total Suspanded	149	10		mg/1	SM2540 C-11
Total Organic Carbon 3.1 1.0 mg/1 SM3310 B-11 JC91700-7 BM-6M Alkalinity, Total as CaCO3 a 118 5.0 mg/1 SM2320 B-11 Nitrogen, Ammonia 0.25 0.20 mg/1 SM4500NH3 H-11LACHAT Nitrogen, Nitrate b 3.5 0.11 mg/1 EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/1 EPA 353.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/1 EPA 351.2/LACHAT Nitrogen, Total Kjeldahl 0.59 0.20 mg/1 EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/1 SM2540 C-11 Solids, Total Dissolved 5.6 4.0 mg/1 SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/1 SM5310 B-11	Tatal Operation Carbon	11.0	4.0		nig/1	SM2340 D-11
JC91700-7BM-6MAlkalinity, Total as CaCO3 a1185.0mg/lSM2320 B-11Nitrogen, Ammonia0.250.20mg/lSM4500NH3 H-11LACHATNitrogen, Nitrate b3.50.11mg/lEPA353.2/SM4500NO2BNitrogen, Nitrate + Nitrite3.50.10mg/lEPA 353.2/LACHATNitrogen, Nitrite0.0450.010mg/lSM4500NO2 B-11Nitrogen, Total Kjeldahl0.590.20mg/lEPA 351.2/LACHATSolids, Total Dissolved20810mg/lSM2540 C-11Solids, Total Suspended5.64.0mg/lSM2540 D-11Total Organic Carbon2.61.0mg/lSM5310 B-11	Total Organic Carbon	3.1	1.0		mg/1	SM3310 B-11
Alkalinity, Total as CaCO3 a1185.0mg/lSM2320 B-11Nitrogen, Ammonia0.250.20mg/lSM4500NH3 H-11LACHATNitrogen, Nitrate b3.50.11mg/lEPA353.2/SM4500NO2BNitrogen, Nitrate + Nitrite3.50.10mg/lEPA 353.2/LACHATNitrogen, Nitrite0.0450.010mg/lSM4500NO2 B-11Nitrogen, Total Kjeldahl0.590.20mg/lEPA 351.2/LACHATSolids, Total Dissolved20810mg/lSM2540 C-11Solids, Total Suspended5.64.0mg/lSM2540 D-11Total Organic Carbon2.61.0mg/lSM5310 B-11	JC91700-7 BM-6M					
Nitrogen, Ammonia 0.25 0.20 mg/l SM4500NH3 H-11LACHAT Nitrogen, Nitrate ^b 3.5 0.11 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l EPA 353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.045 0.010 mg/l SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Alkalinity, Total as CaCO3 ^a	118	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate b 3.5 0.11 mg/l EPA353.2/SM4500NO2B Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l EPA353.2/LACHAT Nitrogen, Nitrate + Nitrite 0.045 0.010 mg/l EPA 353.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/l SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Nitrogen, Ammonia	0.25	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate + Nitrite 3.5 0.10 mg/l EPA 353.2/LACHAT Nitrogen, Nitrite 0.045 0.010 mg/l SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Nitrogen, Nitrate ^b	3.5	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrite 0.045 0.010 mg/l SM4500NO2 B-11 Nitrogen, Total Kjeldahl 0.59 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Nitrogen, Nitrate + Nitrite	3.5	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl 0.59 0.20 mg/l EPA 351.2/LACHAT Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Nitrogen, Nitrite	0.045	0.010		mg/l	SM4500NO2 B-11
Solids, Total Dissolved 208 10 mg/l SM2540 C-11 Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Nitrogen, Total Kieldahl	0.59	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Suspended 5.6 4.0 mg/l SM2540 D-11 Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11	Solids, Total Dissolved	208	10		mg/l	SM2540 C-11
Total Organic Carbon 2.6 1.0 mg/l SM5310 B-11 JC91700-8 BM-6D	Solids. Total Suspended	5.6	4.0		mg/l	SM2540 D-11
JC91700-8 BM-6D	Total Organic Carbon	2.6	1.0		mg/l	SM5310 B-11
	JC91700-8 BM-6D					
Alkalinity Total as CaCO3 ^a 166 10 mg/l SM2320 B-11	Alkalinity Total as CaCO3 a	166	10		mg/l	SM2320 B-11
Nitrogen Ammonia 0.60 0.20 mg/l SM4500NH3 H-11L ACHAT	Nitrogen Ammonia	0.60	0.20		mg/1	SM2520 B 11 SM4500NH3 H-111 ACHAT
Nitrogen Nitrate ^b 3.9 0.11 mg/l FPA353.2/SM4500N02B	Nitrogen Nitrate ^b	3.9	0.11		mg/1	FPA353 2/SM4500NO2B
Nitrogen Nitrate + Nitrite 4.0 0.10 mg/l FPA 353 2/I ACHAT	Nitrogen Nitrate + Nitrite	4.0	0.10		mg/1	FPA 353 2/I ACHAT
Nitrogen Nitrite 0.095 0.10 mg/l SM/500NO2 B 11	Nitrogen Nitrite	0.095	0.10		mg/1	$SM4500NO2 R_{-11}$
Nitrogen Total Kieldahl 0.00 0.00 0.00 mg/l FDA 251 2/LACHAT	Nitrogen, Total Kieldahl	0.095	0.010		mg/1	EPA 351 2/L ACHAT
Solide Total Dissolved 255 10 mg/l SM2540 C 11	Solide Total Dissolved	255	10		mg/1	SM2540 C-11
Solids, Total Dissolved 235 To 10 10 10 10 11 SW12340 C-11	Solids, Total Suspended	38.5	4.0		mg/1	SM2540 D-11
Total Organic Carbon 22 10 mg/l SM5310 R-11	Total Organic Carbon	2.2	1.0		mg/1	SM5310 B-11



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12 of 43 JC91700

Job Number:	JC91700
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/16/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JC91700-9 BM-7S					
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved	80.0 1.9 1.9 0.039 1.7 159	5.0 0.11 0.10 0.010 0.20 10		mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11
Solids, Total Suspended Total Organic Carbon	16.2 3.5	4.0 1.0		mg/l mg/l	SM2540 D-11 SM5310 B-11
JC91700-10 BM-7M					
Alkalinity, Total as CaCO3 ^a Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon JC91700-11 BM-7D Alkalinity, Total as CaCO3 ^a Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite	130 0.24 3.7 3.7 0.022 0.68 206 8.5 2.4 208 0.34 5.6 5.6	$5.0 \\ 0.20 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0 \\ 5.0 \\ 0.20 \\ 0.31 \\ 0.30 \\ $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11 SM5310 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT
Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon JC91700-12 BM-8S	0.022 1.1 246 94.6 1.6	0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l	SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	73.0 1.7 1.7 0.034 0.82 151 13.5 3.1	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

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Job Number:	JC91700
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/16/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC91700-13	BM-8M					
Alkalinity, Total a Nitrogen, Nitrate ¹ Nitrogen, Nitrate - Nitrogen, Nitrite Nitrogen, Total Kj Solids, Total Disso Solids, Total Susp	s CaCO3 ^a + Nitrite eldahl blved ended	93.0 2.8 2.8 0.017 0.65 168 7 9	5.0 0.11 0.10 0.010 0.20 10 4.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11
Total Organic Car	bon	2.5	1.0		mg/l	SM2310 B-11
JC91700-14	BM-8D					
Alkalinity, Total a Nitrogen, Ammon Nitrogen, Nitrate ¹ Nitrogen, Nitrate - Nitrogen, Nitrite Nitrogen, Total Kj Solids, Total Disso Solids, Total Susp Total Organic Car	s CaCO3 ^a ia + Nitrite eldahl olved ended bon	130 0.42 2.9 2.9 0.021 1.2 206 125 2.1	$5.0 \\ 0.20 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-15	BM-9S				C	
Alkalinity, Total a Nitrogen, Nitrate ¹ Nitrogen, Nitrate - Nitrogen, Nitrite Nitrogen, Total Kj Solids, Total Disso Solids, Total Susp Total Organic Car	s CaCO3 ^a + Nitrite eldahl olved ended bon	80.0 1.8 1.8 0.029 0.99 148 14.9 3.4	10 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-16	BM-9M					
Alkalinity, Total a Nitrogen, Nitrate ¹ Nitrogen, Nitrate - Nitrogen, Nitrite Nitrogen, Total Kj Solids, Total Disso Solids, Total Susp	s CaCO3 ^a + Nitrite eldahl blved ended bon	125 3.7 3.7 0.022 0.81 209 8.9 2.3	10 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11



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Job Number:	JC91700
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/16/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC91700-17	BM-9D					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Total K Solids, Total Diss Solids, Total Susj Total Organic Ca	as CaCO3 ^a ^b + Nitrite Kjeldahl solved pended rbon	210 5.9 5.9 0.85 323 61.3 1.3	10 0.31 0.30 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-18	BM-108					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total B Solids, Total Diss Solids, Total Sus Total Organic Ca	as CaCO3 ^a ^b + Nitrite Kjeldahl solved pended rbon	80.0 1.4 1.5 0.081 3.5 171 34.0 5.1	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0$		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-19	BM-10M					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total B Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a ^b + Nitrite Kjeldahl solved pended rbon	122 3.7 3.7 0.026 1.1 218 10.9 2.6	$5.0 \\ 0.11 \\ 0.10 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0 $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC91700-20	BM-10D					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total B Solids, Total Diss Solids, Total Sus Total Organic Ca	as CaCO3 ^a ^b + Nitrite Kjeldahl solved pended rbon	202 5.9 5.9 0.021 1.6 264 264 1.5	10 0.31 0.30 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

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JC91700

Job Number:	JC91700
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/16/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JC91700-21 BM-11S					
Alkalinity, Total as CaCO3 ^a	130	5.0		mg/l	SM2320 B-11
BOD, 5 Day	< 10	10		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	5.0	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.0	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.40	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	208	10		mg/l	SM2540 C-11
Solids, Total Suspended	11.9	4.0		mg/l	SM2540 D-11
Total Organic Carbon	1.1	1.0		mg/l	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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Dayton, NJ

Section 4

Sample Results

Report of Analysis



4



te Sampled: 07/16/19	
e Received: 07/16/19	
cent Solids: n/a	
t	e Sampled: 07/16/19 e Received: 07/16/19 cent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	135	5.0	mg/l	1	07/22/19 15:02	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:33	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.0	0.11	mg/l	1	07/22/19 13:32	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.0	0.10	mg/l	1	07/22/19 13:32	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.045	0.010	mg/l	1	07/17/19 00:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.65	0.20	mg/l	1	07/19/19 12:55	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	221	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	5.7	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	2.9	1.0	mg/l	1	07/19/19 02:38	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2S		
Lab Sample ID:	JC91700-2	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water D	Date Received:	07/16/19
	Р	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	74.0	5.0	mg/l	1	07/22/19 15:02	СМ	SM2320 B-11
BOD, 5 Day	< 14	14	mg/l	1	07/17/19 22:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:34	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.9	0.11	mg/l	1	07/22/19 13:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.9	0.10	mg/l	1	07/22/19 13:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.031	0.010	mg/l	1	07/17/19 00:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.4	0.20	mg/l	1	07/19/19 13:02	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	156	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	12.5	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	21.8	1.0	mg/l	1	07/19/19 03:12	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-2M		
Lab Sample ID:	JC91700-3	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	140	10	mg/l	1	07/22/19 15:02	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:05	EB	SM5210 B-11
Nitrogen, Ammonia	0.27	0.20	mg/l	1	07/24/19 10:35	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.0	0.11	mg/l	1	07/22/19 13:42	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.0	0.10	mg/l	1	07/22/19 13:42	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.036	0.010	mg/l	1	07/17/19 00:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20	mg/l	1	07/19/19 13:02	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	209	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	12.0	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	07/19/19 03:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-2D		
Lab Sample ID:	JC91700-4	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
-					-	-	
Alkalinity, Total as CaCO3 ^a	160	5.0	mg/l	1	07/22/19 15:02	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:08	EB	SM5210 B-11
Nitrogen, Ammonia	0.52	0.20	mg/l	1	07/24/19 10:37	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.2	0.11	mg/l	1	07/22/19 13:43	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.2	0.10	mg/l	1	07/22/19 13:43	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.044	0.010	mg/l	1	07/17/19 00:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	3.1	0.20	mg/l	1	07/19/19 13:03	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	233	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	224	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	2.0	1.0	mg/l	1	07/19/19 03:34	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-5S		
Lab Sample ID:	JC91700-5	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	243	10	mg/l	1	07/22/19 15:02	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:11	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:38	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	7.4	0.41	mg/l	1	07/22/19 14:27	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	7.4	0.40	mg/l	4	07/22/19 14:27	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/17/19 00:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/19/19 13:04	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	346	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	6.6	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	1.0	1.0	mg/l	1	07/19/19 04:07	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6S		
Lab Sample ID:	JC91700-6	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	70.0	5.0	mg/l	1	07/22/19 15:02	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:15	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:40	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.0	0.11	mg/l	1	07/22/19 13:45	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.0	0.10	mg/l	1	07/22/19 13:45	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/17/19 00:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.2	0.20	mg/l	1	07/19/19 13:05	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	149	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	11.8	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	3.1	1.0	mg/l	1	07/19/19 04:19	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-6M		
Lab Sample ID:	JC91700-7	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
	I	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Result	RL	Units	DF	Analyzed	By	Method
118	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
< 10	10	mg/l	1	07/17/19 22:18	EB	SM5210 B-11
0.25	0.20	mg/l	1	07/24/19 10:41	KI	SM4500NH3 H-11LACHAT
3.5	0.11	mg/l	1	07/22/19 13:46	KI	EPA353.2/SM4500NO2B
3.5	0.10	mg/l	1	07/22/19 13:46	KI	EPA 353.2/LACHAT
0.045	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
0.59	0.20	mg/l	1	07/19/19 13:06	KI	EPA 351.2/LACHAT
208	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
5.6	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
2.6	1.0	mg/l	1	07/19/19 04:30	CD	SM5310 B-11
	Result 118 < 10 0.25 3.5 3.5 0.045 0.59 208 5.6 2.6	ResultRL1185.0< 10	ResultRLUnits1185.0mg/l< 10	ResultRLUnitsDF1185.0mg/l1< 10	ResultRLUnitsDFAnalyzed1185.0mg/l107/22/19 15:34< 10	ResultRLUnitsDFAnalyzedBy1185.0mg/l107/22/19 15:34CM< 10

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)





JC91700

Client Sample ID:	BM-6D		
Lab Sample ID:	JC91700-8	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	166	10	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:21	EB	SM5210 B-11
Nitrogen, Ammonia	0.60	0.20	mg/l	1	07/24/19 10:43	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.9	0.11	mg/l	1	07/22/19 13:48	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.0	0.10	mg/l	1	07/22/19 13:48	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.095	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.99	0.20	mg/l	1	07/19/19 13:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	255	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	38.5	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	2.2	1.0	mg/l	1	07/19/19 04:41	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-7S		
Lab Sample ID:	JC91700-9	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	80.0	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 20	20	mg/l	1	07/17/19 22:24	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:47	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.9	0.11	mg/l	1	07/22/19 13:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.9	0.10	mg/l	1	07/22/19 13:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.039	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.7	0.20	mg/l	1	07/19/19 13:09	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	159	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	16.2	4.0	mg/l	1	07/20/19 11:37	RC	SM2540 D-11
Total Organic Carbon	3.5	1.0	mg/l	1	07/19/19 04:52	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-7M		
Lab Sample ID:	JC91700-10 D	ate Sampled:	07/16/19
Matrix:	AQ - Surface Water D	ate Received:	07/16/19
	P	ercent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
	120	5.0	(1		05/00/10 15 04		
Alkalinity, Total as CaCO3 ^a	130	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:27	EB	SM5210 B-11
Nitrogen, Ammonia	0.24	0.20	mg/l	1	07/24/19 10:48	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.7	0.11	mg/l	1	07/22/19 13:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.7	0.10	mg/l	1	07/22/19 13:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.022	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.68	0.20	mg/l	1	07/19/19 13:10	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	206	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	8.5	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	07/19/19 05:03	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-7D		
Lab Sample ID:	JC91700-11	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	208	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:29	EB	SM5210 B-11
Nitrogen, Ammonia	0.34	0.20	mg/l	1	07/24/19 10:50	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.6	0.31	mg/l	1	07/22/19 14:28	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.6	0.30	mg/l	3	07/22/19 14:28	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.022	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	07/19/19 13:11	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	246	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	94.6	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	07/19/19 05:37	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8S		
Lab Sample ID:	JC91700-12 Date	Sampled:	07/16/19
Matrix:	AQ - Surface Water Date	Received:	07/16/19
	Perce	ent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	73.0	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 20	20	mg/l	1	07/17/19 22:32	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:51	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.7	0.11	mg/l	1	07/22/19 13:54	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.7	0.10	mg/l	1	07/22/19 13:54	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.034	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.82	0.20	mg/l	1	07/19/19 13:12	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	151	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	13.5	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	3.1	1.0	mg/l	1	07/19/19 05:48	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8M		
Lab Sample ID:	JC91700-13	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
]	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	93.0	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:35	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:53	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.8	0.11	mg/l	1	07/22/19 13:55	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.8	0.10	mg/l	1	07/22/19 13:55	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.017	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.65	0.20	mg/l	1	07/19/19 13:13	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	168	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	7.9	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	2.5	1.0	mg/l	1	07/19/19 06:21	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8D		
Lab Sample ID:	JC91700-14 Date	Sampled:	07/16/19
Matrix:	AQ - Surface Water Date	Received:	07/16/19
	Perce	ent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	130	5.0	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 22:38	EB	SM5210 B-11
Nitrogen, Ammonia	0.42	0.20	mg/l	1	07/24/19 10:54	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.9	0.11	mg/l	1	07/22/19 13:56	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.9	0.10	mg/l	1	07/22/19 13:56	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.021	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.2	0.20	mg/l	1	07/19/19 13:13	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	206	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	125	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	2.1	1.0	mg/l	1	07/19/19 06:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9S		
Lab Sample ID:	JC91700-15	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		
Project:	Philadelphia District, Reservoir Sampling	Percent Solids:	n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	80.0	10	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 20	20	mg/l	1	07/17/19 22:41	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:56	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.8	0.11	mg/l	1	07/22/19 13:58	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.8	0.10	mg/l	1	07/22/19 13:58	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.029	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.99	0.20	mg/l	1	07/19/19 13:14	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	148	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	14.9	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	3.4	1.0	mg/l	1	07/19/19 07:06	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9M		
Lab Sample ID:	JC91700-16 D	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water D	Date Received:	07/16/19
	Р	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	125	10	mg/l	1	07/22/19 15:34	СМ	SM2320 B-11
BOD, 5 Day	< 20	20	mg/l	1	07/17/19 22:45	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 10:57	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.7	0.11	mg/l	1	07/22/19 13:59	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.7	0.10	mg/l	1	07/22/19 13:59	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.022	0.010	mg/l	1	07/17/19 00:42	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.81	0.20	mg/l	1	07/23/19 12:54	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	209	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	8.9	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	07/19/19 07:17	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9D		
Lab Sample ID:	JC91700-17	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	210	10	mg/l	1	07/22/19 15:48	СМ	SM2320 B-11
BOD, 5 Day	< 27	27	mg/l	1	07/17/19 22:47	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 11:09	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.9	0.31	mg/l	1	07/22/19 14:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.9	0.30	mg/l	3	07/22/19 14:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/17/19 00:50	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.85	0.20	mg/l	1	07/23/19 12:55	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	323	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	61.3	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	07/19/19 07:35	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





te Sampled:	07/16/19
te Received:	07/16/19
rcent Solids:	n/a
11 11	te Sampled: te Received: rcent Solids:

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	80.0	5.0	mg/l	1	07/22/19 16:16	СМ	SM2320 B-11
BOD, 5 Day	< 68	68	mg/l	1	07/17/19 22:50	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 11:10	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.4	0.11	mg/l	1	07/22/19 14:01	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.5	0.10	mg/l	1	07/22/19 14:01	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.081	0.010	mg/l	1	07/17/19 00:50	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	3.5	0.20	mg/l	1	07/23/19 12:55	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	171	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	34.0	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	5.1	1.0	mg/l	1	07/19/19 07:47	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-10M		
Lab Sample ID:	JC91700-19	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	122	5.0	mg/l	1	07/22/19 16:16	СМ	SM2320 B-11
BOD, 5 Day	< 20	20	mg/l	1	07/17/19 22:53	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 11:11	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.7	0.11	mg/l	1	07/22/19 14:02	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.7	0.10	mg/l	1	07/22/19 14:02	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.026	0.010	mg/l	1	07/17/19 00:50	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	07/23/19 12:58	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	218	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	10.9	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	07/19/19 07:58	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.









Client Sample ID:	BM-10D		
Lab Sample ID:	JC91700-20 Date S	Sampled:	07/16/19
Matrix:	AQ - Surface Water Date I	Received:	07/16/19
	Perce	nt Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	202	10	mg/l	1	07/22/19 16:16	СМ	SM2320 B-11
BOD, 5 Day	< 20	20	mg/l	1	07/17/19 22:56	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 11:13	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.9	0.31	mg/l	1	07/22/19 14:31	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.9	0.30	mg/l	3	07/22/19 14:31	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.021	0.010	mg/l	1	07/17/19 00:50	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.6	0.20	mg/l	1	07/23/19 12:59	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	264	10	mg/l	1	07/17/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	264	4.0	mg/l	1	07/22/19 10:08	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	07/19/19 08:09	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-11S		
Lab Sample ID:	JC91700-21	Date Sampled:	07/16/19
Matrix:	AQ - Surface Water	Date Received:	07/16/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	130	5.0	mg/l	1	07/22/19 16:16	СМ	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	07/17/19 23:26	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/24/19 11:14	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.0	0.11	mg/l	1	07/22/19 14:07	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.0	0.10	mg/l	1	07/22/19 14:07	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/17/19 00:50	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	1	07/23/19 13:00	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	208	10	mg/l	1	07/18/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	11.9	4.0	mg/l	1	07/18/19 10:19	RC	SM2540 D-11
Total Organic Carbon	1.1	1.0	mg/l	1	07/19/19 01:53	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.










Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



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SGS Sample Receipt Summary

Job Number: J	C91700		Client:	USACE-PH	ILADEL	PHIA DIS	TRICT	Project:	PHILADELPHIA	DISTRICT	, RES	ERVOI	R SAMPL
Date / Time Received: 7	/16/2019	3:50:00 F	PM	Delivery Mo	ethod:			Airbill #'s	s:				
Cooler Temps (Raw Meas Cooler Temps (Corre	ured) °C cted) °C	Cooler: Cooler	1: (3.8); 1: (3.8);	Cooler 2: (3 Cooler 2: (3	3.8); Co 3.8); Co	ooler 3: (3 ooler 3: (3	.7); Cooler 4: (3.8 .7); Cooler 4: (3.8	3); Cooler 5 3); Cooler 5	:: (3.9); Cooler 6 :: (3.9); Cooler 6	: (3.7); Coo : (3.7); Coo	oler 7: oler 7:	(3.9); (3.9);	
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature 1. Temp criteria achieved:	Yor ♥ ♥	<u>N</u> 	3. COC P Smpl Date	resent: es/Time OK	Yor ♥ ♥		Sample Integrit 1. Sample labels 2. Container label 3. Sample contain	y - Docume present on b ing complete ner label / CC	entation ottles: e: DC agree:	Y V V V	or		
 Cooler temp verification: Cooler media: No. Coolers: 		IR Gun Ice (Bag) 7					Sample Integrit Sample recvd v All containers a S. Condition of sa	i y - Conditi within HT: accounted for mple:	<u>on</u> r:	V	Intact		
Quality Control_Preserva 1. Trip Blank present / coole 2. Trip Blank listed on COC:	<u>tion '</u> r: [<u>Y or N</u>] ☑] ☑	<u>N/A</u>				Sample Integrit 1. Analysis reque 2. Bottles receive	t y - Instruc ested is clear ed for unspec	tions :: cified tests	<u>Υ</u> ☑	<u>or</u> [N 	<u>N/A</u>
 Samples preserved prope VOCs headspace free: 	rly: 💽		V				 Sufficient volu Compositing ir Filtering instru 	me recvd for Instructions cl ctions clear:	analysis: lear:		[[[>
Test Strip Lot #s:	pH 1-12	:	229517		pH 1	12+:	208717	Ot	her: (Specify)				
Comments													

SM089-03 Rev. Date 12/7/17

> JC91700: Chain of Custody Page 4 of 4



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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

08/02/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91700XA



Sampling Date: 07/16/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 29



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Sample Summary

USACE-Philadelphia District

Job No: JC91700XA

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC91700-1F	07/16/19	07:20 GW	07/16/19	AQ	Surface H2O Filtered	BM-1S
JC91700-1XA	07/16/19	07:20 GW	07/16/19	AQ	Surface Water	BM-1S
JC91700-2F	07/16/19	09:30 GW	07/16/19	AQ	Surface H2O Filtered	BM-2S
JC91700-2XA	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2S
JC91700-3F	07/16/19	09:30 GW	07/16/19	AQ	Surface H2O Filtered	BM-2M
JC91700-3XA	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2M
JC91700-4F	07/16/19	09:30 GW	07/16/19	AQ	Surface H2O Filtered	BM-2D
JC91700-4XA	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2D
JC91700-5F	07/16/19	12:45 GW	07/16/19	AQ	Surface H2O Filtered	BM-5S
JC91700-5XA	07/16/19	12:45 GW	07/16/19	AQ	Surface Water	BM-5S
JC91700-6F	07/16/19	08:45 GW	07/16/19	AQ	Surface H2O Filtered	BM-6S
JC91700-6XA	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6S
JC91700-7F	07/16/19	08:45 GW	07/16/19	AQ	Surface H2O Filtered	BM-6M



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Sample Summary (continued)

USACE-Philadelphia District

JC91700XA Job No:

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	іх Туре	Client Sample ID
JC91700-7XA	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6M
JC91700-8F	07/16/19	08:45 GW	07/16/19	AQ	Surface H2O Filtered	BM-6D
JC91700-8XA	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6D
JC91700-9F	07/16/19	10:00 GW	07/16/19	AQ	Surface H2O Filtered	BM-7S
JC91700-9XA	07/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7S
JC91700-10F	07/16/19	10:00 GW	07/16/19	AQ	Surface H2O Filtered	BM-7M
JC91700-10X	407/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7M
JC91700-11F	07/16/19	10:00 GW	07/16/19	AQ	Surface H2O Filtered	BM-7D
JC91700-11X	A07/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7D
JC91700-12F	07/16/19	11:30 GW	07/16/19	AQ	Surface H2O Filtered	BM-8S
JC91700-12X	A07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8S
JC91700-13F	07/16/19	11:30 GW	07/16/19	AQ	Surface H2O Filtered	BM-8M
JC91700-13X	A07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8M



Sample Summary (continued)

USACE-Philadelphia District

Job No:

JC91700XA

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC91700-14F	07/16/19	11:30 GW	07/16/19	AQ	Surface H2O Filtered	BM-8D
JC91700-14X	A07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8D
JC91700-15F	07/16/19	10:40 GW	07/16/19	AQ	Surface H2O Filtered	BM-9S
JC91700-15X	A07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9S
JC91700-16F	07/16/19	10:40 GW	07/16/19	AQ	Surface H2O Filtered	BM-9M
JC91700-16X	A07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9M
JC91700-17F	07/16/19	10:40 GW	07/16/19	AQ	Surface H2O Filtered	BM-9D
JC91700-17X	A07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9D
JC91700-18F	07/16/19	11:00 GW	07/16/19	AQ	Surface H2O Filtered	BM-10S
JC91700-18X	A07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10S
JC91700-19F	07/16/19	11:00 GW	07/16/19	AQ	Surface H2O Filtered	BM-10M
JC91700-19X	A07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10M
JC91700-20F	07/16/19	11:00 GW	07/16/19	AQ	Surface H2O Filtered	BM-10D



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC91700XA

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	іх Туре	Client Sample ID
JC91700-20X	A07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10D
IC91700-21F	07/16/19	12:45 GW	07/16/19	AO	Surface H2O Filtered	BM-11S
0001100 211	01110,19	12.10 0 11	01110/19			
JC91700-21X	A07/16/19	12:45 GW	07/16/19	AQ	Surface Water	BM-11S





Section 2

Subcontract Lab Data

Report of Analysis





Attention:Tammy McCloskeyReported To:SGS North America2235 US Highway 130Dayton, NJ 08810

Lab ID:	9024952-01	Collected By:	Client
Sample Desc:	BM-1S		

Certificate of Analysis

Laboratory No.: 9024952 Report: 08/01/19

Lab Contact: Richard A Wheeler

Project: Army Corp Reservoirs JC91700XA

Sampled: 07/16/19 09:30

Sampled: 07/16/19 07:20 Received: 07/18/19 10:00 Sample Type: Grab

Received: 07/18/19 10:00

Sample Type: Grab

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.07	mg/l	0.007	0.05	SM 4500-P E	07/18/19	G-11	JCL	
General Chemistry									
Phosphorus as P, Total	0.08	mg/l	0.01	0.01	SM 4500-P E	07/18/19		JCL	

Lab ID:9024952-02Collected By:ClientSample Desc:BM-2S

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemistr	ry								
Phosphorus as P,	0.04	mg/l	0.007	0.05	SM 4500-P E	07/18/19	G-11, J	JCL	
Dissolved									
General Chemistry									
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P E	07/18/19		JCL	
Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	0.04 0.04	mg/l mg/l	0.007	0.05	SM 4500-P E SM 4500-P E	07/18/19 07/18/19	G-11, J	JCL JCL	

Lab ID:9024952-03Collected By:ClientSample Desc:BM-2M

Sampled: 07/16/19 09:30 Received: 07/18/19 10:00 Sample Type: Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.10	mg/l	0.007	0.05	SM 4500-P E	07/18/19	G-11	JCL	
General Chemistry									
Phosphorus as P, Total	0.12	mg/l	0.01	0.01	SM 4500-P E	07/18/19		JCL	



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Lab ID: 9024952- Sample Desc: BM-2D	04 Col	lected By:	Client		Sampled: 07/1	16/19 09:30	Receive Sample Typ	ed: 07/18/19 10:00 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.08	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11	JCL
General Chemistry Phosphorus as P, Total	3.01	mg/l	0.14	0.50	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952- Sample Desc: BM-55	05 Col	lected By:	Client		Sampled: 07/1	16/19 12:45	Receive Sample Typ	ed: 07/18/19 10:00 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	0.05	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11	JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952- Sample Desc: BM-6S	06 Col	lected By:	Client		Sampled: 07/1	16/19 08:45	Receive Sample Typ	ed: 07/18/19 10:00 pe: Grab
Lab ID: 9024952- Sample Desc: BM-6S	06 Col	lected By: Unit	Client	Rep. Limit	Sampled: 07/1 Procedure	16/19 08:45 Analyzed	Receive Sample Typ Notes	ed: 07/18/19 10:00 De: Grab Analyst
Lab ID: 9024952- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved	06 Col Result	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 07/1 Procedure SM 4500-P E	16/19 08:45 Analyzed 07/19/19	Receive Sample Typ Notes G-11, J	ed: 07/18/19 10:00 pe: Grab Analyst JCL
Lab ID: 9024952- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	06 Col <u>Result</u> Y 0.03 0.03	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 07/1 Procedure SM 4500-P E SM 4500-P E	16/19 08:45 Analyzed 07/19/19 07/19/19	Receive Sample Typ Notes G-11, J	ed: 07/18/19 10:00 pe: Grab <u>Analyst</u> JCL JCL
Lab ID: 9024952- Sample Desc: BM-68 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-6M	06 Col <u>Result</u> ^(Y) 0.03 0.03 07 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 07/1 Procedure SM 4500-P E SM 4500-P E Sampled: 07/1	Analyzed 07/19/19 07/19/19	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 07/18/19 10:00 pe: Grab Analyst JCL JCL ed: 07/18/19 10:00 pe: Grab
Lab ID: 9024952- Sample Desc: BM-68 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-6M	06 Col <u>Result</u> ^Y 0.03 0.03 07 Col <u>Result</u>	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 0.01 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit	Sampled: 07/1 Procedure SM 4500-P E SM 4500-P E Sampled: 07/1 Procedure	Analyzed 07/19/19 07/19/19 16/19 08:45 Analyzed	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 07/18/19 10:00 pe: Grab Analyst JCL JCL ed: 07/18/19 10:00 pe: Grab Analyst
Lab ID: 9024952- Sample Desc: BM-68 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-6M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	06 Col Result (Y) 0.03 0.03 07 Col Result (Y) 0.05	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client	Rep. Limit 0.05 0.01 Rep. Limit 0.05	Sampled: 07/1 Procedure SM 4500-P E SM 4500-P E Sampled: 07/1 Procedure SM 4500-P E	Analyzed 07/19/19 07/19/19 16/19 08:45 Analyzed 07/19/19	Receive Sample Typ Notes G-11, J Receive Sample Typ Notes G-11, J	ed: 07/18/19 10:00 pe: Grab Analyst JCL JCL ed: 07/18/19 10:00 pe: Grab Analyst JCL



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N

Lab ID: 9024952 Sample Desc: BM-6D	-08 Col	08 Collected By:			Sampled: 07/	16/19 08:45	Received Sample Type	: 07/18/19 10:00 : Grab
	Docult	Unit	MDI	Rep. Limit	Procedure	Applyzod	Notos	Applyst
Dissolved General Chemist Phosphorus as P, Dissolved	0.08	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11	JCL
General Chemistry Phosphorus as P, Total	0.09	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952 Sample Desc: BM-7S	-09 Col	lected By:	Client		Sampled: 07/7	16/19 10:00	Received Sample Type	: 07/18/19 10:00 : Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved Conneral Chemistry	0.02	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952 Sample Desc: BM-7M	-10 Col	lected By:	Client		Sampled: 07/7	16/19 10:00	Received Sample Type	: 07/18/19 10:00 : Grab
Lab ID: 9024952 Sample Desc: BM-7M	-10 Col	lected By: Unit	Client MDL	Rep. Limit	Sampled: 07/	16/19 10:00 Analyzed	Received Sample Type Notes	: 07/18/19 10:00 : Grab Analyst
Lab ID: 9024952 Sample Desc: BM-7M Dissolved General Chemist Phosphorus as P, Dissolved	Result 0.10	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 07/7 Procedure SM 4500-P E	16/19 10:00 Analyzed 07/19/19	Received Sample Type Notes 4 G-11	: 07/18/19 10:00 : Grab Analyst JCL
Lab ID: 9024952 Sample Desc: BM-7M Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	e-10 Coll Result try 0.10 0.12	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 07/* Procedure SM 4500-P E SM 4500-P E	16/19 10:00 Analyzed 07/19/19 07/19/19	Received Sample Type Notes A G-11	: 07/18/19 10:00 : Grab Analyst JCL JCL
Lab ID:9024952Sample Desc:BM-7MDissolved GeneralChemistry DissolvedPhosphorus as P, DissolvedChemistry Phosphorus as P, TotalLab ID:9024952Sample Desc:BM-7D	2-10 Coll Result try 0.10 0.12 2-11 Coll	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 07/7 Procedure SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 07/7	Analyzed 07/19/19 07/19/19	Received Sample Type G-11 Received Sample Type	: 07/18/19 10:00 : Grab Analyst JCL JCL : 07/18/19 10:00 : Grab
Lab ID:9024952Sample Desc:BM-7MDissolved General Chemistry Phosphorus as P, DissolvedChemistry Phosphorus as P, TotalLab ID:9024952Sample Desc:BM-7D	2-10 Coll Result try 0.10 0.12 2-11 Coll Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 0.01 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit	Sampled: 07/7 Procedure SM 4500-P E SM 4500-P E SM 4500-P E SM 4500-P E Procedure OT/7 Procedure	16/19 10:00 Analyzed 07/19/19 07/19/19 16/19 10:00 Analyzed	Received Sample Type Notes 4 G-11 Received Sample Type	: 07/18/19 10:00 : Grab Analyst JCL JCL : 07/18/19 10:00 : Grab
Lab ID: 9024952 Sample Desc: BM-7M Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952 Sample Desc: BM-7D	2-10 Coll Result try 0.10 0.12 2-11 Coll Result try 0.08	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL 0.007	Rep. Limit 0.05 0.01 Rep. Limit 0.05	Sampled: 07/7 Procedure SM 4500-P E SM 4500-P E Sampled: 07/7 Procedure SM 4500-P E	16/19 10:00 Analyzed 07/19/19 07/19/19 16/19 10:00 Analyzed 07/19/19	Received Sample Type G-11 G-11 Sample Type Sample Type G-11	: 07/18/19 10:00 : Grab Analyst JCL : 07/18/19 10:00 : Grab Analyst JCL



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Lab ID: 9024952- Sample Desc: BM-88	12 Col	lected By:	Client		Sampled: 07/3	16/19 11:30	Received Sample Type	l: 07/18/19 10:00 2: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analvzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.03	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952- Sample Desc: BM-8M	13 Col	lected By:	Client		Sampled: 07/2	16/19 11:30	Received Sample Type	l: 07/18/19 10:00 2: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	0.03	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952-	14 Col	loctod Prz					Decolored	
Sample Desc: BM-8D		iecieu by.	Client		Sampled: 077	16/19 11:30	Sample Type	1: 07/18/19 10:00 2: Grab
Sample Desc: BM-8D	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Sample Type	i: 07/18/19 10:00 2: Grab Analyst
Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved	Result	Unit mg/l	MDL 0.007	Rep. Limit	Sampled: 077 Procedure SM 4500-P E	Analyzed 07/19/19	Notes	i: 07/18/19 10:00 :: Grab Analyst JCL
Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	Result y 0.06 0.11	Unit mg/l mg/l	MDL 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 077 - Procedure SM 4500-P E SM 4500-P E	Analyzed 07/19/19 07/19/19	Notes	I: 07/18/19 10:00 P: Grab Analyst JCL JCL
Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-9S	Result 9 0.06 0.11 15 Col	Unit mg/l mg/l lected By:	MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 07/1 Procedure SM 4500-P E SM 4500-P E Sampled: 07/1	Analyzed 07/19/19 07/19/19 16/19 10:40	Received Sample Type G-11 Received Sample Type	 i: 07/18/19 10:00 i: Grab Analyst JCL JCL i: 07/18/19 10:00 i: Grab
Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-9S	Result 0.06 0.11 15 Col Result	Unit mg/l mg/l lected By: Unit	MDL 0.007 0.01 Client MDL	Rep. Limit	Sampled: 07/ 3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/ 3 Procedure	Analyzed 07/19/19 07/19/19 16/19 10:40 Analyzed	Notes Received Sample Type G-11 Received Sample Type Notes	 i: 07/18/19 10:00 i: Grab Analyst JCL JCL i: 07/18/19 10:00 i: Grab
Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-9S Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry	Result Y 0.06 0.11 0.11 15 Col Result Y 0.03 0.03	Unit mg/l mg/l lected By: Unit mg/l	MDL 0.007 0.01 Client MDL 0.007	Rep. 0.05 0.01 Rep. Limit 0.03	Sampled: 077.3 Procedure SM 4500-P E SM 4500-P E Sampled: 077.3 Procedure SM 4500-P E SM 4500-P E	Analyzed 07/19/19 07/19/19 16/19 10:40 Analyzed 07/19/19	Received Sample Type G-11 Received Sample Type Notes G-11, J	t: 07/18/19 10:00 c: Grab Analyst JCL JCL t: 07/18/19 10:00 c: Grab Analyst JCL



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Lab ID: 9024952- Sample Desc: BM-9M	16 Collected By: (Client		Sampled: 07/	16/19 10:40	Received Sample Type	l: 07/18/19 10:00 :: Grab
	Result	Unit	MDL.	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.04	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952- Sample Desc: BM-9D	17 Col	lected By:	Client		Sampled: 07/	16/19 10:40	Received Sample Type	l: 07/18/19 10:00 :: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	0.05	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11	JCL
Phosphorus as P, Total	0.16	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024952- Sample Desc: BM-10S	18 Col	lected By:	Client		Sampled: 07/	16/19 11:00	Received Sample Type	l: 07/18/19 10:00 l: Grab
Lab ID: 9024952- Sample Desc: BM-10S	18 Col	lected By: Unit	Client	Rep. Limit	Sampled: 07/*	16/19 11:00 Analyzed	Received Sample Type Notes	l: 07/18/19 10:00 I: Grab Analyst
Lab ID: 9024952- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved	18 Col Result	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 07/7 Procedure SM 4500-P E	16/19 11:00 Analyzed 07/19/19	Received Sample Type Notes G-11	: 07/18/19 10:00 : Grab Analyst JCL
Lab ID: 9024952- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	18 Col <u>Result</u> TY 0.08 0.10	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.01	Sampled: 07/* Procedure SM 4500-P E SM 4500-P E	16/19 11:00 Analyzed 07/19/19 07/19/19	Received Sample Type Notes G-11	: 07/18/19 10:00 :: Grab Analyst JCL JCL
Lab ID: 9024952- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-10M	18 Col Result 79 0.08 0.10 19 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.01	Sampled: 07/7 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	16/19 11:00 Analyzed 07/19/19 07/19/19 16/19 11:00	Received Sample Type Notes G-11 Received Sample Type	L: 07/18/19 10:00 L: Grab Analyst JCL JCL L: 07/18/19 10:00 L: Grab
Lab ID: 9024952- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9024952- Sample Desc: BM-10M	18 Col Result 0.08 0.10 19 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.01 Rep. Limit	Sampled: 07/7 Procedure SM 4500-P E SM 4500-P E SM 4500-P E Smapled: 07/7 Procedure	16/19 11:00 Analyzed 07/19/19 07/19/19 16/19 11:00 Analyzed	Received Sample Type Onotes G-11 Received Sample Type Notes	 i: 07/18/19 10:00 i: Grab Analyst JCL i: 07/18/19 10:00 i: Grab Analyst
Lab ID: 9024952- Sample Desc: BM-10S	18 Col Result () () () () () () () () () ()	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL	Rep. 0.05 0.01 Rep. Limit 0.05	Sampled: 07/7 Procedure SM 4500-P E SM 4500-P E Sampled: 07/7 Procedure SM 4500-P E	16/19 11:00 Analyzed 07/19/19 07/19/19 16/19 11:00 Analyzed 07/19/19	Received Sample Type G-11 G-11 Sample Type Sample Type G-11, J	 i: 07/18/19 10:00 i: Grab Analyst JCL i: 07/18/19 10:00 i: Grab Analyst JCL



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12 of 29 JC91700XA



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Lab ID: 9024 Sample Desc: BM-1	052-20 Col	lected By:	Client		Sampled: 07/	16/19 11:00 S a	Receive ample Typ	:d: 07/18/19 10:00 :e: Grab
				Rep.				
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Cher	nistry							
Phosphorus as P, Dissolved	0.05	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11	JCL
General Chemistry								
Phosphorus as P, Total	0.23	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL
Lab ID: 9024 Sample Desc: BM-1	952-21 Col 115	lected By:	Client		Sampled: 07/	16/19 12:45 Sa	Receive ample Typ	d: 07/18/19 10:00 e: Grab
				Dom				
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst

	Result	Unit	MDL	LIIIIII	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemistr	у								
Phosphorus as P, Dissolved	0.05	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.05	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL	



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M.J. Reider Associates, Inc.

Quality Control

General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9G1097								
MB (B9G1097-BLK1)				Prepared & Ana	alyzed: 07/18/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
Batch B9G1163								
MB (B9G1163-BLK1)				Prepared & Ana	alyzed: 07/19/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9G1163-BLK2)				Prepared & Ana	alyzed: 07/19/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9G1163-BLK3)				Prepared & Ana	alyzed: 07/19/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
LFB (B9G1163-BS1)				Prepared & Ana	dyzed: 07/19/20	19		
Phosphorus as P, Total	1.01	0.05	mg/l	101	80-120			
LFM (B9G1163-MS1)		Source: 9024952-05		Prepared & Ana	alyzed: 07/19/20	19		
Phosphorus as P, Total	1.05	0.05	mg/l	97.9	80-120			
LFMD (B9G1163-MSD1)		Source: 9024952-05		Prepared & Ana	alyzed: 07/19/20	19		
Phosphorus as P, Total	1.05	0.05	mg/l	98.7	80-120	0.762	20	

%RFC RPD Reporting Analvte %REC Result Units RPD Limit Limits Limit Notes Batch B9G1098 MB (B9G1098-BLK1) Prepared & Analyzed: 07/18/2019 Phosphorus as P, Dissolved < 0.05 0.05 mg/l G-11, U LFB (B9G1098-BS1) Prepared & Analyzed: 07/18/2019 Phosphorus as P, Dissolved 1.01 0.05101 80-120 G-11 mg/l LFM (B9G1098-MS1) Source: 9024952-01 Prepared & Analyzed: 07/18/2019 Phosphorus as P, Dissolved 1.06 0.05 mg/l 98.780-120 LFMD (B9G1098-MSD1) Source: 9024952-01 Prepared & Analyzed: 07/18/2019 1.07 Phosphorus as P, Dissolved 0.05 mg/l 99.7 80-120 0.943 20 Batch B9G1166 MB (B9G1166-BLK1) Prepared & Analyzed: 07/19/2019 Phosphorus as P, Dissolved G-11, U < 0.05 0.05mg/l Prepared & Analyzed: 07/19/2019 LFB (B9G1166-BS1) Phosphorus as P, Dissolved 1.01 0.05 101 G-11 mg/l 80-120

Dissolved General Chemistry



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JC91700XA



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Preparation Methods

Specific Method	Preparation Method	Prepared Date	Prepared By
9024952-01			
SM 4500-P E	SM 4500-P B	07/18/2019	JCL
9024952-02			
SM 4500-P E	SM 4500-P B	07/18/2019	JCL
9024952-03			
SM 4500-P E	SM 4500-P B	07/18/2019	JCL
9024952-04			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-05			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-06			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-07			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-08			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-09			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-10			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-11			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-12			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-13			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-14			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
9024952-15			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL



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90	024952-16			
	SM 4500-P E	SM 4500-P B	07/19/2019	JCL
90)24952-17			
	SM 4500-P E	SM 4500-P B	07/19/2019	JCL
90	024952-18			
	SM 4500-P E	SM 4500-P B	07/19/2019	JCL
90	024952-19			
	SM 4500-P E	SM 4500-P B	07/19/2019	JCL
90	024952-20			
	SM 4500-P E	SM 4500-P B	07/19/2019	JCL
90	024952-21			
	SM 4500-P E	SM 4500-P B	07/19/2019	JCL

Notes and Definitions

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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Page 1 of 4	le Order Control #	5 ^{Job} # JC91700XA	sis Matrix Codes	DW - Drinking Water GM - Crowind Water	WW - Water WW - Water SW - Surface Water	SO - Soil SL - Sludge SED-Ssediment	01-01 LIQ - Other Liquid AIR - AV	SOL - Other Solid WP - Wpo FR Flaid Row	EB-Equipment Blank RB-Strive Lank RB-Strive Blank TB-Trive Blank		LAB USE ONLY	101		-02		-43		ho		Sp		-16		ts / Special Instructions						http://www.sgs.com/en/terms-and-conditions	slved By:	ilved By:	On tay Conder Temp. C MONT. IC. 9	1.0.100 000 1			
PM: RAW	Bot	80	ter.		-																			Commet						ny.	Date / Time: Rec 2	Date / Time: Rec	d where applicable		\$ 2	- Ice	
9024952 SGS North America	Army Corp Reservoirs					tit from Report to)	!	State Zp	, toq1	Number of preserved Bottles	LbO ERCC BLFL WEOK MEOK H ² ZO MAN H ² ZO MAN	×	×	×	×	×	× 1	×	×	×	×	×	×	eliverable Information	vel 1) UVASP Category A	State Forms	EDD Format	X other REDT2	allen a Results + CC Summary	aru: = Results + GC Summary + Partial Raw data e samples change possession, including courier deliver	telinquished By: 2	telinquished By:	Dustody Seal # Intact Preserved		7-11-19	The second	10,00
CHAIN O	SGS North Arr 2235 Route 13(TEL. 732-329-0200 www.sg	Project Inform	, Reservoir Sampling		State Company Name	Street Address	City	Attention:	Collection	Date Time Sampled # of Matrix bottles	16/19 7:20:00 AM GW AG	16/19 7:20:00 AM GW AQ	16/19 9:30:00 AM GW AG	16/19 9:30:00 AM GW AQ	16/19 9:30:00 AM GW AQ	16/19 12:45:00 PM GW AQ	16/19 12:45:00 PM GW AQ	16/19 8:45:00 AM GW AQ	16/19 8:45:00 AM GW AQ 4	Data D	ate: Commercial "A" (Lev	FULLT1 (Level 3+4)	NJ Reduced	Commercial "C"	Commercia	Introv I At mple Custody must be documented below each fim	d By Fed S	d By: A	dBy:	Her an an in man	0 Dense kom XV	>				
			Project Name:	Philadelphia District	Street	Zip City	Project #	Client Purchase Order #	Phone Project Menager		MEOH/DI Vial #	12	12	12	12	12	<i>n</i>	12	12	12	12	12	12		Approved By (SGS PM): / D		a construction of the second se				MUTA 16.05	Date / Tiffie: Receive	Date / Time: Receive	N.W.			
	うりつ	-	Client / Reporting Information		treet Address	Jty State	rolect Contact E-mail farmmy.mccloskey@sgs.com	hone #	iampter(s) Name(s) GW		Ses Set Field ID / Point of Collection	1XA BM-1S	1F BM-1S .	2XA BM-2S	2F BM-2S	3XA BM-2M	3F BM-2M	4XA BM-2D	4F BM-2D	5XA BM-5S	5F BM-5S	SXA BM-6S	6F BM-6S	Turnaround Time (Business days)	Standard 10 Business Davs	5 Business Days RUSH	3 Business Days RUSH	2 Business Days RUSH 1 Business Day EMERGENCY	X Other Due 7/30/2019		Relinquished by Jame Jule	Retinquished by: Feel So	Relinquished by:				

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			Matrix Codes	DW - Drinking Water	WW - Ground vealer WW - Water SW - Surface Water	sO - Soll SL- Sludge SED-Sediment	OI - OI LIQ - Other Liquid AIR - Air	SOL - Other Solid WP - Wipe FB - Flaid Blank	EB-Equipment Blank RB - Rinse Blank TB - Trip Blank	-	M7	-4	-al	- 05	-09	-4	- 10		= 1	-4	-12	-1		-				and conditions				0, -C	guice	
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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

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MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Rafael A Quijada For Richard A Wheeler Director of Field Services



107 Angelica Street 🔾 Reading, PA 19611 🔾 www.mjreider.com 🔾 (610) 374-5129 🔾 fax (610) 374-7234

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Section 3 😀

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



500 50		CHAIN OF CUSTO SGS North America Inc Day 2235 Route 130, Dayton, NJ 068 TEL 732-329-0200 FAX: 732-329-340	DY ton 10 19/3480	FED-EX Tracking #	Page 1 of 2
Client / Reporting Information		www.sgs.com/ehsusa			SOS 1000 J(91700)
Company Name:	Project Name:	Project Information		Requested	Analysis
U.S. ARMY CORPS OF Engineers	Street	voirs - Blue MA	Rsh	ر العلمي العلمي	OW - Drinking Water GW - Ground Water
Cor Kenn SR. EAST	City	Builing Information (If different from Rep	(at true		WW - Water SW - Surbce Water
Phila. PA 19107	Reading P	A Company Name		22 EN 53	SO - Soli SL - Studge
Jee Louper	Floates S	Street Address		1 E A F	OI-OS
Phone #	Client Purchase Order	Cây	State		AIR - Atr
215-056-6545	\$		onaka Zip		SOL - Other Sata WP - Witte
Sampler(s) Name(s) (010 - Phone #	Project Manager	Allention;		N A H N O	'FB - Field Blank
Greg Wacik 547-9780	Thmmy McClesky	24			RB - Rines Blank
	·		Number of preserved Botson	5 3 9 9 7 9	T8 - Trip Blank
ses Barrete # Field ID / Point of Collection	MEOH/DI Vial # Data T	Semucled Grank inG # cf	InOH WO, OriE EOH NCORE	N N N N N N N N N N N N N N N N N N N	
1F BM - 15	Dillara O	720 15- 6- 6. 190 V			LAB USE ONLY
2F PD - 2S	1.911		++2+++++	XXXXX	Bb
3F BM-2M		30 G G W 9 A		XXXXX	. 821
YE BO . 2D				XXXXX	GFUL
SF BM-59		USU G SW 9 X		XXXXX	1913
LE BM-105	1			XXXXX	
7F BM- lam	00			XXXXX	SUB
SE BM- UD	08	45 6 54 9 4		XXXXX	
GE BM. 75	10/			XXXXX	
IOH BM.7M	100	m GGJ 9 X		XXXXX	
117 BM. 70	V lo	D GSW Y X		XXXXX	
Turn Around Time (Bus	ilness Days)		Deliverable		Comments / Special losts using
10 Busines Days	Approved By (SGS PHI): / Date:	Commercial "A" (Level 1)	NYASP Category A	DOD-QSMS	Southerney Opould PISUUCEDIS
5 Business Days		Commercial "B" (Level 2)	NYASP Category B		
3 Businese Days*		Full Tigst () and ()	MA MCP Criterta		TAZA ()
2 Susiness Days*		Genmercial TC"		- "	that Assessment 2012/
1 Busineas Day*			EDD Format	L	abel Verification
All data available via t ablink		Commercial "A" = Ret	ada only, Commercial "B" + Results	+ OC Summary	
Appre	Sample Custo	dy must bedocumented below and	Results + OC Summary + Partial Raw	data .	http://www.sgs.com/en/terms-and-conditions
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JC91700XA: Chain of Custody Page 1 of 4



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	С	HAIN OF CUSTODY SGS North America Inc Dayton 2235 Route 130, Dayton, NJ 06810 1732-329-0200 FAX: 732-329-34997480	PED-EX Tracting # SGS Duste #	Page Zof Z
Client / Reporting Information	Pro	ject Information		JC91700
ile obm i canor at fair			Requested A	nalysis Matrix Codes
Street Address	Streat	noirs - Blue Marsh	2 1 2 1	DW - Drinking Water
100 Penn Sa East			231	GW - Ground Water
Phila PA 19107	Reading PA	Company Name	2 2 2	SW - Surface Woler SO - Soli
Frotect Contact E-mail	Protect #	Straet Address	비원뒷났	SED-Sadment Qi- Ct
Phone #	Client Purchaso Order /	C2w	ALO	LIQ - Other Liquid
215-656-6545	•	State Zp	P - 5 3	SOL - Other Soft
Sampler(s) Name(s) 6/0 - Pitone #	Project Manager	Altertion	1 3 7 A 3	FB - Field Blank
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		- Number of preserved Bobook	コークム	TB - Trip Blank
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JC91700XA: Chain of Custody Page 2 of 4

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JC91700XA: Chain of Custody Page 3 of 4



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SGS Sample Receipt Summary

Job Number: JC9170	00 Client:	USACE-PHILADELPHIA DIS	TRICT Project: PHILADELPHIAD	ISTRICT, RESERVOIR SAMPL
Date / Time Received: 7/16/20	19 3:50:00 PM	Delivery Method:	Airbill #'s:	
Cooler Temps (Raw Measured) Cooler Temps (Corrected)	°C: Cooler 1: (3.8); °C: Cooler 1: (3.8);	Cooler 2: (3.8); Cooler 3: (3 Cooler 2: (3.8); Cooler 3: (3	.7); Cooler 4: (3.8); Cooler 5: (3.9); Cooler 6: (.7); Cooler 4: (3.8); Cooler 5: (3.9); Cooler 6: (3.7); Cooler 7: (3.9); 3.7); Cooler 7: (3.9);
Cooler SecurityY1. Custody Seals Present:Image: Custody Seals Intact:2. Custody Seals Intact:Image: Custody Seals Intact:Cooler Temperature	<u>Pr N</u> ☐ 3. COC Pr ☐ 4. Smpl Date <u>Y or N</u>	Y or N resent: ☑ □ s/Time OK ☑ □	 Sample Integrity - Documentation Sample labels present on bottles: Container labeling complete: Sample container label / COC agree: 	<u>Y</u> or N ✓ □ ✓ □ ✓ □
1. Temp criteria achieved: 2. Cooler temp verification: 3. Cooler media: 4. No. Coolers:	✓ □ IR Gun □ Ice (Bag) □ 7 □		Sample Integrity - Condition 1. Sample recvd within HT: 2. All containers accounted for: 3. Condition of sample:	Y or N ✓ □ ✓ □ Intact
Quality Control_Preservation 1. Trip Blank present / cooler: 2. Trip Blank listed on COC: 3. Samples preserved properly: 4. VOCs headspace free:	Y or N N/A □ ✓ □ □ ✓ □ □ ✓ □ □ ✓ □ □ ✓ □		Sample Integrity - Instructions 1. Analysis requested is clear: 2. Bottles received for unspecified tests 3. Sufficient volume recvd for analysis: 4. Compositing instructions clear: 5. Either instructions clear:	Y or N N/A M U M U M U M U M U M U M U M U
Test Strip Lot #s: pH 1-	.12:229517	pH 12+:	5. Filtering instructions clear: 208717 Other: (Specify)	
Comments				

SM089-03 Rev. Date 12/7/17

> JC91700XA: Chain of Custody Page 4 of 4





Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

07/24/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91700X



Sampling Date: 07/16/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 17



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Section 2: Subcontract Lab Data	4
Section 3: Misc. Forms	13
3.1: Chain of Custody	14
Sample Summary

USACE-Philadelphia District

Job No: JC91700X

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC91700-1X	07/16/19	07:20 GW	07/16/19	AQ	Surface Water	BM-1S
JC91700-2X	07/16/19	09:30 GW	07/16/19	AQ	Surface Water	BM-2S
JC91700-5X	07/16/19	12:45 GW	07/16/19	AQ	Surface Water	BM-5S
JC91700-6X	07/16/19	08:45 GW	07/16/19	AQ	Surface Water	BM-6S
JC91700-9X	07/16/19	10:00 GW	07/16/19	AQ	Surface Water	BM-7S
JC91700-12X	07/16/19	11:30 GW	07/16/19	AQ	Surface Water	BM-8S
JC91700-15X	07/16/19	10:40 GW	07/16/19	AQ	Surface Water	BM-9S
JC91700-18X	07/16/19	11:00 GW	07/16/19	AQ	Surface Water	BM-10S
JC91700-21X	07/16/19	12:45 GW	07/16/19	AQ	Surface Water	BM-11S



JC91700X



Section 2

Subcontract Lab Data

Report of Analysis





JOSEPH M. LOEPER

100 PENN SQUARE EAST

WANAMAKER BUILDING

PHILADELPHIA, PA 19107

US ARMY CORPS OF ENGINEERS



Serialized: 07/19/2019 08:47am QC36

Regarding:

US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA, PA 19107

PROJECT ID:

W08688

LABORATORY REPORT NUMBER:

L7144746

DarJU

Authorized by: Douglas J. Gump Client Services Manager



5 of 17 JC91700X

Analytical Report Printed 07/19/19 08:47 QC36

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JOSEPH M. LOEPER US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA, PA 19107

Regarding: JOSEPH M. LOEPER US ARMY CORPS OF ENGINEERS 100 PENN SQUARE EAST WANAMAKER BUILDING PHILADELPHIA, PA 19107

Account No: We Project No: We	08688, US ARMY COI 08688, US ARMY COI	RPS OF ENGINE RPS OF ENGINE	ERS ERS	P.O. No:		Inv. No: PWSID No:	1983967 PI		
Sample ID Sa L7144746-1 BN	ample Description M-1S Received Date/Time	e/Temp 07/16/1	9 02:58pm 5.3 C	Iced (Y/N): Y	Samp. D a 07/16/19 (ate/Time/Temp 07:20am NA C	Sampled by Customer		
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst		
ENVIRONMEN	NTAL MICROBIOLO	OGY BM-1S							
Total Coliform, M Fecal Coliform, M	F 1F	CONFLUENT G 170 E, Q	ROWT ldfQ /100ml cfu/100ml	SM 9222B SM 9222D	10 10	10 10	07/16/19 06:28PM LK 07/16/19 05:33PM JG2		
Sample ID Sa L7144746-2 BN	ample Description M-2S Received Date/Time		9 02:58pm 5 3 C	Iced (Y/N): Y	Samp. D a 07/16/19 (ate/Time/Temp 09:30am NA C	Sampled by Customer		

Received Date/Tim		9 02:58pm 5.3 C				
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONMENTAL MICROBIOL	OGY BM-2S					
Total Coliform, MF Fecal Coliform, MF	>2000 Q 1 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	07/16/19 06:28PM LK 07/16/19 05:33PM JG2

PIN: 17757

Serial Number: 6528856



Analytical Report Printed 07/19/19 08:47

Account No: Project No:	: W08688, US ARMY CC W08688, US ARMY CC	ORPS OF ENGINE ORPS OF ENGINE	EERS EERS	P.O. No:		Inv. No: PWSID No:	1983967 PI	
Sample ID L7144746-3	Sample Description BM-5S Received Date/Tim	ne/Temp 07/16/1	9 02:58pm 5.3 C	Iced (Y/N): Y	Samp. Da 07/16/19 1	ate/Time/Temp 12:45pm NA C	Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time,	Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-5S						
Total Coliform Fecal Coliforn	n, MF n, MF	CONFLUENT G >600 Q	ROWT ld fu/100ml cfu/100ml	SM 9222B SM 9222D	10 10	10 10	07/16/19 06:58PM 07/16/19 05:33PM	LK JG2
Sample ID L7144746-4	Sample Description BM-6S Received Date/Tim	ne/Temp 07/16/1	9 02:58pm 5.3 C	Iced (Y/N): Y	Samp. Da 07/16/19 (ate/Time/Temp 08:45am NA C	Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, J	Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-6S						
Total Coliform Fecal Coliforn	n, MF n, MF	>2000 Q <1 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	07/16/19 06:28PM 07/16/19 05:33PM	LK JG2
Sample ID L7144746-5	Sample Description BM-7S Received Date/Tim	ne/Temp 07/16/1	9 02:58pm 5.3 C	Iced (Y/N): Y	Samp. Da 07/16/19 1	ate/Time/Temp 10:00am NA C	Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time,	Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-7S						
Total Coliform Fecal Coliforn	n, MF n, MF	>2000 Q 11 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	07/16/19 06:28PM 07/16/19 05:33PM	LK JG2
Sample ID L7144746-6	Sample Description BM-8S Received Date/Tim	ne/Temp 07/16/1	9 02:58pm 5.3 C	Iced (Y/N): Y	Samp. Da 07/16/19 1	ate/Time/Temp 11:30am NA C	Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, J	Analyst

PIN: 17757

Serial Number: 6528856

JC91700X



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Analytical Report Printed 07/19/19 08:47

Account No: Project No:	W08688, US ARMY CC W08688, US ARMY CC	RPS OF ENGINE RPS OF ENGINE	EERS EERS	P.O. No:		Inv. No: PWSID No:	1983967 PI
Sample ID L7144746-6	Sample Description BM-8S Received Date/Tim	e/Temp 07/16/1	19 02:58pm 5.3 C	Iced (Y/N) : Y	Samp. Da 07/16/19 1	ate/Time/Temp 1:30am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-8S					
Total Coliform, Fecal Coliform	MF , MF	1400 E <1	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	07/16/19 06:58PM LK 07/16/19 05:33PM JG2
Sample ID L7144746-7	Sample Description BM-9S Received Date/Tim	e /Temp 07/16/1	19 02:58pm 5.3 C	Iced (Y/N) : Y	Samp. Da 07/16/19 1	ate/Time/Temp 0:40am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-9S					
Total Coliform, Fecal Coliform	MF , MF	>2000 Q 4 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	07/16/19 06:28PM LK 07/16/19 05:33PM JG2
Sample ID L7144746-8	Sample Description BM-10S Received Date/Tim	e /Temp 07/16/1	19 02:58pm 5.3 C	Iced (Y/N) : Y	Samp. Da 07/16/19 1	ate/Time/Temp 1:00am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	ENTAL MICROBIOL	OGY BM-108	5				
Total Coliform, Fecal Coliform	MF , MF	6600 38 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/16/19 06:58PM LK 07/16/19 05:33PM JG2
Sample ID L7144746-9	Sample Description BM-11S Received Date/Tim	e/Temp 07/16/1	19 02:58pm 5.3 C	Iced (Y/N): Y	Samp. Da 07/16/19 1	ate/Time/Temp 2:45pm NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 17757

Serial Number: 6528856

8 of 17

JC91700X

Page 4 of 8

Analytical Report

Printed 07/19/19 08:47

Account No: W08688, US ARMY CORPS OF ENGINEERS Project No: W08688, US ARMY CORPS OF ENGINEERS		P.O. No:		Inv. No: PWSID No:	1983967 PI		
Sample ID L7144746-9	Sample Description BM-11S Received Date/Tin	ne/Temp 07/16/1	9 02:58pm 5.3 C	Iced (Y/N): Y	Samp. Da 07/16/19 1:	te/Time/Temp 2:45pm NA C	Sampled by Customer
Parameter	ENTAL MICDODIOL	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
	ENTAL MICKOBIOI	JUG I DM-115					
Total Coliform, Fecal Coliform	MF , MF	CONFLUENT GI >600 Q	ROWTI d fu/100ml cfu/100ml	SM 9222B SM 9222D	10 10	10 10	07/16/19 06:58PM LK 07/16/19 05:33PM JG2

Sample Comments | Result Qualifiers:

L7144746-1:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7144746-2:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7144746-3:

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7144746-4:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7144746-5:

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

PIN: 17757

Serial Number: 6528856

N



Account No: W08688, US ARMY CORPS OF ENGINEERS Project No: W08688, US ARMY CORPS OF ENGINEERS P.O. No:

Inv. No: 1983967 PI PWSID No:

Analytical Report

Printed 07/19/19 08:47

L7144746-6 :

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7144746-7:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7144746-8:

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7144746-9:

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.



N

Serial Number: 6528856





DEFINITIONS

The following terms or abbreviations are used in this report:

QC

Less than: In conjunction with a numerical value, < indicates a concentration less than RL / MDL Greater than: In conjunction with a numerical value, > indicates a concentration greater than RL / MDL CFU Colony Forming Unit Dilution Factor (For Microbiology, DF = volume of DF sample tested) DRY Result was reported on a dry weight basis MCL EPA recommended "Maximum Contaminant Level" MDL Method Detection Limit MF Membrane Filtration MPN Most Probable Number For odor test: No Odor Observed ND For all other tests: Analyte concentration Not ND Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

Eurofins QC, LLC (EQC)

Data Qualifiers

J	Estimated value MDL, but < RL
Т	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
Е	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

Warranties, Terms, and Conditions

- · Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
 - "ERF" = field staff performs tests under NJ State certification # 02015.
 - "VL" = field staff performs tests under NJ State certification # 06005.
 - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- · All samples are collected as "grab" samples unless otherwise identified.
- · Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- · EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or guarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.

Page 7 of 8

 The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Jordan Thorngren (Water Microbiology).

EQC Accreditations

Horsham Facility	NELAP/State IDs-	PA:	46-05499	NJ:	PA093	NY:	12080	MD:	357
East Rutherford Facility Vineland Facility Wind Gap Facility	State ID- State ID- State ID-	NJ: NJ: NJ:	02015 06005 PA001						





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Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



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JC91700X: Chain of Custody Page 3 of 4



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SGS Sample Receipt Summary

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Comments				

SM089-03 Rev. Date 12/7/17

> JC91700X: Chain of Custody Page 4 of 4



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Dayton, NJ

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e-Hardcopy 2.0 Automated Report

08/27/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC92437



Sampling Date: 07/30/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 42



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Sample Summary

USACE-Philadelphia District

Job No: JC92437

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC92437-1	07/30/19	07:10 GW	07/30/19	AQ	Surface Water	BM-1S
JC92437-2	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2S
JC92437-3	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2M
JC92437-4	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2D
JC92437-5	07/30/19	13:10 GW	07/30/19	AQ	Surface Water	BM-5S
JC92437-6	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6S
JC92437-7	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6M
JC92437-8	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6D
JC92437-9	07/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7S
JC92437-10	07/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7M
JC92437-11	07/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7D
JC92437-12	07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8S
JC92437-13	07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8M

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Sample Summary (continued)

USACE-Philadelphia District

Job No: JC92437

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC92437-14	07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8D
JC92437-15	07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9S
JC92437-16	07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9M
JC92437-17	07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9D
JC92437-18	07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10S
JC92437-19	07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10M
JC92437-20	07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10D
JC92437-21	07/30/19	13:10 GW	07/30/19	AQ	Surface Water	BM-11S

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	USACE-Philadelphia District	Job No	JC92437
Site:	Philadelphia District, Reservoir Sampling	Report Date	8/12/2019 4:10:09 PM

On 07/30/2019, 21 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.7 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC92437 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

General Chemistry By Method EPA 351.2/LACHAT

	Matrix: AQ	Batch ID:	GP22820
-	All samples were prepared withi	n the recommended metho	od holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC92600-1DUP, JC92600-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

Matrix: AQ	Batch ID: GP22821
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- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-20DUP, JC92437-20MS were used as the QC samples for Nitrogen, Total Kjeldahl.

	Matrix: AQ	Batch ID: GP22907		
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- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-12DUP, JC92437-12MS were used as the QC samples for Nitrogen, Total Kjeldahl.
- Matrix Spike Recovery(s) for Nitrogen, Total Kjeldahl are outside control limits. Spike recovery indicates possible matrix interference.

General Chemistry By Method EPA 353.2/LACHAT

Matrix: AQ	Batch ID:	GP22801

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-1DUP, JC92437-1MS, JC92437-4MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix: AQ Batch ID: GP22802

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC92437-20DUP, JC92437-20MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.



General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ Batch II): F	R180179
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-1 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180180
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-2 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ Batch II): F	R180181
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
	JC92437-3 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180182
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
	JC92437-4 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180183
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
	JC92437-5 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ Batch II): F	R180184
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
	JC92437-6 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180185
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
	JC92437-7 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180186
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-8 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180187
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-9 for Nitrogen, Nitrate: Calculated as: (Nitrog	en, N	litrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180188
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-10 for Nitrogen, Nitrate: Calculated as: (Nitro	gen, 1	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180189
-	The data for EPA353.2/SM4500NO2B meets quality c	ontro	l requirements.
-	JC92437-11 for Nitrogen, Nitrate: Calculated as: (Nitro	gen, 1	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180190
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-12 for Nitrogen, Nitrate: Calculated as: (Nitro	gen, 1	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180191
-	The data for EPA353.2/SM4500NO2B meets quality of	ontro	l requirements.
-	JC92437-13 for Nitrogen, Nitrate: Calculated as: (Nitro	gen, 1	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch II): F	R180192

The data for EPA353.2/SM4500NO2B meets quality control requirements.

Monday, August 12, 2019

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General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ	Batch ID:	R180192
-	JC92437-14 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R180193
-	The data for EPA353.2/SM4500NO2	B meets quality cont	rol requirements.
-	JC92437-15 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R180194
-	The data for EPA353.2/SM4500NO2	B meets quality cont	rol requirements.
-	JC92437-16 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R180195
-	The data for EPA353.2/SM4500NO2	B meets quality cont	rol requirements.
-	JC92437-17 for Nitrogen, Nitrate: Cal	culated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R180196
L	Matrix: AQ The data for EPA353.2/SM4500NO2	Batch ID: B meets quality cont	R180196 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Calo	Batch ID: B meets quality cont culated as: (Nitroger	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Cal- Matrix: AQ	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID:	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Calo Matrix: AQ The data for EPA353.2/SM4500NO21	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Cal- Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-19 for Nitrogen, Nitrate: Cal-	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Cale Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-19 for Nitrogen, Nitrate: Cale Matrix: AQ	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID:	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180198
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Cale Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-19 for Nitrogen, Nitrate: Cale Matrix: AQ The data for EPA353.2/SM4500NO21	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180198 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Calo Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-19 for Nitrogen, Nitrate: Calo Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-20 for Nitrogen, Nitrate: Calo	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180198 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-18 for Nitrogen, Nitrate: Cale Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-19 for Nitrogen, Nitrate: Cale Matrix: AQ The data for EPA353.2/SM4500NO21 JC92437-20 for Nitrogen, Nitrate: Cale Matrix: AQ	Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID: 3 meets quality cont culated as: (Nitroger Batch ID:	R180196 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180197 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180198 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180198 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180199

JC92437-21 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)





General Chemistry By Method SM2320 B-11

	Matrix: AQ Batch ID: GN98320
	All samples were analyzed within the recommended method holding time.
	All method blanks for this batch meet method specific criteria.
	Sample(s) JC92437-1DUP were used as the QC samples for Alkalinity, Total as CaCO3.
	JC92437-1 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-5 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-3 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-10 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-11 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-12 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
1	JC92437-13 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-14 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-2 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-17 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-4 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-7 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-6 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-15 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-8 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
I	JC92437-9 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-20 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
I	JC92437-19 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-18 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	JC92437-16 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.
	Matrix: AQ Batch ID: GN98324
Ē	All samples were analyzed within the recommended method holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92486-2DUP were used as the QC samples for Alkalinity, Total as CaCO3.
- JC92437-21 for Alkalinity, Total as CaCO3: Sample was titrated to a final pH of 4.5.

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General Chemistry By Method SM2540 C-11

	Matrix:	AQ	Batch ID:	GN98176

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-21DUP were used as the QC samples for Solids, Total Dissolved.

Matrix: AQ	Batch ID:	GN98250

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-1DUP, JC92437-2DUP were used as the QC samples for Solids, Total Dissolved.

	Matrix: AQ	Batch ID:	GN98277
-			

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-14DUP were used as the QC samples for Solids, Total Dissolved.

General Chemistry By Method SM2540 D-11

Matrix: AQ	Batch ID:	GN98165	
All samples were analyzed within the recommended method holding time.			
All method blanks for this batch	meet method specific crite	teria.	

Sample(s) JC92430-3DUP were used as the QC samples for Solids, Total Suspended.

Matrix: AQ	Batch ID:	GN98249
	:a: a 11 a	

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-1DUP were used as the QC samples for Solids, Total Suspended.
- JC92437-8 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.
- JC92437-9 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.

Matrix: AQ	Batch ID:	GN98274
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92600-1DUP were used as the QC samples for Solids, Total Suspended.
- JC92437-15 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 500 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.

General Chemistry By Method SM4500NH3 H-11LACHAT

	Matrix: AQ	Batch ID:	GP22799
-	All samples were prepared within the reco	ommended metho	d holding time.
-	All method blanks for this batch meet met	thod specific crite	eria.
-	Sample(s) JC92437-1MS, JC92437-1MS	SD, JC92437-1DU	JP were used as the QC samples for Nitrogen, Ammonia.
-	RPD(s) for Duplicate for Nitrogen, Amm duplicate and sample concentrations.	onia are outside o	control limits for sample GP22799-D1. RPD acceptable due to low
	Matrix: AO	Batch ID:	GP22800

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC92437-19DUP, JC92437-19MS, JC92437-19MSD were used as the QC samples for Nitrogen, Ammonia.

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General Chemistry By Method SM4500NO2 B-11

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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-11DUP, JC92437-11MS were used as the QC samples for Nitrogen, Nitrite.

General Chemistry By Method SM5210 B-11

Matrix: AQ	Batch ID:	GP22737
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- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-1DUP, JC92437-21DUP were used as the QC samples for BOD, 5 Day.

General Chemistry By Method SM5310 B-11

	Matrix: AQ	Batch ID:	GP22807
_	All samples were prepared within	n the recommended metho	d holding time

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-2MS, JC92437-2MSD were used as the QC samples for Total Organic Carbon.

Matrix: AQ	Batch ID:	GP22808
------------	-----------	---------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92437-10MS, JC92437-10MSD were used as the QC samples for Total Organic Carbon.

Matrix: AQ	Batch ID:	GP22855

All samples were prepared within the recommended method holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92354-3MS, JC92354-3MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover



Job Number:	JC92437
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/30/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC92437-1	BM-1S					
Alkalinity, Total Nitrogen, Ammo Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total F Solids, Total Disa Total Organic Ca	as CaCO3 ^a nia b + Nitrite Kjeldahl solved rbon	156 0.21 4.0 4.1 0.099 0.69 223 3.3	10 0.20 0.11 0.10 0.010 0.20 10 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC92437-2	BM-2S					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Total F Solids, Total Diss Solids, Total Sus Total Organic Ca	as CaCO3 ^a b + Nitrite Kjeldahl solved pended rbon	75.0 1.9 1.9 0.031 1.5 132 10.9 4.5	10 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC92437-3	BM-2M					
Alkalinity, Total Nitrogen, Ammo Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total B Solids, Total Diss Total Organic Ca	as CaCO3 ^a nia b + Nitrite Kjeldahl solved rbon	165 0.30 4.1 4.2 0.056 0.84 235 2.7	10 0.20 0.11 0.10 0.010 0.20 10 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC92437-4	BM-2D					
Alkalinity, Total Nitrogen, Ammo Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total F Solids, Total Diss Solids, Total Sus Total Organic Ca	as CaCO3 ^a nia b x + Nitrite Kjeldahl solved pended rbon	165 0.33 4.1 4.2 0.096 0.91 232 4.1 2.6	$ \begin{array}{c} 10\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

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SGS

JC92437

Job Number:	JC92437
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/30/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC92437-5	BM-5S					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total H Solids, Total Diss	as CaCO3 ^a + Nitrite Kjeldahl solved rbon	240 7.6 7.6 0.011 0.34 315	10 0.41 0.40 0.010 0.20 10		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 C-11
JC92437-6	BM-6S	1.7	1.0		ing/1	510510 5-11
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total F Solids, Total Dis Solids, Total Sus Total Organic Ca	as CaCO3 ^a b + Nitrite Kjeldahl solved pended rbon	111 1.8 1.8 0.029 0.69 126 10.0 3.7	10 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC92437-7	BM-6M					
Alkalinity, Total Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total F Solids, Total Dist Total Organic Ca	as CaCO3 ^a b + Nitrite Kjeldahl solved rbon	135 3.9 4.2 0.32 0.55 205 2.4	10 0.15 0.10 0.050 0.20 10 1.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC92437-8	BM-6D					
Alkalinity, Total Nitrogen, Ammo Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Total F Solids, Total Diss Solids, Total Sus Total Organic Ca	as CaCO3 ^a nia b + Nitrite Kjeldahl solved pended ^c rbon	196 1.2 2.9 3.0 0.12 1.7 241 8.2 2.4	$ \begin{array}{c} 10\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11





Job Number:	JC92437
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/30/19

Lab Sample ID Client Sample I Analyte	D Result/ Qual	RL	MDL	Units	Method
JC92437-9 BM-7S					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended ^c Total Organic Carbon	62.0 5.3 1.9 1.9 0.021 1.1 134 9.8 4.0	$ \begin{array}{c} 10 \\ 5.0 \\ 0.11 \\ 0.10 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0 \\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC92437-10 BM-7M					
Alkalinity, Total as CaCO3 ^a Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Total Organic Carbon	115 0.21 3.4 3.4 0.031 0.69 175 2.6	$ \begin{array}{c} 10\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC92437-11 BM-7D					
Alkalinity, Total as CaCO3 ^a Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	153 0.34 4.5 4.5 0.040 0.34 224 8.7 2.3	$ \begin{array}{c} 10\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC92437-12 BM-8S					
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	70.0 1.8 1.8 0.034 0.72 117 8.9 4.3	$ \begin{array}{c} 10\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

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JC92437

Job Number:	JC92437
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/30/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JC92437-13 BM-8M					
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b	84.0 2.2	10 0.11		mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite	2.2 0.030	0.10 0.010		mg/l mg/l	EPA 353.2/LACHAT SM4500NO2 B-11
Nitrogen, Total Kjeldahl Solids, Total Dissolved	0.98 130	0.20 10		mg/l mg/l	EPA 351.2/LACHAT SM2540 C-11
Solids, Total Suspended Total Organic Carbon	11.6 3.3	4.0 1.0		mg/l mg/l	SM2540 D-11 SM5310 B-11
JC92437-14 BM-8D					
Alkalinity, Total as CaCO3 ^a	115	10		mg/l	SM2320 B-11
Nitrogen Nitrate b	1.0	0.20		mg/l mg/l	SM4500NH3 H-IILACHAT
Nitrogen, Nitrate + Nitrite	2.5	0.11		mg/1 mg/1	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.050	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	3.6	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	219	10		mg/l	SM2540 C-11
Solids, Total Suspended	138	4.0		mg/l	SM2540 D-11
Total Organic Carbon	5.0	1.0		mg/l	SM5310 B-11
JC92437-15 BM-9S					
Alkalinity, Total as CaCO3 ^a	77.0	10		mg/l	SM2320 B-11
BOD, 5 Day	6.1	5.0		mg/l	SM5210 B-11
Nitrogen, Nitrate	1.9	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.9	0.10		mg/1	EPA 353.2/LACHAT
Nitrogen, Total Kieldehl	0.034	0.010		mg/1	SM4500NO2 B-11 EDA 251 2/LACHAT
Solids Total Dissolved	1.1	0.20 10		mg/1	SM2540 C 11
Solids, Total Suspended ^d	7.0	4.0		mg/1	SM2540 D-11
Total Organic Carbon	4.3	1.0		mg/l	SM5310 B-11
JC92437-16 BM-9M					
Alkalinity, Total as CaCO3 ^a	115	10		mg/l	SM2320 B-11
Nitrogen, Nitrate ^b	3.6	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.029	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.42	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	193	10		mg/l	SM2540 C-11
Solids, Total Suspended	4.1	4.0		mg/l	SM2540 D-11





Job Number:	JC92437
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/30/19

Lab Sample ID Client Sampl Analyte	e ID Result/ Qual	RL M	DL Units	Method
Total Organic Carbon	2.5	1.0	mg/l	SM5310 B-11
JC92437-17 BM-9D				
Alkalinity, Total as CaCO3 ^a Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	140 0.32 4.8 4.9 0.053 0.84 278 37.6 2.1	$ \begin{array}{c} 10\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $	mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC92437-18 BM-10S				
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon JC92437-19 BM-10M Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total Kjeldahl	79.0 1.8 1.8 0.027 1.1 124 10.8 3.5 90.0 2.4 2.4 0.028 1.3	$ \begin{array}{c} 10\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $ $ \begin{array}{c} 10\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ \end{array} $	mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11 SM5310 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT
Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	150 13.0 3.4	10 4.0 1.0	mg/l mg/l mg/l	SM2540 C-11 SM2540 D-11 SM5310 B-11
JC92437-20 BM-10D				
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended	180 5.7 5.7 0.018 3.4 247 112	10 0.31 0.30 0.010 0.20 10 4.0	mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11



Job Number:	JC92437
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	07/30/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Total Organic Carbon	2.4	1.0		mg/l	SM5310 B-11
JC92437-21 BM-11S					
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	70.0 3.7 3.7 0.44 125 6.8	10 0.11 0.10 0.20 10 4.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.

(d) Reported sample aliquot obtained from filtration of 500 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.





Dayton, NJ

Section 4

Sample Results

Report of Analysis



4



Client Sample ID:	BM-1S		
Lab Sample ID:	JC92437-1	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	156	10	mg/l	1	08/06/19 08:19	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:04	EB	SM5210 B-11
Nitrogen, Ammonia	0.21	0.20	mg/l	1	08/05/19 09:59	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.0	0.11	mg/l	1	08/05/19 16:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.1	0.10	mg/l	1	08/05/19 16:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.099	0.010	mg/l	1	07/30/19 22:52	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20	mg/l	1	08/07/19 10:58	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	223	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	3.3	1.0	mg/l	1	08/05/19 19:56	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-2S		
Lab Sample ID:	JC92437-2	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	75.0	10	mg/l	1	08/06/19 08:19	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:07	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:00	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.9	0.11	mg/l	1	08/05/19 16:34	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.9	0.10	mg/l	1	08/05/19 16:34	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.031	0.010	mg/l	1	07/30/19 22:52	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.5	0.20	mg/l	1	08/07/19 10:59	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	132	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	10.9	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	4.5	1.0	mg/l	1	08/07/19 16:01	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.









Client Sample ID:	BM-2M		
Lab Sample ID:	JC92437-3 Da	ate Sampled:	07/30/19
Matrix:	AQ - Surface Water Da	ate Received:	07/30/19
	Pe	ercent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

	D L	DI	T T 1 /	DE		р	
Analyte	Result	RL	Units	DF	Analyzed	Ву	Method
Alkalinity, Total as CaCO3 ^a	165	10	mg/l	1	08/06/19 08:19	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:11	EB	SM5210 B-11
Nitrogen, Ammonia	0.30	0.20	mg/l	1	08/05/19 10:02	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.1	0.11	mg/l	1	08/05/19 16:35	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.2	0.10	mg/l	1	08/05/19 16:35	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.056	0.010	mg/l	1	07/30/19 22:52	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.84	0.20	mg/l	1	08/07/19 11:00	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	235	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	2.7	1.0	mg/l	1	08/07/19 16:34	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2D		
Lab Sample ID:	JC92437-4	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	165	10	mg/l	1	08/06/19 08:19	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:15	EB	SM5210 B-11
Nitrogen, Ammonia	0.33	0.20	mg/l	1	08/05/19 10:06	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.1	0.11	mg/l	1	08/05/19 16:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.2	0.10	mg/l	1	08/05/19 16:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.096	0.010	mg/l	1	07/30/19 22:52	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.91	0.20	mg/l	1	08/07/19 11:01	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	232	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	4.1	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	08/07/19 16:45	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.






Client Sample ID:	BM-5S		
Lab Sample ID:	JC92437-5	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	240	10	mg/l	1	08/06/19 08:19	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:17	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:08	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	7.6	0.41	mg/l	1	08/05/19 17:25	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	7.6	0.40	mg/l	4	08/05/19 17:25	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.011	0.010	mg/l	1	07/30/19 22:52	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.34	0.20	mg/l	1	08/07/19 11:02	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	315	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	08/07/19 16:56	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6S		
Lab Sample ID:	JC92437-6	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	111	10	mg/l	1	08/06/19 08:19	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:20	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:09	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.8	0.11	mg/l	1	08/05/19 16:41	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.8	0.10	mg/l	1	08/05/19 16:41	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.029	0.010	mg/l	1	07/30/19 22:52	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20	mg/l	1	08/07/19 11:05	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	126	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	10.0	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	3.7	1.0	mg/l	1	08/07/19 17:07	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6M		
Lab Sample ID:	JC92437-7	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Bv	Method
					·	v	
Alkalinity, Total as CaCO3 ^a	135	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:23	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:11	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.9	0.15	mg/l	1	08/05/19 16:42	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.2	0.10	mg/l	1	08/05/19 16:42	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.32	0.050	mg/l	5	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.55	0.20	mg/l	1	08/07/19 11:06	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	205	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	08/07/19 17:51	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-6D		
Lab Sample ID:	JC92437-8	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	196	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:26	EB	SM5210 B-11
Nitrogen, Ammonia	1.2	0.20	mg/l	1	08/05/19 10:12	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.9	0.11	mg/l	1	08/05/19 16:43	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.0	0.10	mg/l	1	08/05/19 16:43	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.12	0.010	mg/l	1	07/30/19 23:09	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.7	0.20	mg/l	1	08/07/19 11:07	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	241	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended ^c	8.2	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	08/07/19 18:02	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.

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Client Sample ID:	BM-7S		
Lab Sample ID:	JC92437-9	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	62.0	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	5.3	5.0	mg/l	1	07/31/19 21:30	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:13	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.9	0.11	mg/l	1	08/05/19 16:44	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.9	0.10	mg/l	1	08/05/19 16:44	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.021	0.010	mg/l	1	07/30/19 23:09	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	08/07/19 11:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	134	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended ^c	9.8	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	4.0	1.0	mg/l	1	08/07/19 18:14	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.





Client Sample ID:	BM-7M		
Lab Sample ID:	JC92437-10	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	115	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:33	EB	SM5210 B-11
Nitrogen, Ammonia	0.21	0.20	mg/l	1	08/05/19 10:15	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.4	0.11	mg/l	1	08/05/19 16:45	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.4	0.10	mg/l	1	08/05/19 16:45	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.031	0.010	mg/l	1	07/30/19 23:09	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20	mg/l	1	08/07/19 11:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	175	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	08/07/19 18:47	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-7D		
Lab Sample ID:	JC92437-11	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

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Analyte	Result	KL	Units	DF	Analyzed	ву	Method
Alkalinity, Total as CaCO3 ^a	153	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:37	EB	SM5210 B-11
Nitrogen, Ammonia	0.34	0.20	mg/l	1	08/05/19 10:16	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.5	0.11	mg/l	1	08/05/19 16:46	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.5	0.10	mg/l	1	08/05/19 16:46	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.040	0.010	mg/l	1	07/30/19 23:09	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.34	0.20	mg/l	1	08/07/19 11:09	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	224	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	8.7	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	08/07/19 19:21	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8S		
Lab Sample ID:	JC92437-12	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	70.0	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:40	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:18	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.8	0.11	mg/l	1	08/05/19 16:47	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.8	0.10	mg/l	1	08/05/19 16:47	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.034	0.010	mg/l	1	07/30/19 23:09	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.72	0.20	mg/l	1	08/12/19 11:16	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	117	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	8.9	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	4.3	1.0	mg/l	1	08/07/19 19:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8M		
Lab Sample ID:	JC92437-13	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
]	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	84.0	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:43	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:19	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.2	0.11	mg/l	1	08/05/19 16:48	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10	mg/l	1	08/05/19 16:48	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.030	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.98	0.20	mg/l	1	08/07/19 11:11	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	130	10	mg/l	1	08/03/19 11:11	RC	SM2540 C-11
Solids, Total Suspended	11.6	4.0	mg/l	1	08/03/19 08:49	RC	SM2540 D-11
Total Organic Carbon	3.3	1.0	mg/l	1	08/07/19 20:06	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8D		
Lab Sample ID:	JC92437-14 Da	ate Sampled:	07/30/19
Matrix:	AQ - Surface Water Da	ate Received:	07/30/19
	Pe	ercent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

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Analyte	Result	KL	Units	DF	Analyzed	Ву	Method
Alkalinity, Total as CaCO3 ^a	115	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:45	EB	SM5210 B-11
Nitrogen, Ammonia	1.0	0.20	mg/l	1	08/05/19 10:23	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.5	0.11	mg/l	1	08/05/19 16:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.5	0.10	mg/l	1	08/05/19 16:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.050	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	3.6	0.20	mg/l	1	08/07/19 11:12	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	219	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	138	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	5.0	1.0	mg/l	1	08/07/19 20:17	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9S		
Lab Sample ID:	JC92437-15	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	77.0	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	6.1	5.0	mg/l	1	07/31/19 21:47	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:25	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.9	0.11	mg/l	1	08/05/19 16:53	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.9	0.10	mg/l	1	08/05/19 16:53	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.034	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	08/07/19 11:14	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	139	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended ^c	7.0	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	4.3	1.0	mg/l	1	08/07/19 20:28	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Reported sample aliquot obtained from filtration of 500 mL of sample. Volume was reduced from 1 liter as the sample clogged the filter at the higher volume.





Client Sample ID:	BM-9M		
Lab Sample ID:	JC92437-16	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	115	10	mg/l	1	08/06/19 08:45	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:50	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:26	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.6	0.11	mg/l	1	08/05/19 16:54	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10	mg/l	1	08/05/19 16:54	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.029	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.42	0.20	mg/l	1	08/12/19 11:17	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	193	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	4.1	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	2.5	1.0	mg/l	1	08/07/19 20:39	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9D		
Lab Sample ID:	JC92437-17	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	140	10	mg/l	1	08/06/19 09:00	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:52	EB	SM5210 B-11
Nitrogen, Ammonia	0.32	0.20	mg/l	1	08/05/19 10:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.8	0.11	mg/l	1	08/05/19 16:55	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.9	0.10	mg/l	1	08/05/19 16:55	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.053	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.84	0.20	mg/l	1	08/07/19 11:16	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	278	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	37.6	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	2.1	1.0	mg/l	1	08/07/19 20:50	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-10S		
Lab Sample ID:	JC92437-18	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
·					·	·	
Alkalinity, Total as CaCO3 ^a	79.0	10	mg/l	1	08/06/19 09:00	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:55	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:29	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.8	0.11	mg/l	1	08/05/19 16:56	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.8	0.10	mg/l	1	08/05/19 16:56	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.027	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	08/07/19 11:17	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	124	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	10.8	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	3.5	1.0	mg/l	1	08/07/19 21:02	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-10M		
Lab Sample ID:	JC92437-19 Date 3	Sampled:	07/30/19
Matrix:	AQ - Surface Water Date 2	Received:	07/30/19
	Perce	ent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	90.0	10	mg/l	1	08/06/19 09:00	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 21:59	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:41	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.4	0.11	mg/l	1	08/05/19 16:57	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	08/05/19 16:57	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.028	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.3	0.20	mg/l	1	08/07/19 11:18	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	150	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	13.0	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	3.4	1.0	mg/l	1	08/07/19 21:13	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-10D		
Lab Sample ID:	JC92437-20	Date Sampled:	07/30/19
Matrix:	AQ - Surface Water	Date Received:	07/30/19
	P	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	180	10	mg/l	1	08/06/19 09:00	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 22:04	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:42	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.7	0.31	mg/l	1	08/05/19 17:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.7	0.30	mg/l	3	08/05/19 17:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.018	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	3.4	0.20	mg/l	1	08/12/19 11:07	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	247	10	mg/l	1	08/01/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	112	4.0	mg/l	1	08/05/19 09:46	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	08/08/19 02:44	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-11S		
Lab Sample ID:	JC92437-21 Da	ate Sampled:	07/30/19
Matrix:	AQ - Surface Water Da	ate Received:	07/30/19
	Pe	crcent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

						_	
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	70.0	10	mg/l	1	08/06/19 09:28	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	07/31/19 22:21	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/05/19 10:44	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.7	0.11	mg/l	1	08/05/19 17:06	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.7	0.10	mg/l	1	08/05/19 17:06	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/30/19 23:23	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.44	0.20	mg/l	1	08/12/19 11:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	125	10	mg/l	1	08/01/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	6.8	4.0	mg/l	1	08/01/19 09:50	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	08/08/19 02:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.











Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



506	SW C	SGS North America Inc 2235 Route 130, Dayton, NJ EL 732-2392000 FAX: 723 202	TODY Dayton 08810	FED-EX Tracking #	Page 1 of	<u>2</u>
Client / Reporting Information		www.sgs.com/ehsusa	9-3499/3480	SGS Quale #	565 Job 8 7 6 7 1	(0)
Company Name:	Project Neme: Pr	roject Information			J(729	3/
U.S. ABMY COODS OF EDDING	USAGE Da	Car Di		Requested /	nalysis	Matrix Codes
Street Address	Streat	eirs - Dive M	ARSH			DW - Drinking Water
100 Penn SR. East		Different de				GW - Ground Water
DA IGUE	City Sta	alle Company Name	n Report to)	N 2 2 3		SW - Surface Water
Protect Contact E-mail	Keading PA					SL-Studge
Jee Loeper		Straet Address				SED-Sedment OI-OI
Phone #	Client Purchase Order	Cây		RSII		LIQ - Other Liquid AIR - Alt
413.056.0545 Sampleda) Name/a)	1		oute Zip	日に日に		SOL - Other Solid WP - Wine
GOO Wack Gio - Phone #	Project Manager	Altertion:		3 - 5 19 0 0		FB - Field Blank
Greg Wach 541.4180	Inmmy McClosker	4		3 7 6 0		R8 - Rinee Blank
	Cone	action	Number of preserved Bottos	5 5 9 7 9		118 - Trip Blank
Barrete # Field ID / Point of Collection	MECHINIXIA	Semucled Grav (G) # cf	동 ~ ~ 별 분 뿐	もばのない		
IFRM-19	76.1	e by Compilic, Matthe bolitions	HIN NUCLEAR AND NU	HAWEL		
26 0 20	1/30/19 11	ONTGSWA	XXX	XXXXXX	┼╌┾╶┼╶┼╶┤	C = D
21 Din.as	0945	GIGISW 9	XX		┟╼┼╼┼╼┼╸	USS
DF BM-2M	094	5 6 8419				651
YF BM.2D	8944			XXXXX		LISTI
SF BM-55	111	all a swit		XXXXX		ISEL
6F BM-105	- Mark	1 a Drol &	XXX	XXXXXX		
7F BM - LOM		9 0 500 9	XX	XXXXXX		
SE BO LOD		5 16 SW 9	XXIII	XXXXX		
AC BM TS		G G S W 9	XXX	XVXXX	┝╼┼╾┼╾┼	
4F 011-75		LGSW9	XXX		┝╼┼╸┼╸┽╶┽	
OF BM. /M	1 1015	G(Su) 9	x			
UP BM. 70	1015	V GSUNG		XXXXX		
			~+-M-++++	XXXXX		
Turn Around Time (Busit	ness Days)					
	opproved By (SGS PM); / Dete;	Commercial "A" (Level 1)	Deliverable		Comments / Special Instru-	ctions
5 Business Days		Commercial "B" (Level 2)	NYASP Catagory A	DOD-QSAIS		
3 Business Days"		NJ Roduced (Lovel 3)	MA MCP Criteria	ſ	•	
2 Businese Days*		Full Tier I (Lavol 4)	CT RCP Criteria		ITIAL ASECOMENT 36	Alzr D
1 Business Day		Commercial "C"	State Forms		THAL ASESSIVENT	4
All date graniet (SP Ca Cabler)		Commercial *** -	EDD Format	· · · · · · · · · · · · · · · · · · ·	BEL VERIFICATION	
Approv	Sabole Custode A	Commercial "C	* Results + OC Summarcial "8" = Results +	OC Summary		
a Constant Starte	L'CD Received By:	Rel	samples change possession, includ	ng courier delivery.	http://www.sos.com/en/terns-e	and-conditions
Relinquishet P	- 30 1/	2	L (\neq)	Rola SW	lacolved By:	
Railmautored by	11413		Inquished By:	Date / Timer	tocalinad the	
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JC92437: Chain of Custody Page 1 of 3



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GAG	CH	AIN OF CUSTODY		Page 20	f_2
	3	2235 Route 130, Dayton, NJ 08810	FED-EX Tracking #	Bottle Onder Control #	7
e	TEL.	732-329-0200 FAX: 732-329-3499/3480	SGS Ounde #	SGS Jaco # T(97427
Client / Reporting Information	Project Neme: Project	ct Information	Requested	Analysis	Matrix Codes
U.S. ARMY CORDS OF ENG	USACE Resen	voirs - Blue Marsh	2 3		DW - Drinking Weller
100 Pen Sy East		Billing briographics (# different from Revented)	001		WW - Water SW - Surface Water
Phila PA 1910-7	Readiate PA	Company Name	8 3 2		SO - Soli SL- Skidge
Protect Contact E-mail	Protect #	Straet Address	12 <u>2</u> <u>2</u>		SED-Sedment OI - OS
SOL LOLPER	Client Purchasa Order /	C2v	ALO		UQ - Other Liqvid AIR - Air
215-656-6545		State Zp	F ISO		WP - Wips FB - Field Blank
Area Wacik 597.9780	TA manay Mac Lachay	Allerston:			E8-Equipment Blank R8 - Rinse Blank
p	Cottector	n - Number of preserved Bobos			TB - Trip Blank
SGS		Sumpled grave(a) # of T T T O W S T O	Pol Pol		
17 C BM - CC	Time Date Time		Hawr		LAB USE ONLY
ISE AM OM	1/3919 11:40	A GSW 9 X X	XXXX		
HE BM 80	0.48	GSW YX X	XXXX		
ISF BM-95	1.90		XXXX		
Ibel Bm. 9m	10.75		XXXX		
17F BM 90	10:44	CE SIAL O X V	XXXX		
18F BM-105	1115	GSW 9 X X			
ISF BM-10M	11:15	G DW 9 X X		╺┼╾┼╶┼╶┤	
201 BA.10D	11:15	GSW 9 X X	XXXX		
21F BM - 115	1/0	V G SW 9 X X	XXXX	+	
	· · · · · · · · · · · · · · · · · · ·				
Turn Around Time (Bu	(aug)		•		
	Approved By (SGS PM): / Date:	Commercial "A" (Level 1) NYASP Category A		Comments / Specia	al Instructions
10 Business Days		Commercial "B" (Level 2) NYASP Category B			
3 Business Days*		Full Tier / (Level 4) GT RCP Criteria GT RCP Criteria			
2 Business Days"		Commercial "C" State Forme	-		
Other		Commercial "A" = Results only Commercial "I" = 0	-	;	
Aa uguravallable Aa Labink / Appr	rovel needed for 1-3 Business Day YAT	Commercial C. Beauting + OC Summery + Perior Re-	aw data	http://www.sps.com/en	Merms-and-conditions
ac 15	9/58 Received Br	Retinguished By:	Deta / Time: 130	Racolved By:	
Relinguished by	a: , 741 Rocalland By:	A Rollnquished By:	/ 30/4	Received Be	<u>´</u>
Detty haughted by: Dete / Tipe	e: Recolved By:	Custody Seal #	tacl Preserved where soulicable	4 On Ira	Copier Term T 5 2
]5		Act mises Absects Direm.	.10: 0	3.6.20

JC92437: Chain of Custody Page 2 of 3



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SGS Sample Receipt Summary

Job Number:	JC92437	Client:	USACE-PHILAE	DELPHIA DIS	TRICT	Project: PHILAI	DELPHIA DISTR	RICT,	RESERVC	OIR SAMPL
Date / Time Received:	7/30/2019 5:41:	:00 PM	Delivery Metho	od:		Airbill #'s:				
Cooler Temps (Raw Mea Cooler Temps (Corr	sured) °C: Co rected) °C: Co	ooler 1: (3.6); ooler 1: (3.5);	Cooler 2: (3.8); Cooler 2: (3.7);	Cooler 3: (3 Cooler 3: (3	.7); Cooler 4: (3.2 .6); Cooler 4: (3.1); Cooler 5: (3.2);); Cooler 5: (3.1);	Cooler 6: (3.3); Cooler 6: (3.2);	Coo Coo	ler 7: (3.5) ler 7: (3.4)	
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature 1. Temp criteria achieved: 2. Cooler temp verification: 3. Cooler media: 4. No. Coolers:	<u>Y or N</u> ✓ □ ✓ □ ✓ □ IR G IR G IR G	3. COC Pr 4. Smpl Date: <u>N</u> Sun 3ag)	yesent: v s/Time OK v	<u>or N</u>	Sample Integrity 1. Sample labels p 2. Container labeli 3. Sample contain Sample Integrit 1. Sample necvd w 2. All containers a 3. Condition of sam	y - Documentation present on bottles: ing complete: her label / COC agre ty - Condition vithin HT: inccounted for: mole:	<u>n</u> . e:	Y V V Y	or N or N ntact	
Quality Control _Preserv 1. Trip Blank present / cool 2. Trip Blank listed on COO 3. Samples preserved prop 4. VOCs headspace free:	ation Y or er: □ :: □ werly: ✓	<u>N</u> N/A V V N N V			Sample Integrit 1. Analysis reque 2. Bottles receive 3. Sufficient volur 4. Compositing in 5. Filtering instruct	ty - Instructions ested is clear: ed for unspecified test me recvd for analysi instructions clear: ctions clear:	sts s:	Y .	or N	N/A V
Test Strip Lot #s:	pH 1-12:	229517		pH 12+:	208717	Other: (Sp	pecify)			
Comments										

SM089-03 Rev. Date 12/7/17

> JC92437: Chain of Custody Page 3 of 3

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S





Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

08/14/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC92437XA



Sampling Date: 07/30/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 26



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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3.1: Chain of Custody	24

Sample Summary

USACE-Philadelphia District

Job No: JC92437XA

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC92437-1F	07/30/19	07:10 GW	07/30/19	AQ	Surface H2O Filtered	BM-1S
JC92437-1XA	07/30/19	07:10 GW	07/30/19	AQ	Surface Water	BM-1S
JC92437-2F	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2S
JC92437-2XA	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2S
JC92437-3F	07/30/19	09:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-2M
JC92437-3XA	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2M
JC92437-4F	07/30/19	09:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-2D
JC92437-4XA	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2D
JC92437-5F	07/30/19	13:10 GW	07/30/19	AQ	Surface H2O Filtered	BM-5S
JC92437-5XA	07/30/19	13:10 GW	07/30/19	AQ	Surface Water	BM-5S
JC92437-6F	07/30/19	08:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-6S
JC92437-6XA	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6S
JC92437-7F	07/30/19	08:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-6M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC92437XA

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC92437-7XA	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6M
JC92437-8F	07/30/19	08:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-6D
JC92437-8XA	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6D
JC92437-9F	07/30/19	10:15 GW	07/30/19	AQ	Surface H2O Filtered	BM-7S
JC92437-9XA	07/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7S
JC92437-10F	07/30/19	10:15 GW	07/30/19	AQ	Surface H2O Filtered	BM-7M
JC92437-10X	407/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7M
JC92437-11F	07/30/19	10:15 GW	07/30/19	AQ	Surface H2O Filtered	BM-7D
JC92437-11X	407/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7D
JC92437-12F	07/30/19	11:40 GW	07/30/19	AQ	Surface H2O Filtered	BM-8S
JC92437-12X	A07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8S
JC92437-13F	07/30/19	11:40 GW	07/30/19	AQ	Surface H2O Filtered	BM-8M
JC92437-13X	A07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC92437XA

Sample Number	Collected Date	Time By	Received	Matri Code	іх Туре	Client Sample ID
JC92437-14F	07/30/19	11:40 GW	07/30/19	AQ	Surface H2O Filtered	BM-8D
JC92437-14X	A07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8D
JC92437-15F	07/30/19	10:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-9S
JC92437-15X	A07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9S
JC92437-16F	07/30/19	10:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-9M
JC92437-16X	A07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9M
JC92437-17F	07/30/19	10:45 GW	07/30/19	AQ	Surface H2O Filtered	BM-9D
JC92437-17X	A07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9D
JC92437-18F	07/30/19	11:15 GW	07/30/19	AQ	Surface H2O Filtered	BM-10S
JC92437-18X	A07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10S
JC92437-19F	07/30/19	11:15 GW	07/30/19	AQ	Surface H2O Filtered	BM-10M
JC92437-19X	A07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10M
JC92437-20F	07/30/19	11:15 GW	07/30/19	AQ	Surface H2O Filtered	BM-10D





Sample Summary (continued)

USACE-Philadelphia District

Job No: JC92437XA

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC92437-20X	A07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10D
1002427 215	07/20/10	12 10 CW	07/20/10			DV (110
JC92437-21F	07/30/19	13:10 GW	07/30/19	AQ	Surface H2O Filtered	BM-11S
JC92437-21X	A07/30/19	13:10 GW	07/30/19	AQ	Surface Water	BM-11S





Section 2

Subcontract Lab Data

Report of Analysis





Attention: Tammy McCloskey Reported To: SGS North America 2235 US Highway 130 Dayton, NJ 08810

Lab ID: 9027747-01 Collected By: Client Sample Desc: BM-1S

Certificate of Analysis

Laboratory No.: 9027747 Report: 08/12/19 Lab Contact: Amy L Morriss

Project: Army Corp Reservoirs

Sampled: 07/30/19 07:10 Received: 08/08/19 09:42 Sample Type: Grab

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.04	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL	

Lab ID: 9027747-02 Collected By: Client Sample Desc: BM-2S

Sampled: 07/30/19 09:45

Received: 08/08/19 09:42 Sample Type: Grab

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL	

Lab ID: 9027747-03 Collected By: Client Sample Desc: BM-2M

Sampled: 07/30/19 09:45

Received: 08/08/19 09:42 Sample Type: Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr	ry							
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL



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Lab ID: 9027747- Sample Desc: BM-2D	04 Col	lected By:	Client		Sampled: 07/3	30/19 09:45	Receive Sample Typ	ed: 08/08/19 09:42 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.05	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL
Lab ID: 9027747- Sample Desc: BM-5S	05 Col	lected By:	Client		Sampled: 07/3	30/19 13:10	Receive Sample Typ	ed: 08/08/19 09:42 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	0.04	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL
Lab ID: 9027747- Sample Desc: BM-6S	06 Col	lected By:	Client		Sampled: 07/3	30/19 08:45	Receive Sample Typ	ed: 08/08/19 09:42 De: Grab
Lab ID: 9027747- Sample Desc: BM-6S	06 Col	lected By: Unit	Client	Rep. Limit	Sampled: 07/: Procedure	30/19 08:45 Analyzed	Receive Sample Typ Notes	ed: 08/08/19 09:42 De: Grab
Lab ID: 9027747- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved	06 Col Result	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E	30/19 08:45 Analyzed 08/09/19	Receive Sample Typ Notes G-11, J	ed: 08/08/19 09:42 pe: Grab Analyst JCL
Lab ID: 9027747- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	06 Col <u>Result</u> ry 0.02	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure 3 SM 4500-P E 3	30/19 08:45 Analyzed 08/09/19 08/09/19	Receive Sample Typ Notes G-11, J J	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL
Lab ID: 9027747- Sample Desc: BM-6S Dissolved General Chemiste Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747- Sample Desc: BM-6M	06 Col Result TY 0.02 0.02 07 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3	30/19 08:45 Analyzed 08/09/19 08/09/19 30/19 08:45	Receive Sample Typ Notes G-11, J J Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL id: 08/08/19 09:42 pe: Grab
Lab ID: 9027747- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747- Sample Desc: BM-6M	06 Col Result ^{YY} 0.02 0.02 07 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 07/3	30/19 08:45 Analyzed 08/09/19 08/09/19 30/19 08:45 Analyzed	Receive Sample Typ Notes G-11, J J Receive Sample Typ Notes	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL ed: 08/08/19 09:42 pe: Grab Analyst
Lab ID: 9027747- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747- Sample Desc: BM-6M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	06 Col Result Y 0.02 0.02 07 Col Result Y 0.01	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Limit 0.05	Sampled: 07/3 Procedure SM 4500-P E Sampled: 07/3 Procedure SM 4500-P E	30/19 08:45 Analyzed 08/09/19 08/09/19 30/19 08:45 Analyzed 08/09/19	Receive Sample Type G-11, J J Sample Type Sample Type Onotes G-11, J	ed: 08/08/19 09:42 pe: Grab Analyst JCL jCL ed: 08/08/19 09:42 pe: Grab Analyst JCL



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Lab ID: 902774 Sample Desc: BM-6D	7-08 Col	lected By:	Client		Sampled: 07/3	30/19 08:45	Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemis Phosphorus as P, Dissolved	0.06	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11	JCL
General Chemistry Phosphorus as P, Total	0.08	mg/l	0.01	0.05	SM 4500-P E	08/09/19		JCL
Lab ID: 902774* Sample Desc: BM-7S	7-09 Col	lected By:	Client		Sampled: 07/3	30/19 10:15	Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemis Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.05	SM 4500-P E	08/09/19		JCL
Lab ID: 902774 Sample Desc: BM-7M	7-10 Col	lected By:	Client		Sampled: 07/3	30/19 10:15	Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab
Lab ID: 902774 Sample Desc: BM-7M	7-10 Col	lected By: Unit	Client MDL	Rep. Limit	Sampled: 07/3	30/19 10:15 Analyzed	Receive Sample Typ Notes	ed: 08/08/19 09:42 oe: Grab Analyst
Lab ID: 902774 Sample Desc: BM-7M Dissolved General Chemis Phosphorus as P, Dissolved	7-10 Col Result	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E	30/19 10:15 Analyzed 08/09/19	Receive Sample Typ Notes G-11, J	ed: 08/08/19 09:42 pe: Grab Analyst JCL
Lab ID:902774'Sample Desc:BM-7MDissolved General Chemist Phosphorus as P, DissolvedChemist Phosphorus as P, Total	7-10 Col Result stry 0.02 0.03	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E	30/19 10:15 Analyzed 08/09/19 08/09/19	Receive Sample Typ Notes G-11, J J	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL
Lab ID:902774'Sample Desc:BM-7MDissolved General Chemist DissolvedChemist Chemist Phosphorus as P, TotalLab ID:902774'Sample Desc:BM-7D	7-10 Col Result stry 0.02 0.03 7-11 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3	30/19 10:15 Analyzed 08/09/19 08/09/19 30/19 10:15	Receive Sample Typ Notes G-11, J J Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL ed: 08/08/19 09:42 pe: Grab
Lab ID:902774'Sample Desc:BM-7MDissolved General Chemist Phosphorus as P, DissolvedChemist Phosphorus as P, TotalLab ID:902774'Sample Desc:BM-7D	7-10 Col Result 0.02 0.03 7-11 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3 Procedure	30/19 10:15 Analyzed 08/09/19 08/09/19 30/19 10:15 Analyzed	Receive Sample Typ Notes G-11, J J Receive Sample Typ Notes	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL ed: 08/08/19 09:42 pe: Grab Analyst
Lab ID: 902774' Sample Desc: BM-7M Dissolved General Chemistry Dissolved General Chemistry Phosphorus as P, Total Lab ID: 902774' Sample Desc: BM-7D Dissolved BM-7D Dissolved BM-7D Dissolved BM-7D Dissolved BM-7D	7-10 Col Result stry 0.02 0.03 7-11 Col stry 0.03	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 0.01 Client 0.007 0.007	Rep. 0.05 0.05 Limit	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3 Procedure SM 4500-P E	30/19 10:15 Analyzed 08/09/19 08/09/19 30/19 10:15 Analyzed 08/09/19	Receive Sample Typ Otes G-11, J J Receive Sample Typ Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL ed: 08/08/19 09:42 pe: Grab Analyst JCL



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Lab ID: 9027747 Sample Desc: BM-88	-12 Col	lected By:	Client		Sampled: 07/3	30/19 11:40	Receive Sample Typ	d: 08/08/19 09:42 pe: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL
Lab ID: 9027747 Sample Desc: BM-8M	-13 Col	lected By:	Client		Sampled: 07/3	30/19 11:40	Receive Sample Typ	d: 08/08/19 09:42 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemist Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL
Lab ID: 9027747 Sample Desc: BM-8D	-14 Col l	lected By:	Client		Sampled: 07/3	30/19 11:40	Receive Sample Typ	d: 08/08/19 09:42 be: Grab
Lab ID: 9027747 Sample Desc: BM-8D	-14 Coll Result	lected By: Unit	Client	Rep. Limit	Sampled: 07/3	30/19 11:40 Analyzed	Receive Sample Typ Notes	d: 08/08/19 09:42 pe: Grab Analyst
Lab ID: 9027747 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved	-14 Coll Result	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E	30/19 11:40 Analyzed 08/09/19	Receive Sample Typ Notes G-11, J	d: 08/08/19 09:42 pe: Grab Analyst JCL
Lab ID: 9027747 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	-14 Coll <u>Result</u> rry 0.04 0.68	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E	30/19 11:40 Analyzed 08/09/19 08/09/19	Receive Sample Typ Notes G-11, J	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL
Lab ID: 9027747 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747 Sample Desc: BM-9S	-14 Coll Result Try 0.04 0.68 -15 Coll	Unit mg/l mg/l Hected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3	30/19 11:40 Analyzed 08/09/19 08/09/19 30/19 10:45	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL d: 08/08/19 09:42 pe: Grab
Lab ID: 9027747 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747 Sample Desc: BM-9S	-14 Coll <u>Result</u> 17 0.04 0.68 -15 Coll Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3 Procedure	30/19 11:40 Analyzed 08/09/19 08/09/19 30/19 10:45 Analyzed	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL d: 08/08/19 09:42 pe: Grab Analyst
Lab ID: 9027747 Sample Desc: BM-8D Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747 Sample Desc: BM-9S Dissolved General Chemist Phosphorus as P, Dissolved General Chemist	-14 Coll <u>Result</u> (TY) 0.04 0.68 -15 Coll <u>Result</u> (TY) 0.02	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL 0.007	Rep. 0.05 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3 Procedure SM 4500-P E	30/19 11:40 Analyzed 08/09/19 08/09/19 30/19 10:45 Analyzed 08/09/19	Receive Sample Typ G-11, J Receive Sample Typ Notes G-11, J	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL d: 08/08/19 09:42 pe: Grab Analyst JCL



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Lab ID: 9027747- Sample Desc: BM-9M	16 Coll	lected By:	Client		Sampled: 07/3	80/19 10:45	Receive Sample Typ	ed: 08/08/19 09:42 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
General Chemistry Phosphorus as P, Total	0.03	mg/l	0.01	0.05	SM 4500-P E	08/09/19	J	JCL
Lab ID: 9027747- Sample Desc: BM-9D	17 Col l	lected By:	Client		Sampled: 07/3	30/19 10:45	Receive Sample Typ	ed: 08/08/19 09:42 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	0.02	mg/l	0.007	0.05	SM 4500-P E	08/09/19	G-11, J	JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.05	SM 4500-P E	08/09/19		JCL
Lab ID: 9027747- Sample Desc: BM-10S	18 Col l	lected By:	Client		Sampled: 07/3	30/19 11:15	Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab
Lab ID: 9027747- Sample Desc: BM-10S	18 Coll	lected By: Unit	Client	Rep. Limit	Sampled: 07/3	30/19 11:15 Analyzed	Receive Sample Typ Notes	ed: 08/08/19 09:42 pe: Grab Analyst
Lab ID: 9027747- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved	18 Coll <u>Result</u> Y <0.007	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E	30/19 11:15 Analyzed 08/09/19	Receive Sample Typ Notes G-11, U	ed: 08/08/19 09:42 De: Grab Analyst JCL
Lab ID: 9027747- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	18 Coll <u>Result</u> Y <0.007 0.05	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E	30/19 11:15 Analyzed 08/09/19 08/09/19	Receive Sample Typ Notes G-11, U J	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL
Lab ID: 9027747- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747- Sample Desc: BM-10M	18 Coll <u>Result</u> Y <0.007 0.05 19 Coll	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3	30/19 11:15 Analyzed 08/09/19 08/09/19 30/19 11:15	Receive Sample Typ Notes G-11, U J Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL ed: 08/08/19 09:42 pe: Grab
Lab ID: 9027747- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747- Sample Desc: BM-10M	18 Coll Result Y <0.007	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 0.01 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3 Procedure	30/19 11:15 Analyzed 08/09/19 08/09/19 30/19 11:15 Analyzed	Receive Sample Typ Notes G-11, U J Receive Sample Typ	ed: 08/08/19 09:42 pe: Grab Analyst JCL JCL ed: 08/08/19 09:42 pe: Grab Analyst
Lab ID: 9027747- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9027747- Sample Desc: BM-10M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	18 Coll Result 'Y 0.007 0.05 19 Coll Result 'Y 0.03	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 0.01 Client MDL 0.007	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 07/3 Procedure SM 4500-P E SM 4500-P E Sampled: 07/3 Procedure SM 4500-P E	30/19 11:15 Analyzed 08/09/19 08/09/19 30/19 11:15 Analyzed 08/08/19	Receive Sample Typ G-11, U J Receive Sample Typ Notes G-11, J	ed: 08/08/19 09:42 pe: Grab Analyst JCL jCL ed: 08/08/19 09:42 pe: Grab Analyst JCL



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Lab ID: 902774 Sample Desc: BM-10	7-20 Col	lected By:	Client		Sampled: 07/2	30/19 11:15 Sa	Receive ample Typ	ed: 08/08/19 09:42 pe: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemi	stry							
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.21	mg/l	0.01	0.05	SM 4500-P E	08/08/19		JCL
Lab ID: 902774 Sample Desc: BM-11	17-21 Col S	lected By:	Client		Sampled: 07/	30/19 13:10 Sa	Receive ample Typ	ed: 08/08/19 09:42 pe: Grab
				Dec				
	Result	Unit	MDL	кер. Limit	Procedure	Analyzed	Notes	Analyst

Dissolved General Chemistry	у								
Phosphorus as P,	0.03	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL	
Dissolved									
General Chemistry									
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL	



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Quality Control

General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9H0457	neour		omto	, state	Linito	iu b	Linny	110100
MB (B9H0457-BLK1)				Prepared & An	alyzed: 08/08/20)19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9H0457-BLK2)				Prepared & An	alyzed: 08/08/20)19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9H0457-BLK3)				Prepared & An	alvzed: 08/08/20)19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
LFB (B9H0457-BS1)				Prepared & An	alvzed: 08/08/20)19		
Phosphorus as P, Total	1.00	0.05	mg/l	99.6	80-120			
Batch B9H0517								
MB (B9H0517-BLK1)				Prepared & An	alyzed: 08/09/20)19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9H0517-BLK2)				Prepared & An	alyzed: 08/09/20)19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
LFB (B9H0517-BS1)				Prepared & An	alyzed: 08/09/20)19		
Phosphorus as P, Total	1.01	0.05	mg/l	101	80-120			
LFM (B9H0517-MS1)		Source: 9027747-03		Prepared & An	alvzed: 08/09/20)19		
Phosphorus as P, Total	1.00	0.05	mg/l	98.5	80-120			
LFMD (B9H0517-MSD1)		Source: 9027747-03		Prepared & An	alyzed: 08/09/20)19		
Phosphorus as P, Total	1.00	0.05	mg/l	98.3	80-120	0.200	20	
		Dissol	ved Gen	eral Chemisti	'Y			
		Reporting			%REC		RPD	Analyte
	Result	Limit	Units	%REC	Limits	RPD	Limit	Notes

	Result	Limit	Units	%REC	Limits	RPD	Limit	Notes
Batch B9H0458								
MB (B9H0458-BLK1)				Prepared & Ana	lyzed: 08/08/20	19		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					G-11, U
LFB (B9H0458-BS1)				Prepared & Ana	lyzed: 08/08/20	19		
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.5	80-120			G-11
Batch B9H0518								
MB (B9H0518-BLK1)				Prepared & Ana	lyzed: 08/09/20	19		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					G-11, U
MB (B9H0518-BLK2)				Prepared & Ana	lyzed: 08/09/20	19		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					U
LFB (B9H0518-BS1)				Prepared & Ana	lyzed: 08/09/20	19		
Phosphorus as P, Dissolved	1.00	0.05	mg/l	100	80-120			G-11



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	Dissolved General Chemistry (Continued)								
	Result	Reporting Limit	Units	%REC %REC Limits RPD			RPD Limit	Analyte Notes	
Batch B9H0518 (Continued)									
LFM (B9H0518-MS1)		Source: 9027747-16		Prepared & Ana	alyzed: 08/09/20)19			
Phosphorus as P, Dissolved	1.00	0.05	mg/l	98.5	80-120				
LFMD (B9H0518-MSD1)		Source: 9027747-16		Prepared & Ana	alyzed: 08/09/20)19			
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.1	80-120	0.601	20		



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Preparation Methods

Specific Method	Preparation Method	Prepared Date	Prepared By
9027747-01			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-02			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-03			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-04			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-05			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-06			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-07			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-08			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-09			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-10			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-11			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-12			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-13			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-14			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9027747-15			
SM 4500-P E	SM 4500-P B	08/09/2019	JCL



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JC92437XA

9	027747-16			
	SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9	027747-17			
	SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9	027747-18			
	SM 4500-P E	SM 4500-P B	08/09/2019	JCL
9	027747-19			
	SM 4500-P E	SM 4500-P B	08/08/2019	JCL
9	027747-20			
	SM 4500-P E	SM 4500-P B	08/08/2019	JCL
9	027747-21			
	SM 4500-P E	SM 4500-P B	08/08/2019	JCL

Notes and Definitions

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



107 Angelica Street 🔾 Reading, PA 19611 🔾 www.mjreider.com 🔾 (610) 374-5129 🔾 fax (610) 374-7234

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															_		~																JULION L	
PM: ALM				DW - Drinking Water	WW - Ground Water WW - Water	SV- Source vvater SC- Source SLD-Studge SED-Sediment	01 - 02 L4O - Other Liquid AIR - Air	SOL - Other Solid WP - Wpe FB - Freid Blank	EB-Equipment Blank RB - Rinse Blank TB - Tins Blank		LAB USE ONLY													tions						com/en/lerms-and-conditions		·	o vala a	Cooler Temp. 'C
027747 North America	Corp Reservoirs																							Comments / Special Instruc						http://www.sgs		No: A Raceived By:	me: q: y 2 Racewood of www.	applicable Conto
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λαο	aytori 8810 499/3480					eni from Report to)		State Zip		- Number of preserved Bottles	ENCOBE WEOH DI Meter NOVE H ⁵ 20 [•] H ⁵ 20 [•] HNO ² NBOH													Deliverable Information	svel 1) VASP Categ	vel 2) VASP Categ	D EDD Format	X Other REDT	al "A" = Results Only	al "B" = Results + QC Summary al "C" = Results + QC Summary + Par	te samples change possession,	Relinquished By: Feol	Relinquished By	Custody Seal #
N OF CUST	th America Inc D: ute 130, Dayton, NJ 06 -0200 FAX: 732-329-3 www.sos.com/obsusa	Information				Billing Information (if differ Company Name	Sireel Address	City	Attention		Sampted # of by Matrix bottles	GW AQ	Data	Commercial "A" (Le	Commercial "8" (Lt	NJ Reduced	Commercial "C"	Commerce	Commerce	ocumented below each tin	lux													
CHAIN	SGS Nor 2235 Ro TEL. 732-329, w	Project		cl, Reservoir Sampling		State				Collection	Date	7/30/19 7:10:00 AM	7/30/19 7:10:00 AM	7/30/19 9:45:00 AM	7/30/19 1:10:00 PM	7/30/19 1:10:00 PM	7/30/19 8:45:00 AM	7/30/19 8:45:00 AM		Date:		1		-	rgency IAT	ample Custody must be d	Mark HOO	ved By:	ved By					
			Project Name	Philadelphia Distri	Street	Zip City	Project #	Client Purchase Order	Pitone Project Manager		MEOH:DI Visi #														Approved By (SGS PM): /					oproval needed for RUSH/Erne	S LAIN S	8/19 11 20 1000	ate / Time: Recer	ale / Time: Recei
		Client / Reporting Information	Company Name.		Street Address	City State 2	Project Contact E-mail tamrny.mccloskey@sgs.com	Phone #	Sampler(s) Namers) GW		Sample Field ID / Point of Collection	1XA BM-fS	1F BM-1S ~ ~ 0 {	2XA BM-2S >	2F BM-2S - 02	3XA BM-2M	3F BM-2M ~~-03	4XA BM-2D	4F BM-2D / - 04	5XA BM-5S	5F BM-5S ~~05	exa BM-65	6F BM-65 ~ 0 Q	Turnargund Time (Business days)		6 Business Davs RUSH	3 Business Days RUSH	2 Business Days RUSH	1 Bushess Day EMERGENCY [V] Other	Endreen & Ruspill data available via Labink Ar	(X INV .	Cheul Vurchuge	Relivedushed by: 3	Relinquished by: 5

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Project #			Street Ac	ddress					V						OI - Other Liquid	
Client Purchase Order #			City			State		Zip	x						SOL - Other Solid WP - Wipe	
Phone Project Manager			Attention						1504 '						FB - Field Blank EB-Equipment Blank RB - Rinse Blank	
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MEOH/DI Vial # Date	•	Time	Sampled	Matrox	a of bottles	HMO* M®OH HCI	NONE *OS ⁺ H	ENCOBE WEOH DI M ⁹¹⁶¹	ษรมาษ	, 409T						
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Approval operated for RUSH/Emeroance TAT	101				Commercial	"B" = Res	ults + QC 5	Summary								
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ade Jyme Eversale CULLEOP DW - Christong Water WW - Cround Water WW - Vister WW - Surface Water SO - Sold SOL - Other Lequid SOL - Other Lequid SOL - Other Lequid SOL - Other Lequid SOL - Other Sold WP - Wipe FB - Field Bank LAB USE ONLY Matrix Codes http://www.sgs.com/en/terms-and-conditions Cooler Temp. "C JC92437XA Comments / Special Instructions 5 Bottle Order Control # # dol. 208 eceived Bv ved Requested Analysis Therm ID ート:加un Date (Time: Proserved where applicable Commercal "B" = Aesuls = OC 8ummary Commercal "C" = Resuls = OC 8ummary = Partial Raw data commercal "C" = Resuls = OC 8ummary = Partial Raw data cumented befow cach time samples change possession, including courtier delivery. Absent FED-EX Tracking # × × × × × × 40d1 SGS Quote # Intacl Notintacl NYASP Category A NYASP Category B State Forms ED0 Format X Other <u>REDT2</u> +09T, NDABT113 × × × × \times × M Ĵ ENCORE Retinguisting -Z^b нозм netevv IQ Data Deliverable Information BNON Billing Information (If different from Report to) Company Name Commercial "A" = Results Only 'OS'H umber of Relinquished By ustody Seal # HNO² N⁸OH SGS North America Inc. - Dayton 2235 Route 130, Dayton, NJ 08810 TEL. 732-329-0200 FAX: 732-329-3499/3480 State Commercial "A" (Level 1)
 Commercial "B" (Level 2)
 FULT1 (Level 3+4)
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 NJ Reduced
 Commencial "C" # of bothes www.sgs.com/ehsusa Matrix Å AQ AQ Å AQ AQ Å ÅQ AQ AQ Å ÅQ Project Information Street Address × 0 Attention' Sampled 10:45:00 AM GW GW GW GV 11-40:00 AM GW 11:40:00 AM GW 11.40.00 AM GW 11-40:00 AM GW 10:45:00 AM GW 10:45:00 AM GW 10:45:00 AM GW NO City 10:45:00 AM 10:45-00 AM 11-15:00 AM 11:15:00 AM Sample Custody must be do Р Д Philadelphia District, Reservoir Sampling Slate Time allector Date Trive: 17:00 Received By: C Due 8/13/2019 h T/A data available via Lablink Approval needed for RUSH/Emergency 143 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 7/30/19 Received By: Date Received By: oved By (SGS PM). / Date Client Purchase Order # Project Manager MEOH//DI Vial # Project Name Project # Street ₹ 0 Appro Date - Timeate ' Time Phone 20 Client / Reporting Information Company Name Field ID / Point of Collection Slandard 10 Buskness Days
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 X Ohler Due 8/13/2019 8-1 0) 1 - < MO-MEI -14 11-2 urnaround Time (Busin tammy.mccloskey@sgs.com R DAN E-mail 1 ١ State Len Y BM-8M Ge-MB BM-9M BM-10S . 18F BM-10S BM-8M BM-8D BM-8D BM-9S BM-9S **BM-9D** ampler(s) Name(s) Relinquished by: Relinquished by. eel Address orect Contact hone # 17XA 18XA GW 14XA 15XA 5G5 3nithe # 13XA 16XA 13F 14F 15F 16F 17F

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405			Matrix Codes	DW - Drinking Water	GW - Ground Water WW - Water	-SW Surface Water SO - Soit SL- Studge	SEU-Sediment OI - Oi LIQ - Other Liquid AIR - Air	SOL - Other Solid WP - Wipe	FB - Field Blank EB-Equipment Blank RB - Rinse Blank	TB - Trip Blank	1 AB USE ONLY															rms-and-conditions		D YACK	iter Temp. 'C
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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

any L Mains

Amy L Morriss Project Manager



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Section 3 😀

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody





505	ςω a	SGS North America Inc Dayton 2335 Route 130, Dayton, NJ 06810 E17232392000 FAX: 732393498974880	FED-EX Tracking 8	Page <u>1</u> of <u>2</u>
Client / Reporting Information	1	www.sgs.com/ehsusa	SG8 Quite #	565.100 TC92427
Company Name:	Project Nema:	roject Information	Requested A	
U.S. ARMY CORPS OF Engineers	Street Reserve	oirs - Blue MARSH	La al	DW - Drinking Water
100 Penn Se. East		Bullion Information (Malific		GW - Ground Water WW - Water
Phila PA 19107		te Company Name		SW - Surface Water SO - Soli
Protect Contact E-mail	Protect #	Street 4 dat		SI-Sludge
Jee Loeper		Short WOURS?	1 2 E C L	OI-OT
215.056-6545	Client Purchase Order	Cây State Zp		LC - Other Liquid AIR - Atr SOL - Other Solid With a
GOO WOOK GIG GIG	Project Manager	Altertion:	1 3 - 5 19 0	FB - Field Blank
101 ey Wacik 547.9780	Inmmy McClosky	4	2. 40	EB-Equipment Blank R8 - Rhae Blank
ses Barrete # Field ID / Point of Collection	MECH/DI Vial # Dam Too	Samulad Grav (G) 2 cf	KN PO4	TB - Trip Blank
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7F BM-6M	Acut		XXXXX	
8F BM - 6D	1981		XXXXX	
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5 Susiness Days		Commercial 'B" (Level 2) NYASP Catagory B	_	•
3 Businese Days"		Full Tier I (Level 4)	!	
1 Business Days		Commercial "C"	- IN	ITIAL ASESSMENT SA SB
0ther		NJ DKQP EDD Format		
All date granier we cablerie Approv	val needed for 1-3 Business Day TAT	Commercial "A" = Results only, Commercial "B" = Results	LA	BEL VERIFICATION
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JC92437XA: Chain of Custody Page 1 of 3



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SGS		SGS North America Inc Dayton	Page _2 of _2
	TE	2235 Route 130, Dayton, NJ 08810 FED-EX Tracking #	Bottle Onder Control #
Client / Reporting Information	Pro	vww.sgs.com/ehsusa	555 MB J(92437
Company Name:	Project Name:	Jeet mornation	Requested Analysis Matrix Code
U.S. ARMY CORPS OF ENG	Stread	Noirs-Blue Marsh 3 0	DW - Drinking W GW - Ground W
100 Pen Sy East		Billing Information (# different from Report to)	VVW - Water SW - Surface W
Phila PA 1910-	Readiate PA	Company Name	SO-Soil SL-Studge
Protect Contact E-mail	Protect #	Straet Address	SED-Sedmen 01-0#
Phone #	Client Purchaso Order (O D AR-AF
215-656-6545			Suc - Cumar Suc WP - Wupe TRI- Field Bar
Greg Wacik 597.978	Tome # Project Hanager		R8 - Rinse Bar
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ISF BM-95	1.90		×
IbE BM.9m			×
17F BM 90	10:4		×
18F BM-105	1115		×
ISF BM-10M	11:15	G DW 9 X X X X X	\$
ZOF BM·10D	11:15	GSWYX X XXXX	
UF BM-115	110	V G SW 9 X X X X X	× · · · · · · · · · · · · · · · · · · ·
Turn Around Tim	e (Business Davs)		
_	Approved By (SGS PM): / Date:	Deliverable Commercial "A" (Level 1) NYASP Category A	Comments / Special Instructions
10 Businese Days		Commercial 'B" (Level 2) NYASP Category B	
3 Business Days*		Full Tier I (Lavol 4)	
2 Business Days"		Commercial "C" State Forme	
Other		Commercial "A" = Results only: Commercial "B" = Results - 00 0	
	Approval needed for 1-3 Business Day TAT	Commercial "C" s Destring + OC Surmary + Of De Raw data must be documented below each time samples change possession, including courser delivery	http://www.sps.com/en/terms-and-conditio
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JC92437XA: Chain of Custody Page 2 of 3



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SGS Sample Receipt Summary

Job Number: J	C92437	Client:	USACE-PHILADELPHIA DIS	STRICT Project: PHILADELPHIA D	ISTRICT, RESERVOIR SA	AMPL
Date / Time Received: 7/	/30/2019 5:	41:00 PM	Delivery Method:	Airbill #'s:		
Cooler Temps (Raw Mease Cooler Temps (Corre	ured) °C: cted) °C:	Cooler 1: (3.6); Cooler 1: (3.5);	Cooler 2: (3.8); Cooler 3: (3 Cooler 2: (3.7); Cooler 3: (3	7); Cooler 4: (3.2); Cooler 5: (3.2); Cooler 6: (3.6); Cooler 4: (3.1); Cooler 5: (3.1); Cooler 6: (3.3); Cooler 7: (3.5); (3.2); Cooler 7: (3.4);	
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature 1. Temp criteria achieved: 2. Cooler temp verification: 3. Cooler media: 4. No. Coolers:	Y or N ✓ □ ✓ □ ✓ □ ✓ □ ✓ □ ✓ □ ✓ □ ✓ □	3. COC Pr 4. Smpl Date 0r N R Gun e (Bag) 7	YorN esent: ✓ □ s/Time OK ✓ □	Sample Integrity - Documentation 1. Sample labels present on bottles: 2. Container labeling complete: 3. Sample container label / COC agree: Sample Integrity - Condition 1. Sample recvd within HT: 2. All containers accounted for: 3. Condition of sample:	Y or N Image: Second s	
Quality Control Preservat 1. Trip Blank present / cooler 2. Trip Blank listed on COC: 3. Samples preserved proper 4. VOCs headspace free:	tion <u>Y</u> :: □ : : : : : : : : : : : : : : : : :			Sample Integrity - Instructions 1. Analysis requested is clear: 2. Bottles received for unspecified tests 3. Sufficient volume recvd for analysis: 4. Compositing instructions clear: 5. Filtering instructions clear:	<u>Y or N N/A</u> ✓ □ ✓ □ ✓ □ ✓ □ ✓ □ ✓ ✓ ✓ □ ✓ ✓ ✓ ✓	\] -
Test Strip Lot #s:	pH 1-12: _	229517	pH 12+:	208717 Other: (Specify)		_
Comments						

SM089-03 Rev. Date 12/7/17

> JC92437XA: Chain of Custody Page 3 of 3

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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

08/14/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC92437X



Sampling Date: 07/30/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 16



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS. Test results relate only to samples analyzed.

SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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3.1: Chain of Custody	14

Sample Summary

USACE-Philadelphia District

Job No: JC92437X

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC92437-1X	07/30/19	07:10 GW	07/30/19	AQ	Surface Water	BM-1S
JC92437-2X	07/30/19	09:45 GW	07/30/19	AQ	Surface Water	BM-2S
JC92437-5X	07/30/19	13:10 GW	07/30/19	AQ	Surface Water	BM-5S
JC92437-6X	07/30/19	08:45 GW	07/30/19	AQ	Surface Water	BM-6S
JC92437-9X	07/30/19	10:15 GW	07/30/19	AQ	Surface Water	BM-7S
JC92437-12X	07/30/19	11:40 GW	07/30/19	AQ	Surface Water	BM-8S
JC92437-15X	07/30/19	10:45 GW	07/30/19	AQ	Surface Water	BM-9S
JC92437-18X	07/30/19	11:15 GW	07/30/19	AQ	Surface Water	BM-10S
JC92437-21X	07/30/19	13:10 GW	07/30/19	AQ	Surface Water	BM-11S



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JC92437X

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Section 2

Subcontract Lab Data

Report of Analysis







Serialized: 08/05/2019 05:48pm QC35

Regarding:

SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

PROJECT ID:

W09769 USACE

LABORATORY REPORT NUMBER:

L7147785

Dargy

Authorized by: Douglas J. Gump Client Services Manager



KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130

DAYTON,NJ 08810

Eurofins QC, LLC

KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

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Regarding: KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

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Account No Project No:	: W09769, SGS NORTH W09769 USACE, USAC	AMERICA, INC. E		P.O. No:		Inv. No: PWSID No:	1986725 PI
Sample ID L7147785-1	Sample Description BM-1S Received Date/Tim	e/Temp 07/30/	19 03:00pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 (ate/Time/Temp)7:10am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-1S					
Total Coliform Fecal Coliforn	n, MF n, MF	>20000 Q 29 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/30/19 07:37PM LK 07/31/19 12:12AM LK
Sample ID L7147785-2	Sample Description BM-2S Received Date/Tim	e/Temp 07/30/	19 03:00pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 (ate/Time/Temp)9:45am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-2S					

SM 9222B

SM 9222D

PIN: 28748

Total Coliform, MF Fecal Coliform, MF

Serial Number: 6534343

cfu/100ml

cfu/100ml



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JC92437X

07/30/19 07:37PM LK 07/31/19 12:12AM LK

Analytical Report Printed 08/05/19 17:48

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Account No: W09769, S Project No: W09769 US	GS NORTH AMERICA, INC. ACE, USACE		P.O. No:		Inv. No: PWSID No:	1986725 PI
Sample ID Sample De L7147785-3 BM-5S Receive	escription	19 03:00pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 0	tte/Time/Temp 1:10pm NA C	Sampled by Customer
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONMENTAL MI	CROBIOLOGY BM-5S					
Total Coliform, MF Fecal Coliform, MF	>20000 Q 440 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 10	100 10	07/30/19 08:13PM SRK 07/30/19 10:52PM LK
Sample ID Sample De L7147785-4 BM-6S Receive	escription ed Date/Time/Temp 07/30/	19 03:00pm 3.8 C	Iced (Y/N): Y	Samp. D a 07/30/19 0	t e/Time/Temp 8:45am NA C	Sampled by Customer
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONMENTAL MI	CROBIOLOGY BM-6S					
Total Coliform, MF Fecal Coliform, MF	11700 E, Q 7 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/30/19 08:13PM SRK 07/31/19 12:12AM LK
Sample ID Sample De L7147785-5 BM-7S Receive	ed Date/Time/Temp 07/30/	19 03:00pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 1	te/Time/Temp 0:15am NA C	Sampled by Customer
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONMENTAL MI	CROBIOLOGY BM-7S					
Total Coliform, MF Fecal Coliform, MF	10600 E, Q 6 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/30/19 07:37PM LK 07/30/19 10:52PM LK
Sample ID Sample De L7147785-6 BM-8S Receive	escription ed Date/Time/Temp 07/30/	19 03:00pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 1	t e/Time/Temp 1:40am NA C	Sampled by Customer
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 28748

Serial Number: 6534343

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JC92437X

Analytical Report Printed 08/05/19 17:48

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE			P.O. No:	Inv. No: PWSID No:		1986725 PI		
Sample ID L7147785-6	Sample Description BM-8S Received Date/Tim	ne/Temp 07/30/1	19 03:0	0pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 1	te/Time/Temp 1:40am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-8S						
Total Coliform Fecal Coliform	ı, MF ı, MF	3200 Q 2 Q		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/30/19 07:37PM LK 07/30/19 10:52PM LK
Sample ID L7147785-7	Sample Description BM-9S Received Date/Tim	ne/Temp 07/30/1	19 03:0	0pm 3.8 C	Iced (Y/N): Y	Samp. D a 07/30/19 1	te/Time/Temp 0:45am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-9S						
Total Coliform Fecal Coliform	n, MF n, MF	12400 E, Q 2 Q		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/30/19 07:37PM LK 07/30/19 10:52PM LK
Sample ID L7147785-8	Sample Description 35 Received Date/Tim	ne/Temp 07/30/1	19 03:0	0pm 3.8 C	Iced (Y/N): Y	Samp. D a 07/30/19 1	te/Time/Temp 1:15am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY 35						
Total Coliform Fecal Coliform	ı, MF n, MF	15200 E, Q 5 Q		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	07/30/19 07:37PM LK 07/31/19 12:12AM LK
Sample ID L7147785-9	Sample Description 30 Received Date/Tim	ne/Temp 07/30/1	19 03:0	0pm 3.8 C	Iced (Y/N): Y	Samp. Da 07/30/19 0	te/Time/Temp 1:10pm NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 28748

Serial Number: 6534343

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Analytical Report

Printed 08/05/19 17:48

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE				P.O. No:		Inv. No: PWSID No:	1986725 PI
Sample ID Sample Description L7147785-9 30 Received Date/Time/Temp 07/30/19 03:00pm 3.8 C			Iced (Y/N): Y	Samp. Date/Time/Temp 07/30/19 01:10pm NA C		Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONMENTAL MICROBIOLOGY 30							
Total Coliform, Fecal Coliform,	MF MF	>20000 Q 1100 E, Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 1	100 100	07/30/19 08:13PM SRK 07/30/19 10:52PM LK

Sample Comments | Result Qualifiers:

L7147785-1 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7147785-2:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147785-3 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147785-4 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147785-5:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

PIN: 28748

Serial Number: 6534343



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Eurofins QC, LLC

Analytical Report

Printed 08/05/19 17:48

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE

P.O. No:

Inv. No: 1986725 PI PWSID No:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147785-6:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147785-7:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147785-8:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7147785-9:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6534343

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DEFINITIONS

The following terms or abbreviations are used in this report:

QC

Less than: In conjunction with a numerical value, < indicates a concentration less than RL / MDL Greater than: In conjunction with a numerical value, > indicates a concentration greater than RL / MDL CFU Colony Forming Unit Dilution Factor (For Microbiology, DF = volume of DE sample tested) DRY Result was reported on a dry weight basis EPA recommended "Maximum Contaminant Level" MCL MDL Method Detection Limit MF Membrane Filtration **MPN** Most Probable Number For odor test: No Odor Observed ND For all other tests: Analyte concentration Not ND Detected greater than the RL / MDL

NEC	Negotive (Abcost
NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

Data Qualifiers

J	Estimated value MDL, but < RL
Т	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

Warranties, Terms, and Conditions

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
 - "ERF" = field staff performs tests under NJ State certification # 02015.
 - "VL" = field staff performs tests under NJ State certification # 06005.
 - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- · The report shall not be reproduced, except in full, without the written consent of the laboratory.
- · All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been
 performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

EQC Accreditations

Horsham Facility	NELAP/State IDs-	PA:	46-05499	NJ:	PA093	NY:	12080	MD:	357
East Rutherford Facility Vineland Facility Wind Gap Facility	<u>State ID</u> - <u>State ID</u> - <u>State ID</u> -	NJ: NJ: NJ:	02015 06005 PA001						

Eurofins QC, LLC (EQC)



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Page 1 of

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DVI - Drithung Weiter GWI - Ground Weiter WWI - Kanara WWI - Kanara SWI - Surface Weiter SSI - Subdig SSI - Subdig SSI - Subdig SSI - Subdig SSI - Chiner Social MR - Mig TR - Find Blank TR - Find Bl LAB USE ONLY http://www.sgs.com/en/terms/and-conditions Matrix Codes 38 5 CUSTOMER DELIVERE 1,10, 100 feed & coli 3 8 0 785-Bothis Onder Control : Roceived By: Rocolvod By. 10 2 Preserved where applicable In Line. Ċ ding courler deliver ALL SUMMARY FED-EX Tracking & JG2 CU/MMJ 07/30/19 1616 07/30/19 1657 Intact . Not intect 1 SGS Ounta # colitor ad 10101 pub 1-201-1 X × X X X × × × X 5821 1 × × X × 00 L7147785-1 BROOME HOBIN A 3.8C Iced:Y anteve (C Deliverable NONE Reservines - Blue Marsh 'OS'H Ŀ MUCO Cochanterman er CONH Custody Sual # TEL 732-329-0200 FAX: 732-329-3499/3480 Stata Billing Information (if different from Report to) Company Name HORN юн Commercial "A" (Level 1) www.sgs.com/ehsusa t of battles ented below aach Azdavele \mathcal{C} 3 C ര R \mathcal{C} 3 Ŋ Commercia Commer R Commercial "B" (L Full Tler I (Lovat 4) NJ Reduced (Level Sw 3:5 Commercial "C" <u>Siv.</u> <u>U</u> 3 G 5W Ù BW SiJ 33 જ Ť. NJ OKOP Gran (c) Corres (c) ৬ ৬ J ى ৵ ৵ Project Information ტ SUTER Address Percent of 000000 Mention PU OILO ŝ Sh.80 0% 04:11 55 ₹ P Stote 11ma 170 がい 597-9780 Tammy McCosky Approval reeded for 1-3 Business Day TAT 7/34/9 Approved By (SGS PH); Plane: Recolved By: 622 USACE Reacting Client Purchase Order # 215-6570-654-6545 Prova Prova A LOHOTVER & Project Name: Turn Around Time (Business Days) Ç street Links 30/19 ete / Thmo vence - Phila District 19107 ß **Client / Reporting Information** 100 Penn So, East Field ID / Point of Collection Joe Loeper Bm- 10S BM-11S
 10 Business Days

 5 Business Days

 3 Business Days

 3 Business Days

 1 Business Days

 1 Business Days

 1 Business Days
 Bm - 7S 0m-25 PA 0m - 55 BM- US BM-85 Bm-- 95 Fred wheik Bm - 1S Other All data available shod by: Sampleris) Name(Company Name Phila Protect Contact Reling Falls Sits Site Į e

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Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody





666	SC) CHAIN OF CUSTODY SGS North America Inc Dayton 2235 Route 130, Dayton, NJ 06810	Page <u>1 of </u> 2
	TEL 732-329-0200 FAX: 732-329-3499/3480	TM-011719-105
Client / Reporting Information	Project Information	JC92437
	Projed Name: Requested Ar	nalysis Matrix Codes
Street Address	SUSACE RESErvoires - Blue MARSH SIS	
100 Penn Se East	Stream	DW - Drinking Water GW - Ground Water WW - Water
Phila, PA 19107	Reaching OA Company Name	SW - Surface Water SO - Soli
Protect Contact E-mail	Protect # Street Address	SL-Sludge SED-Sediment
Phone #		OI-00 LIQ - Other Lloudd
215-056-0545 Sempler(s) Neme(s)	Ciberl Purchase Order City State Zp State	AIR - Air SOL - Other Satia WP - Wibe
Greg Wacik 507,9780	Project Managar Altertion:	FB - Fleti Blank
J. J	Ditestion	R8 - Rine Blank
ses Bernete # Field iD / Point of Collection		
1F BM - 15		LAB USE ONLY
2F BOD - 2S	V X X X X X X	(22
36 00.20	/ OTHS / G SW 9 X X X X X X X X	-+++++>>>
	975 G SW 9 X X X X	
AL DW. AD	0945 G Swi 9 x x X X	
DE BM-55	VIO GSW 9 X X X X X X	
br BM-65	bry GGA9 X GHIXXXXX	
7F BM-6M	Keys 16 5wl 9 V X X X X X X	
8F BM-6D	1085 16 Sule XXXXXX	
9F1 BM . 75		
OF BM. 7M		
VE BM. TD	US GSU9X XXXXXX	
011-10	V 1015 V G SW 9 X X X X X X X X X	-+
Turn Around Time (Busi		
A	Approved By (SGS pert- / news-	Comments / Special last using
10 Businosa Days	Commercial "A" (Lavel 1) NYASP Category A DOD-QSMS	
5 Business Days	NJ Roduced (Lovel 3) MA MCP Catagory B	• • •
2 Business Days	Full Tier I (Leval 4) CT RCP Criteria	ZAZZ AN
1 Business Day	Commercial "C" State Forms	HAL ASESSMENT 34135
Other	EDD Format	
Approv	vel needed for 1-3 Business Day TAT Commercial "Commercial "Commer	DEL VERIFICATION
Day Tige	Receive By:	http://www.sos.com/en/teams-and-conditions
Relinquished St.	150 1 Dota / Time: NW Ra	Icolived By:
3 Antific Tools	174//Raceived By:	
5 Dete / Time:	Recolved by: Castody Seal 6 Down	cerved by:
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	·	3:1 ' 3,2

JC92437X: Chain of Custody Page 1 of 3



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SGG	C	SGS North America Inc Dayton 2235 Route 130, Dayton, NJ 08810	FED-EX Tracking #	Page _2of _2	-1
•	T	EL 732-329-0200 FAX: 732-329-3499/3480	SGS Quale #	SOS Jane Transie	-
Client / Reporting Information	. Pi	roject Information	Paguastad		-
S ARMY CORPS OF ENG	USACE Res	ensirs - Blue Marsh	0 3	DW - Drinking Weter	5 star
DO PROD SH EUST	Streat		9 3 1	GW - Ground Water WW - Water	kor
State PA 1910-7	Reading PH	Billing Information (If different from Report to) ate Company Name	2 S 2	SW - Surfaça Weter SO - Soli SL- Stadge	ler
ect Contact E-mail	Protect #	Straet Address	2 3 L		
soe rocper	Client Purchaso Order /	Cây State 7a	A	AIR - Atr SOL - Other Solid	
215-656-6545			4 + 20	WP - Wipe FB - Fleid Blank	
29 Wacik 597.9780	TAMMY Maclosh	Allention:	ne de la companya de	E8-Equipment Bank R8 - Rinse Blank T8 - Trip Blank	mik k
	Con	- Number of preserved Bottos	3000		_
Field ID / Point of Collection	MECH/DI Vial # Date The	ma by Compic, Mach bottes Q g g g Q Q = 1	1225		
P BM - 85	7/301911.1	10 1/8 G SW 9 V V		LAB USE ONLY	<u>~</u>
BM-8M	VAZ	nor GSW 9 X VIIII		+-+-	-
BM-80	1/1:4	a su a x		┼╧╋╌╃╶┼╴┠╸╸╸	-
F BM-95	10:0	451 6 911 9 8 8			_
Bm.9m	Vosi		XXXX		_
- BM-9D	10:4	KAL BESTILLE			_
8m-105	1144	C GSW 9 X X		+-+-+-+-+-+	4
BM-10M	11:10	S G DW 9 X X		+	-
BAIDD	11:1	S GISU 9 X X			-
BM - 115	V Fre	V G SW 9 X X		+-+-	-
				+ + + + + + - +	-
				+	-
Turn Around Time (Busi	iness Days)	Deliverable		Comments / Special Instructions	-
10 Business Days	Approved By (SGS PM): / Date:	Commercial "A" (Lavel 1) NYASP Category A	DOD-QSM5		1
S Business Days		NJ Reduced (Lovel 3) MA MCP Criteria			
2 Business Days"		Full Tier / (Level 4) GT RCP Criteria	-		
1 Business Day		NJ DKQP		,	
Al der walable a Labirk	val geoded for 1-3 Buchess Dry YAT	Commercial "A" = Results only, Commercial "B" = Result	s + QC Summary		
	Same Citatod	Commercial "C" & Bentil + OC Summery + Period Re y must be documented below each time complet change possession, inclu	wdata ding courier delivery,	http://www.sgs.com/en/terms-and-conditions	15.
1319	1/:50 1	Redinguithed By:	Doto / Timo: 130	Recoived By:	1
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				5.6 20	` .

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JC92437X: Chain of Custody Page 2 of 3



15 of 16 JC92437X

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SGS Sample Receipt Summary

Job Number:	JC92437	Client:	USACE-PHILADELPHIA DIS	TRICT Project: PHILADELPHIA D	ISTRICT, RESERVOIR SAMPL
Date / Time Received:	7/30/2019 5:	41:00 PM	Delivery Method:	Airbill #'s:	
Cooler Temps (Raw Meas Cooler Temps (Corre	sured) °C: ected) °C:	Cooler 1: (3.6); Cooler 1: (3.5);	Cooler 2: (3.8); Cooler 3: (3 Cooler 2: (3.7); Cooler 3: (3	.7); Cooler 4: (3.2); Cooler 5: (3.2); Cooler 6: (.6); Cooler 4: (3.1); Cooler 5: (3.1); Cooler 6: (3.3); Cooler 7: (3.5); 3.2); Cooler 7: (3.4);
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature 1. Temp criteria achieved: 2. Cooler temp verification: 3. Cooler media: 4. No. Coolers: Quality Control_Preserved 2. Trip Blank present / coole 2. Trip Blank listed on COC 3. Samples preserved prope 4. VOCs headspace free:	Y or N ♥ □ ♥ □ ● 1 Ic □ Ic □ ation Y err: □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	3. COC Pr 4. Smpl Date or N R Gun e (Bag) 7 or N N/A ♥ □ ↓ ↓ ↓	<u>Y or N</u> resent: ☑ □ s/Time OK ☑ □	Sample Integrity - Documentation 1. Sample labels present on bottles: 2. Container labeling complete: 3. Sample container label / COC agree: Sample Integrity - Condition 1. Sample recvd within HT: 2. All containers accounted for: 3. Condition of sample: Sample Integrity - Instructions 1. Analysis requested is clear: 2. Bottles received for unspecified tests 3. Sufficient volume recvd for analysis: 4. Compositing instructions clear: 5. Filtering instructions clear:	Y or N ✓ □
Test Strip Lot #s:	pH 1-12:	229517	pH 12+:	208717 Other: (Specify)	
Comments					

SM089-03 Rev. Date 12/7/17

JC92437X: Chain of Custody Page 3 of 3



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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

09/10/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93544



Sampling Date: 08/20/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 42



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Sample Summary

USACE-Philadelphia District

Job No: JC93544

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC93544-1	08/20/19	07:20 GW	08/20/19	AQ	Surface Water	BM-1S
JC93544-2	08/20/19	09:30 GW	08/20/19	AQ	Surface Water	BM-2S
JC93544-3	08/20/19	09:30 GW	08/20/19	AQ	Surface Water	BM-2M
IC93544-4	08/20/19	09:30 GW	08/20/19	40	Surface Water	BM-2D
JC/3544-4	00/20/17	07.30 G W	00/20/17	ΛQ	Surface Water	DM-2D
JC93544-5	08/20/19	12:40 GW	08/20/19	AQ	Surface Water	BM-5S
JC93544-6	08/20/19	08:30 GW	08/20/19	AQ	Surface Water	BM-6S
JC93544-7	08/20/19	08:30 GW	08/20/19	AQ	Surface Water	BM-6M
1002544.9	08/20/10	08.20 CW	08/20/10	10	Surface Water	DM (D
JC93344-8	08/20/19	08.30 0 ₩	08/20/19	AQ	Surface water	BM-0D
JC93544-9	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7S
JC93544-10	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7M
JC93544-11	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7D
IC02544 12	08/20/10	11.40 CW	08/20/10	10	Surface Water	DM QS
JC75544-12	00/20/19	11.40 0 ₩	00/20/19	лų	Surface water	DIM-00
JC93544-13	08/20/19	11:40 GW	08/20/19	AQ	Surface Water	BM-8M
				-		



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC93544

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC93544-14	08/20/19	11:40 GW	08/20/19	AQ	Surface Water	BM-8D
JC93544-15	08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9S
JC93544-16	08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9M
JC93544-17	08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9D
JC93544-18	08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10S
JC93544-19	08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10M
JC93544-20	08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10D
JC93544-21	08/20/19	12:40 GW	08/20/19	AQ	Surface Water	BM-11S





CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	USACE-Philadelphia District	Job No	JC93544
Site:	Philadelphia District, Reservoir Sampling	Report Date	9/3/2019 9:34:46 AM

On 08/20/2019, 21 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC93544 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

General Chemistry By Method EPA 351.2/LACHAT

Matrix: AQ	Batch ID:	GP23232
All samples were prepared within	1 the recommended metho	od holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC93773-1DUP, JC93773-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

Matrix: AQ Ba	atch ID:	GP23233
---------------	----------	---------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-1DUP, JC93544-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

l l l l l l l l l l l l l l l l l l l	Matrix: AQ	Batch ID:	GP23296	
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All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC93524-2DUP, JC93524-2MS were used as the QC samples for Nitrogen, Total Kjeldahl.

General Chemistry By Method EPA 353.2/LACHAT

_			
	Matrix: AQ	Batch ID:	GP23315
-	All samples were prepared within	n the recommended metho	d holding time.
-	All method blanks for this batch	meet method specific crite	eria.
-	Sample(s) JC93524-2DUP, JC92	3544-1MS were used as th	ne QC samples for Nitrogen, Nitrate + Nitrite.
	Matrix: AQ	Batch ID:	GP23316

All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC93689-4DUP, JC93689-4MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

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General Chemistry By Method EPA353.2/SM4500NO2B

Matrix: AQ	Batch ID:	R180632
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-1 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180633
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-2 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180634
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-3 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180635
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-4 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180636
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-5 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180637
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-6 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180638
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-7 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180639
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-8 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180640
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-9 for Nitrogen, Nitrate: Calcul	lated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180641
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-10 for Nitrogen, Nitrate: Calcu	ulated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180642
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-11 for Nitrogen, Nitrate: Calcu	ulated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180651
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-12 for Nitrogen, Nitrate: Calcu	ulated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180652
The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
JC93544-13 for Nitrogen, Nitrate: Calcu	ulated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Matrix: AQ	Batch ID:	R180653
		•

The data for EPA353.2/SM4500NO2B meets quality control requirements.

Tuesday, September 03, 2019

Page 2 of 6

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General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ	Batch ID:	R180653
-	JC93544-14 for Nitrogen, Nitrate: Calcu	ilated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R180654
-	The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
-	JC93544-15 for Nitrogen, Nitrate: Calcu	lated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R180655
-	The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
-	JC93544-16 for Nitrogen, Nitrate: Calcu	lated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
Γ	Matrix: AQ	Batch ID:	R180656
-	The data for EPA353.2/SM4500NO2B	meets quality cont	rol requirements.
	JC93544-17 for Nitrogen, Nitrate: Calcu	ilated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R180657
	Matrix: AQ The data for EPA353.2/SM4500NO2B	Batch ID: meets quality cont	R180657 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu	Batch ID: meets quality contr lated as: (Nitroger	R180657 rol requirements. a, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ	Batch ID: meets quality contr lated as: (Nitroger Batch ID:	R180657 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B	Batch ID: meets quality contr ilated as: (Nitroger Batch ID: meets quality contr	R180657 rol requirements. a, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-19 for Nitrogen, Nitrate: Calcu	Batch ID: meets quality contr lated as: (Nitroger Batch ID: meets quality contr lated as: (Nitroger	R180657 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-19 for Nitrogen, Nitrate: Calcu Matrix: AQ	Batch ID: meets quality contr ulated as: (Nitroger Batch ID: meets quality contr ulated as: (Nitroger Batch ID:	R180657 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180659
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-19 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B	Batch ID: meets quality contr lated as: (Nitroger Batch ID: meets quality contr lated as: (Nitroger Batch ID: meets quality contr	R180657 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180659 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-19 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-20 for Nitrogen, Nitrate: Calcu	Batch ID: meets quality contr alated as: (Nitroger Batch ID: meets quality contr alated as: (Nitroger Batch ID: meets quality contr alated as: (Nitroger	R180657 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180659 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-18 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-19 for Nitrogen, Nitrate: Calcu Matrix: AQ The data for EPA353.2/SM4500NO2B JC93544-20 for Nitrogen, Nitrate: Calcu Matrix: AQ	Batch ID: meets quality contr ilated as: (Nitroger Batch ID: meets quality contr ilated as: (Nitroger Batch ID: meets quality contr ilated as: (Nitroger Batch ID:	R180657 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180658 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180659 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180659 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R180660

JC93544-21 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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General Chemistry By Method SM2320 B-11

	Matrix: AQ	Batch ID:	G	GN99192
	All samples were analyzed within	n the recommended metho	d h	holding time.
	All method blanks for this batch	meet method specific crite	eria	a.
	Sample(s) JC93423-2DUP were	used as the QC samples for	or	Alkalinity, Total as CaCO3.
	JC93544-1 for Alkalinity, Total a	as CaCO3: Sample was titi	rate	ted to a final pH of 4.5.
	Matrix: AQ	Batch ID:	G	GN99201
	All samples were analyzed within	n the recommended metho	d h	holding time.
	All method blanks for this batch	meet method specific crite	eria	a.
	Sample(s) JC93544-2DUP were	used as the QC samples for	òr	Alkalinity, Total as CaCO3.
	JC93544-11 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-17 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-16 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-15 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
-	JC93544-14 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-18 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-10 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-7 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
	JC93544-6 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
-	JC93544-5 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
	JC93544-4 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
	JC93544-9 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
-	JC93544-2 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
	JC93544-8 for Alkalinity, Total	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
	JC93544-21 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-12 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-19 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-13 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
-	JC93544-20 for Alkalinity, Total	as CaCO3: Sample was ti	itra	ated to a final pH of 4.5.
	JC93544-3 for Alkalinity, Total a	as CaCO3: Sample was tit	rate	ted to a final pH of 4.5.
G	eneral Chemistry By Me	thod SM2540 C-11	1	
	Matrix: AQ	Batch ID:	G	GN99003

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93524-2DUP were used as the QC samples for Solids, Total Dissolved.

Matrix: AQ	Batch ID:	GN99052

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC93544-1DUP, JC93544-2DUP were used as the QC samples for Solids, Total Dissolved.



General Chemistry By Method SM2540 D-11

Matrix:	AQ	Batch ID:	GN98986

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93497-2DUP were used as the QC samples for Solids, Total Suspended.

Matrix:	AQ	Batch ID:	GN99051

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-1DUP, JC93544-2DUP were used as the QC samples for Solids, Total Suspended.

General Chemistry By Method SM4500NH3 H-11LACHAT

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- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-1DUP, JC93544-1MS, JC93544-1MSD were used as the QC samples for Nitrogen, Ammonia.

Matrix: AQ	Batch ID:	GP23332

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-14DUP, JC93544-14MS, JC93544-14MSD were used as the QC samples for Nitrogen, Ammonia.

General Chemistry By Method SM4500NO2 B-11

Matrix: AQ	Batch ID:	GN98923		
All samples were analyzed within the recommended method holding time				

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93524-2DUP, JC93524-2MS were used as the QC samples for Nitrogen, Nitrite.

General Chemistry By Method SM5210 B-11

Matrix: A	2 Batch ID:	GP23166

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-1DUP, JC93544-21DUP were used as the QC samples for BOD, 5 Day.
- JC93544-17 for BOD, 5 Day: DO depletion less than 2.
- JC93544-20 for BOD, 5 Day: DO depletion less than 2.
- JC93544-21 for BOD, 5 Day: DO depletion less than 2.
- JC93544-19 for BOD, 5 Day: DO depletion less than 2.
- JC93544-18 for BOD, 5 Day: DO depletion less than 2.


General Chemistry By Method SM5310 B-11

	Matrix: AQ		Batch ID:	GP23343
4.11		1 141 4	1 1 4	11 11

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-1MS, JC93544-1MSD were used as the QC samples for Total Organic Carbon.

Matrix: AQ	Batch ID:	GP23344
All samples were prepared with	in the recommended metho	d holding time.

- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93544-11MS, JC93544-11MSD were used as the QC samples for Total Organic Carbon.

Matrix: AQ	Batch ID:	GP23345

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Sample(s) JC93544-21MS, JC93544-21MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover



Job Number:	JC93544
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	08/20/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JC93544-1 BM-1S					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Total Organic Carbon	144 8.5 0.27 3.6 3.8 0.24 0.71 232 2.6	10 1.7 0.20 0.15 0.10 0.050 0.20 10 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC93544-2 BM-2S					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	85.5 3.7 2.1 2.2 0.11 1.1 161 4.7 4.0	5.0 1.7 0.11 0.10 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC93544-3 BM-2M				U	
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Total Organic Carbon	131 6.1 3.1 3.4 0.26 0.55 206 2.3	10 1.7 0.15 0.10 0.050 0.20 10 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC93544-4 BM-2D					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved	164 8.2 0.46 3.8 4.0 0.19 0.84 236	10 1.7 0.20 0.15 0.10 0.050 0.20 10		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11



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Job Number:	JC93544
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	08/20/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Solids, Total Suspended	72.4	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.6	1.0		mg/l	SM5310 B-11
JC93544-5 BM-58					
Alkalinity, Total as CaCO3 ^a	203	10		mg/l	SM2320 B-11
BOD, 5 Day	2.7	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	7.1	0.41		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	7.1	0.40		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.018	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.47	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	312	10		mg/l	SM2540 C-11
Solids, Total Suspended	4.6	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.3	1.0		mg/l	SM5310 B-11
JC93544-6 BM-68					
Alkalinity, Total as CaCO3 ^a	86.0	5.0		mg/l	SM2320 B-11
BOD, 5 Day	4.6	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.1	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.70	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	146	10		mg/l	SM2540 C-11
Solids, Total Suspended	4.9	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.9	1.0		mg/l	SM5310 B-11
JC93544-7 BM-6M					
Alkalinity Total as CaCO3 a	135	10		mg/l	SM2320 B-11
BOD 5 Day	8 2	17		mg/1 mg/1	SM5210 B-11
Nitrogen Nitrate ^b	3.4	0.15		mg/l	FPA353 2/SM4500NO2B
Nitrogen Nitrate + Nitrite	3.7	0.10		mg/l	FPA 353 2/LACHAT
Nitrogen Nitrite	0.27	0.050		mg/l	SM4500NO2 B-11
Nitrogen, Total Kieldahl	0.58	0.20		mg/l	FPA 351 2/LACHAT
Solids Total Dissolved	208	10		mg/l	SM2540 C-11
Total Organic Carbon	2.3	1.0		mg/l	SM5310 B-11
JC93544-8 BM-6D					
Alkalinity Total as CaCO3 a	177	10		mg/l	SM2320 B-11
BOD 5 Day	13.0	17		mg/1	SM2320 B-11 SM5210 B-11
Nitrogen Ammonia	1 4	0.20		mg/1	SM3210 B-11 SM4500NH3 H-111 ACHAT
Nitrogen Nitrote ^b	3.0	0.20		mg/1	EDA 252 2/SM4500NO2D
Nitrogen Nitrate Nitrite	3.0	0.11		mg/1	ELASSS. $2/SW14300INO2B$ EDA 252 $2/LACUAT$
muogen, muaie + mune	5.1	0.10		iiig/1	LI A 333.2/LAUTAI

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Job Number:	JC93544
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	08/20/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Nitrogen, Nitrite	0.15	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.8	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	252	10		mg/l	SM2540 C-11
Solids, Total Suspended	9.3	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.9	1.0		mg/l	SM5310 B-11
JC93544-9 BM-7S					
Alkalinity, Total as CaCO3 ^a	88.0	5.0		mg/l	SM2320 B-11
BOD, 5 Day	4.9	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.1	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.090	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	164	10		mg/l	SM2540 C-11
Solids, Total Suspended	5.9	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.5	1.0		mg/l	SM5310 B-11
JC93544-10 BM-7M					
Alkalinity, Total as CaCO3 ^a	113	5.0		mg/l	SM2320 B-11
BOD, 5 Day	6.0	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	3.1	0.15		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.4	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.31	0.050		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.49	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	198	10		mg/l	SM2540 C-11
Total Organic Carbon	2.5	1.0		mg/l	SM5310 B-11
JC93544-11 BM-7D					
Alkalinity, Total as CaCO3 ^a	178	10		mg/l	SM2320 B-11
BOD, 5 Day	7.8	1.7		mg/l	SM5210 B-11
Nitrogen, Ammonia	0.67	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.4	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.16	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	252	10		mg/l	SM2540 C-11
Solids, Total Suspended	48.3	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.6	1.0		mg/l	SM5310 B-11
JC93544-12 BM-8S					
Alkalinity, Total as CaCO3 ^a	89.5	5.0		mg/l	SM2320 B-11

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Job Number:	JC93544
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	08/20/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
BOD, 5 Day	4.9	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	1.9	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.0	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.071	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.67	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	155	10		mg/l	SM2540 C-11
Solids, Total Suspended	5.2	4.0		mg/l	SM2540 D-11
Total Organic Carbon	4.1	1.0		mg/l	SM5310 B-11
JC93544-13 BM-8M					
Alkalinity, Total as CaCO3 ^a	109	5.0		mg/l	SM2320 B-11
BOD, 5 Day	3.0	1.7		mg/l	SM5210 B-11
Nitrogen, Ammonia	0.22	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.5	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.6	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.052	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.77	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	176	10		mg/l	SM2540 C-11
Solids, Total Suspended	7.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.0	1.0		mg/l	SM5310 B-11
JC93544-14 BM-8D					
Alkalinity, Total as CaCO3 ^a	101	5.0		mg/l	SM2320 B-11
BOD, 5 Day	4.4	1.7		mg/l	SM5210 B-11
Nitrogen, Ammonia	0.48	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.1	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.053	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.75	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	182	10		mg/l	SM2540 C-11
Solids, Total Suspended	27.8	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.8	1.0		mg/l	SM5310 B-11
JC93544-15 BM-98					
Alkalinity, Total as CaCO3 ^a	85.0	5.0		mg/l	SM2320 B-11
BOD, 5 Day	5.9	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.0	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.1	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.073	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.86	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	141	10		mg/l	SM2540 C-11
Solids, Total Suspended	7.7	4.0		mg/l	SM2540 D-11
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Job Number:	JC93544
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	08/20/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Total Organic Carbon	3.7	1.0		mg/l	SM5310 B-11
JC93544-16 BM-9M					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended	151 5.5 0.25 4.1 4.2 0.15 0.55 236 9.8	$ \begin{array}{c} 10\\ 1.7\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11
Total Organic Carbon	2.4	1.0		mg/l	SM5310 B-11
JC93544-17 BM-9D					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day ^c Nitrogen, Ammonia Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	181 3.3 0.61 4.1 4.2 0.064 0.94 270 74.4 2.4	$ \begin{array}{c} 10\\ 1.7\\ 0.20\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC93544-18 BM-10S					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day ^c Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	84.0 4.3 2.0 2.1 0.067 0.71 149 7.2 3.7	$5.0 \\ 1.7 \\ 0.11 \\ 0.010 \\ 0.20 \\ 10 \\ 4.0 \\ 1.0 $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC93544-19 BM-10M					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day ^c Nitrogen, Nitrate ^b	122 2.9 3.4	5.0 1.7 0.11		mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B

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JC93544

Job Number:	JC93544
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	08/20/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Nitrogen, Nitrate + Nitrite	3.4	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.046	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.70	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	209	10		mg/l	SM2540 C-11
Solids, Total Suspended	10.3	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.2	1.0		mg/l	SM5310 B-11
JC93544-20 BM-10D					
Alkalinity, Total as CaCO3 ^a	166	10		mg/l	SM2320 B-11
BOD, 5 Day ^c	2.9	1.7		mg/l	SM5210 B-11
Nitrogen, Ammonia	0.54	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.9	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.9	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.022	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.49	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	265	10		mg/l	SM2540 C-11
Solids, Total Suspended	138	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.8	1.0		mg/l	SM5310 B-11
JC93544-21 BM-11S					
Alkalinity, Total as CaCO3 ^a	84.0	5.0		mg/l	SM2320 B-11
BOD, 5 Day ^c	1.8	1.7		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.6	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.6	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.60	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	137	10		mg/l	SM2540 C-11
Solids, Total Suspended	10.3	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.6	1.0		mg/l	SM5310 B-11

(a) Sample was titrated to a final pH $\,$ of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) DO depletion less than 2.

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Dayton, NJ

Section 4

Sample Results

Report of Analysis



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Client Sample ID:	BM-1S		
Lab Sample ID:	JC93544-1	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

						_	
Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	144	10	mg/l	1	08/27/19 11:00	UP	SM2320 B-11
BOD, 5 Day	8.5	1.7	mg/l	1	08/21/19 20:33	EB	SM5210 B-11
Nitrogen, Ammonia	0.27	0.20	mg/l	1	08/27/19 15:30	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.6	0.15	mg/l	1	08/28/19 15:17	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.8	0.10	mg/l	1	08/28/19 15:17	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.24	0.050	mg/l	5	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.71	0.20	mg/l	1	08/26/19 16:32	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	232	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	08/29/19 12:42	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2S		
Lab Sample ID:	JC93544-2	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	85.5	5.0	mg/l	1	08/27/19 12:25	UP	SM2320 B-11
BOD, 5 Day	3.7	1.7	mg/l	1	08/21/19 20:38	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:31	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.1	0.11	mg/l	1	08/28/19 15:18	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10	mg/l	1	08/28/19 15:18	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.11	0.010	mg/l	1	08/20/19 22:13	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	08/26/19 16:34	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	161	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	4.7	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	4.0	1.0	mg/l	1	08/29/19 13:16	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2M		
Lab Sample ID:	JC93544-3 D	ate Sampled:	08/20/19
Matrix:	AQ - Surface Water D	ate Received:	08/20/19
	P	ercent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Amaluta	Decult	DI	T.m.ita	DE	Amolymod	D	Mathad
Analyte	Kesult	KL	Units	DF	Analyzed	ву	Method
Alkalinity, Total as CaCO3 ^a	131	10	mg/l	1	08/27/19 12:25	UP	SM2320 B-11
BOD, 5 Day	6.1	1.7	mg/l	1	08/21/19 20:42	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:33	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.1	0.15	mg/l	1	08/28/19 15:20	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.4	0.10	mg/l	1	08/28/19 15:20	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.26	0.050	mg/l	5	08/20/19 23:22	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.55	0.20	mg/l	1	08/26/19 16:35	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	206	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	08/29/19 13:27	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-2D		
Lab Sample ID:	JC93544-4	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	164	10	mg/l	1	08/27/19 12:25	UP	SM2320 B-11
BOD, 5 Day	8.2	1.7	mg/l	1	08/21/19 20:43	EB	SM5210 B-11
Nitrogen, Ammonia	0.46	0.20	mg/l	1	08/27/19 15:34	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.8	0.15	mg/l	1	08/28/19 15:21	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.0	0.10	mg/l	1	08/28/19 15:21	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.19	0.050	mg/l	5	08/20/19 23:22	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.84	0.20	mg/l	1	08/26/19 16:36	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	236	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	72.4	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	08/29/19 13:38	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-5S		
Lab Sample ID:	JC93544-5	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	203	10	mg/l	1	08/27/19 12:25	UP	SM2320 B-11
BOD, 5 Day	2.7	1.7	mg/l	1	08/21/19 20:46	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:36	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	7.1	0.41	mg/l	1	08/28/19 16:03	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	7.1	0.40	mg/l	4	08/28/19 16:03	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.018	0.010	mg/l	1	08/20/19 22:13	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.47	0.20	mg/l	1	08/26/19 16:37	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	312	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	4.6	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	08/29/19 13:49	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-6S		
Lab Sample ID:	JC93544-6	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	86.0	5.0	mg/l	1	08/27/19 12:25	UP	SM2320 B-11
BOD, 5 Day	4.6	1.7	mg/l	1	08/21/19 20:47	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:40	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.1	0.11	mg/l	1	08/28/19 15:23	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10	mg/l	1	08/28/19 15:23	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010	mg/l	1	08/20/19 22:13	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.70	0.20	mg/l	1	08/26/19 16:38	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	146	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	4.9	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	3.9	1.0	mg/l	1	08/29/19 14:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-6M		
Lab Sample ID:	JC93544-7	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Bv	Method
·					·	·	
Alkalinity, Total as CaCO3 ^a	135	10	mg/l	1	08/27/19 12:25	UP	SM2320 B-11
BOD, 5 Day	8.2	1.7	mg/l	1	08/21/19 20:56	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:41	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.4	0.15	mg/l	1	08/28/19 15:26	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.7	0.10	mg/l	1	08/28/19 15:26	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.27	0.050	mg/l	5	08/20/19 23:22	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.58	0.20	mg/l	1	08/26/19 16:39	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	208	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	08/29/19 15:06	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6D		
Lab Sample ID:	JC93544-8	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	177	10	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	13.0	1.7	mg/l	1	08/21/19 21:00	EB	SM5210 B-11
Nitrogen, Ammonia	1.4	0.20	mg/l	1	08/27/19 15:43	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.0	0.11	mg/l	1	08/28/19 15:27	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.1	0.10	mg/l	1	08/28/19 15:27	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.15	0.010	mg/l	1	08/20/19 22:13	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.8	0.20	mg/l	1	08/26/19 16:39	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	252	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	9.3	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.9	1.0	mg/l	1	08/29/19 15:17	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-7S		
Lab Sample ID:	JC93544-9	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	88.0	5.0	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	4.9	1.7	mg/l	1	08/21/19 21:15	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:44	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.1	0.11	mg/l	1	08/28/19 15:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10	mg/l	1	08/28/19 15:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.090	0.010	mg/l	1	08/20/19 22:32	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.69	0.20	mg/l	1	08/26/19 16:40	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	164	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	5.9	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	3.5	1.0	mg/l	1	08/29/19 15:28	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-7M		
Lab Sample ID:	JC93544-10	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Result	RL	Units	DF	Analyzed	By	Method
113	5.0	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
6.0	1.7	mg/l	1	08/21/19 21:20	EB	SM5210 B-11
< 0.20	0.20	mg/l	1	08/27/19 15:46	KI	SM4500NH3 H-11LACHAT
3.1	0.15	mg/l	1	08/28/19 15:30	KI	EPA353.2/SM4500NO2B
3.4	0.10	mg/l	1	08/28/19 15:30	KI	EPA 353.2/LACHAT
0.31	0.050	mg/l	5	08/20/19 23:22	СМ	SM4500NO2 B-11
0.49	0.20	mg/l	1	08/26/19 16:41	KI	EPA 351.2/LACHAT
198	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
< 4.0	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
2.5	1.0	mg/l	1	08/29/19 15:39	CD	SM5310 B-11
	Result 113 6.0 < 0.20 3.1 3.4 0.31 0.49 198 < 4.0 2.5	ResultRL1135.06.01.7< 0.20	ResultRLUnits1135.0mg/l6.01.7mg/l< 0.20	ResultRLUnitsDF1135.0mg/l16.01.7mg/l1< 0.20	ResultRLUnitsDFAnalyzed1135.0mg/l108/27/19 14:396.01.7mg/l108/21/19 21:20< 0.20	ResultRLUnitsDFAnalyzedBy1135.0mg/l108/27/19 14:39UP6.01.7mg/l108/21/19 21:20EB< 0.20

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)





JC93544

Client Sample ID:	BM-7D		
Lab Sample ID:	JC93544-11	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	178	10	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	7.8	1.7	mg/l	1	08/21/19 21:22	EB	SM5210 B-11
Nitrogen, Ammonia	0.67	0.20	mg/l	1	08/27/19 15:47	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.4	0.11	mg/l	1	08/28/19 15:31	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10	mg/l	1	08/28/19 15:31	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.16	0.010	mg/l	1	08/20/19 22:32	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.1	0.20	mg/l	1	08/26/19 16:42	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	252	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	48.3	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	08/29/19 16:20	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8S		
Lab Sample ID:	JC93544-12	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	89.5	5.0	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	4.9	1.7	mg/l	1	08/21/19 21:25	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/27/19 15:49	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	1.9	0.11	mg/l	1	08/28/19 15:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.0	0.10	mg/l	1	08/28/19 15:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.071	0.010	mg/l	1	08/20/19 22:32	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.67	0.20	mg/l	1	08/26/19 16:45	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	155	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	5.2	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	4.1	1.0	mg/l	1	08/30/19 13:48	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-8M		
Lab Sample ID:	JC93544-13	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	109	5.0	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	3.0	1.7	mg/l	1	08/21/19 21:26	EB	SM5210 B-11
Nitrogen, Ammonia	0.22	0.20	mg/l	1	08/29/19 15:51	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.5	0.11	mg/l	1	08/28/19 15:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.6	0.10	mg/l	1	08/28/19 15:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.052	0.010	mg/l	1	08/20/19 22:32	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.77	0.20	mg/l	1	08/26/19 16:45	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	176	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	7.0	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	3.0	1.0	mg/l	1	08/30/19 13:59	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.









Client Sample ID:	BM-8D		
Lab Sample ID:	JC93544-14	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

RL = Reporting Limit

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Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	101	5.0	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	4.4	1.7	mg/l	1	08/21/19 21:30	EB	SM5210 B-11
Nitrogen, Ammonia	0.48	0.20	mg/l	1	08/29/19 15:52	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.1	0.11	mg/l	1	08/28/19 15:53	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.2	0.10	mg/l	1	08/28/19 15:53	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.053	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.75	0.20	mg/l	1	08/26/19 16:46	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	182	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	27.8	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.8	1.0	mg/l	1	08/30/19 14:10	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9S		
Lab Sample ID:	JC93544-15	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	85.0	5.0	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	5.9	1.7	mg/l	1	08/21/19 21:34	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/29/19 15:54	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.0	0.11	mg/l	1	08/28/19 15:54	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.1	0.10	mg/l	1	08/28/19 15:54	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.073	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.86	0.20	mg/l	1	08/26/19 16:47	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	141	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	7.7	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	3.7	1.0	mg/l	1	08/30/19 14:21	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9M		
Lab Sample ID:	JC93544-16	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	151	10	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day	5.5	1.7	mg/l	1	08/21/19 21:39	EB	SM5210 B-11
Nitrogen, Ammonia	0.25	0.20	mg/l	1	08/29/19 15:55	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.1	0.11	mg/l	1	08/28/19 15:55	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.2	0.10	mg/l	1	08/28/19 15:55	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.15	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.55	0.20	mg/l	1	08/26/19 16:48	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	236	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	9.8	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	08/30/19 14:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-9D		
Lab Sample ID:	JC93544-17	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	181	10	mg/l	1	08/27/19 14:39	UP	SM2320 B-11
BOD, 5 Day ^b	3.3	1.7	mg/l	1	08/21/19 21:40	EB	SM5210 B-11
Nitrogen, Ammonia	0.61	0.20	mg/l	1	08/29/19 16:00	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	4.1	0.11	mg/l	1	08/28/19 15:57	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.2	0.10	mg/l	1	08/28/19 15:57	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.064	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.94	0.20	mg/l	1	08/26/19 16:49	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	270	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	74.4	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	08/30/19 14:44	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) DO depletion less than 2.







Client Sample ID:	BM-10S		
Lab Sample ID:	JC93544-18	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	84.0	5.0	mg/l	1	08/27/19 14:55	UP	SM2320 B-11
BOD, 5 Day ^b	4.3	1.7	mg/l	1	08/21/19 21:43	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/29/19 16:01	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.0	0.11	mg/l	1	08/28/19 15:58	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.1	0.10	mg/l	1	08/28/19 15:58	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.067	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.71	0.20	mg/l	1	08/26/19 16:50	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	149	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	7.2	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	3.7	1.0	mg/l	1	08/30/19 14:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) DO depletion less than 2.





Client Sample ID:	BM-10M		
Lab Sample ID:	JC93544-19	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	122	5.0	mg/l	1	08/27/19 14:55	UP	SM2320 B-11
BOD, 5 Day ^b	2.9	1.7	mg/l	1	08/21/19 21:46	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/29/19 16:02	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	3.4	0.11	mg/l	1	08/28/19 15:59	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.4	0.10	mg/l	1	08/28/19 15:59	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.046	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.70	0.20	mg/l	1	08/26/19 16:51	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	209	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	10.3	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	3.2	1.0	mg/l	1	08/30/19 15:28	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) DO depletion less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)



4.19 **4**



Client Sample ID:	BM-10D		
Lab Sample ID:	JC93544-20	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	166	10	mg/l	1	08/27/19 14:55	UP	SM2320 B-11
BOD, 5 Day ^b	2.9	1.7	mg/l	1	08/21/19 21:48	EB	SM5210 B-11
Nitrogen, Ammonia	0.54	0.20	mg/l	1	08/29/19 16:04	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	4.9	0.11	mg/l	1	08/28/19 16:00	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.9	0.10	mg/l	1	08/28/19 16:00	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.022	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.49	0.20	mg/l	1	08/28/19 11:52	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	265	10	mg/l	1	08/23/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	138	4.0	mg/l	1	08/23/19 09:52	RC	SM2540 D-11
Total Organic Carbon	2.8	1.0	mg/l	1	08/30/19 15:39	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) DO depletion less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)



4.20 **4**



Client Sample ID:	BM-11S		
Lab Sample ID:	JC93544-21	Date Sampled:	08/20/19
Matrix:	AQ - Surface Water	Date Received:	08/20/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	84.0	5.0	mg/l	1	08/27/19 14:55	UP	SM2320 B-11
BOD, 5 Day ^b	1.8	1.7	mg/l	1	08/21/19 21:59	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/29/19 16:05	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.6	0.11	mg/l	1	08/28/19 16:01	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.6	0.10	mg/l	1	08/28/19 16:01	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/20/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.60	0.20	mg/l	1	08/26/19 16:28	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	137	10	mg/l	1	08/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	10.3	4.0	mg/l	1	08/22/19 09:58	RC	SM2540 D-11
Total Organic Carbon	3.6	1.0	mg/l	1	08/30/19 16:13	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) DO depletion less than 2.











Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



SGS	SW CHA	IN OF CUST North America Inc S5 Route 130, Dayton, NJ	ODY Dayton 08810	FED-EX Tracking #	Page 1	of Z É
	TEL 732	2-329-0200 FAX: 732-325	9-3499/3480	SGS Queza #	BN-08120	4-3
Client / Reporting Information	Project Ir	nformation				[93544]
Company Name:	Project Name:	_		Requ	ested Analysis	Matrix Codes
U.S. ARMY CORPS OF Engineers	USACE RESERVOIRS	s - Bive M	IARSH			DW - Drinking Water
100 Peno Se EDGT						GW - Ground Water WW - Water
City Contraction Zip	City State Co	Illing Information (If different from Simpany Name	m Report to)	N S N P		SW - Surface Water
Phila. PA 19107	Reading PA					SL-Studge
TUP LANDAS	Protect # 37	rael Address		Z Z Z L		OI+OS
Phone #	CBent Purchase Order Co		Phil			AIR-Air
215-056-6545	\$	·	ощие Др	1 2 2 2 0		SOL - Other Solid WP - Wipe
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JC93544: Chain of Custody Page 1 of 3



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JC93544: Chain of Custody Page 2 of 3

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SGS Sample Receipt Summary

Job Number:	JC93544	Ļ	c	lient:	USACE-PH	HILADE	Elphia (DISTRICT	Project:	PHILADELPHIA [DISTRICT, I	RESERVO	DIR SAMPL
Date / Time Received:	8/20/201	9 4:3	32:00 PM	I	Delivery N	lethod	I:		Airbill #	s:			
Cooler Temps (Raw Meas Cooler Temps (Corr	sured) ° ected) °	C: C:	Cooler 1: Cooler 1:	(3.8); (3.7);	Cooler 2: Cooler 2:	(3.8); ((3.7); (Cooler 3: Cooler 3:	(3.9); Cooler 4: (3.7) (3.8); Cooler 4: (3.6)	7); Cooler 5 6); Cooler 5	5: (3.7); Cooler 6: 5: (3.6); Cooler 6:	(3.8); Cool (3.7); Cool	er 7: (3.8) er 7: (3.7)	;
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature 1. Temp criteria achieved: 2. Cooler temp verification:	Yor ☑	<u>N</u> □ <u>Y</u> ⊮	- 3. (4. Sm D r<u>N</u> R Gun	COC P pl Date	resent: s/Time OK	Y . ♥ ♥	<u>or N</u>	Sample Integrit 1. Sample labels 2. Container labe 3. Sample contai Sample Integrit	ty - Docume present on t ling complet ner label / Co ity - Condit	entation pottles: e: DC agree: ion	Y V V Y	Dr N	
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Quality Control_Preserve 1. Trip Blank present / cool 2. Trip Blank listed on COC 3. Samples preserved prop	ation er: :: erly:	Y 	or N	<u>N/A</u>				Sample Integri 1. Analysis requi 2. Bottles receive 3. Sufficient volu	i ty - Instruc ested is clea ed for unspe ime recvd for	r: cified tests r analysis:	<u>Υ</u> ☑ ☑	or N	<u>N/A</u>
4. VOCs headspace free:				✓				 Compositing i Filtering instru 	nstructions c uctions clear:	lear:			
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SM089-03 Rev. Date 12/7/17

> JC93544: Chain of Custody Page 3 of 3

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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

09/13/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93544XA



Sampling Date: 08/20/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 15



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Section 3: Misc. Forms	12
3.1: Chain of Custody	13

Sample Summary

USACE-Philadelphia District

Job No: JC93544XA

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC93544-1XA	08/20/19	07:20 GW	08/20/19	AQ	Surface Water	BM-1S
JC93544-2XA	08/20/19	09:30 GW	08/20/19	AQ	Surface Water	BM-2S
JC93544-5XA	08/20/19	12:40 GW	08/20/19	AQ	Surface Water	BM-5S
JC93544-6XA	08/20/19	08:30 GW	08/20/19	AQ	Surface Water	BM-6S
JC93544-9XA	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7S
JC93544-12X	A08/20/19	11:40 GW	08/20/19	AQ	Surface Water	BM-8S
JC93544-15X	A08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9S
JC93544-18X	A08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10S
JC93544-21X	A08/20/19	12:40 GW	08/20/19	AQ	Surface Water	BM-11S




Section 2

Subcontract Lab Data

Report of Analysis





KRISTIN DEGRAW SGS NORTH AMERICA, INC.

2235 ROUTE 130

DAYTON, NJ 08810



Serialized: 09/05/2019 05:59pm QC35

Regarding:

SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

PROJECT ID:

W09769 USACE

LABORATORY REPORT NUMBER:

L7154966

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Authorized by: Douglas J. Gump Client Services Manager



5 of 15 JC93544XA

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Eurofins QC, LLC

Analytical Report Printed 09/05/19 17:59 QC35

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KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

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Regarding: KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

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Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE				P.O. No:		Inv. No: PWSID No:	1990906 PI		
Sample ID L7154966-1	Sample Descripti BM-1S Received Date	on 2/Time/Temp 08/2	20/19 03:00pm 3.0 C	Iced (Y/N): Y	Samp. D 08/20/19	ate/Time/Temp 07:20am NA C	Sampled by Customer		
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst		
ENVIRON	MENTAL MICROB	IOLOGY BM-	15						
Total Coliforr Fecal Colifor	n, MF m, MF	>20000 Q 30	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2		
Sample ID L7154966-2	Sample Descripti BM-2S Received Date	on 2/Time/Temp 08/2	20/19 03:00pm 3.0 C	Iced (Y/N): Y	Samp. D 08/20/19	ate/Time/Temp 09:30am NA C	Sampled by Customer		
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst		
ENVIRON	MENTAL MICROB	JOLOGY BM-2	2S						

SM 9222B

SM 9222D

PIN: 28748

Total Coliform, MF Fecal Coliform, MF

Serial Number: 6542353

cfu/100ml

cfu/100ml



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08/20/19 06:28PM SRK 08/20/19 09:33PM KC2

Analytical Report Printed 09/05/19 17:59

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE			P.O. No:	Inv. No: PWSID No:		1990906 PI		
Sample ID Sample Description L7154966-3 BM-5S Received Date/Time/Temp 08/20/19 03:00pm 3.0 C		Iced (Y/N): Y	Samp. Date/Time/Temp 08/20/19 12:40pm NA C		Sampled by Customer			
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-5S						
Total Coliform Fecal Coliforn	n, MF n, MF	>20000 270		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 10	100 10	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2
Sample ID L7154966-4	Sample Description BM-6S Received Date/Tim	ne/Temp 08/20/*	19 03:0	0pm 3.0 C	Iced (Y/N): Y	Samp. Da 08/20/19 0	ite/Time/Temp 8:30am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-6S						
Total Coliform Fecal Coliforn	n, MF n, MF	>20000 Q 4		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2
Sample ID L7154966-5	Sample Description BM-7S Received Date/Tim	e/Temp 08/20/ [/]	19 03:0	0pm 3.0 C	Iced (Y/N): Y	Samp. Da 08/20/19 1	te/Time/Temp 0:10am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-7S						
Total Coliform Fecal Coliforn	n, MF n, MF	8300 E, Q 5		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2
Sample ID L7154966-6	Sample Description BM-8S Received Date/Tim	ne/Temp 08/20/*	19 03:0	0pm 3.0 C	Iced (Y/N): Y	Samp. Da 08/20/19 1	te/Time/Temp 1:40am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst

Serial Number: 6542353

JC93544XA

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Analytical Report Printed 09/05/19 17:59

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE			P.O. No:	Inv. No: PWSID No:		1990906 PI		
Sample ID Sample Description L7154966-6 BM-8S Received Date/Time/Temp 08/20/19 03:00pm 3.0 C		Iced (Y/N): Y	Samp. Date/Time/Temp 08/20/19 11:40am NA C		Sampled by Customer			
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-8S						
Total Coliform Fecal Coliform	n, MF n, MF	260 <1		cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2
Sample ID L7154966-7	Sample Description BM-9S Received Date/Tim	ne/Temp 08/20/ ⁻	19 03:0	0pm 3.0 C	Iced (Y/N): Y	Samp. Da 08/20/19 1	te/Time/Temp 0:30am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-98						
Total Coliform Fecal Coliform	n, MF n, MF	2700 2		cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 100	100 1	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2
Sample ID L7154966-8	Sample Description BM-10S Received Date/Tim	ne/Temp 08/20/ ⁻	19 03:0	0pm 3.0 C	Iced (Y/N): Y	Samp. Da 08/20/19 1	te/Time/Temp 1:00am NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-109	5					
Total Coliform Fecal Coliform	n, MF n, MF	190 E 2		cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	08/20/19 06:28PM SRK 08/20/19 09:33PM KC2
Sample ID L7154966-9	Sample Description BM-11S Received Date/Tim	ne/Temp 08/20/ ⁻	19 03:0	0pm 3.0 C	Iced (Y/N): Y	Samp. Da 08/20/19 1	t e/Time/Temp 2:40pm NA C	Sampled by Customer
Parameter		Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 28748

Serial Number: 6542353

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Analytical Report Printed 09/05/19 17:59

Account No: W Project No: W	/09769, SGS NORTH /09769 USACE, USA		P.O. No:		Inv. No: PWSID No:	1990906 PI		
Sample ID S L7154966-9 B	ample Description M-11S Received Date/Tin	ne/Temp 08/20/1	9 03:00pm 3.0 C	Iced (Y/N): Y	Samp. Dat 08/20/19 12	e/Time/Temp 2:40pm NA C	Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, A	Analyst
ENVIRONME	NTAL MICROBIOI	.OGY BM-11S						
Total Coliform, N Fecal Coliform, N	ЛF MF	>20000 4400 Q	cfu/100ml cfu/100ml	SM 9222B SM 9222D	1 1	100 100	08/20/19 06:28PM 08/20/19 09:33PM	SRK KC2

Sample Comments | Result Qualifiers:

L7154966-1:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7154966-2:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7154966-4 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7154966-5:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7154966-8:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7154966-9:

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6542353





DEFINITIONS

The following terms or abbreviations are used in this report:

QC

Less than: In conjunction with a numerical value, < indicates a concentration less than RL / MDL Greater than: In conjunction with a numerical value, > indicates a concentration greater than RL / MDL CFU Colony Forming Unit Dilution Factor (For Microbiology, DF = volume of DE sample tested) DRY Result was reported on a dry weight basis EPA recommended "Maximum Contaminant Level" MCL MDL Method Detection Limit MF Membrane Filtration **MPN** Most Probable Number For odor test: No Odor Observed ND For all other tests: Analyte concentration Not ND Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

Data Qualifiers

J	Estimated value MDL, but < RL
Т	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

Warranties, Terms, and Conditions

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
 - "ERF" = field staff performs tests under NJ State certification # 02015.
 - "VL" = field staff performs tests under NJ State certification # 06005.
 - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- · The report shall not be reproduced, except in full, without the written consent of the laboratory.
- · All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been
 performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

EQC Accreditations

Horsham Facility	NELAP/State IDs-	PA:	46-05499	NJ:	PA093	NY:	12080	MD:	357
East Rutherford Facility Vineland Facility Wind Gap Facility	<u>State ID</u> - <u>State ID</u> - <u>State ID</u> -	NJ: NJ: NJ:	02015 06005 PA001						





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Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody





Client / Reporting Information Dick 35 V/4 Comparison USACE Resources Bit Comparison Comparison Comparison Bit Comparison Comparison Comparison Bit Comparison Comparison Comparison Comparison Comparison Philos Comparison Fig. Comparison Comparison Processon Comparison Comparison Comparison Comparison Processon Comparison Comparison Comparison Comparison Processon Comparison Comparison Comparison Comparison Comparison Processon Comparison Comparison Comparison Comparison Comparison Comparison Processon Comparison Comparison Comparison Comparison Comparison Compari	565	SW CHAIN OF CL SGS North America I 2235 Route 130, Dayo TEL 732-329-0200 FAX: 7	ISTODY IC Dayton n. NI 06810 32-323-3499/3480	FEDEX Tracking a	Page <u>1 of </u> 2. É
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Politic Contract E-rail Politic Contract State State <th< td=""><td>Phila, PA 19107</td><td>Reading PA</td><td></td><td></td><td>SO - Soli SL- Stadoe</td></th<>	Phila, PA 19107	Reading PA			SO - Soli SL- Stadoe
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	VWW.sgs.com/ehsusa	11110 503 JDT 6 661 202
Client / Reporting Information	Project Information	JC 7 55 44
HE DOM COOPER SHE		Matrix Codes
Street Address	Street Reservoirs - Blue Marsh G o	DW - Drinking Wester
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City State Zip	City State Company Name	SW - Surface Weter SO - Soli
Phila. PA 19107	Keading PA	SL-Stadge
TAU LAUDE	Protect # Street Address	OI-OB
Phone #	Client Purchase Order / Cây	AIR - Atr
215-656-6545		SOL - Other Sotto WP - Wipe
Sempler(s) Name(s) (0/0, Phone i	Protect Manager Attention:	FB - Field Blank EB-Equipment Blank
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10F BIN-105	100 GSWYX NIXXXX	
194 BM-10M	VIDO GOW9XXXXXXX	
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10 Business Days	Commercial "B" (Level 2) NYASP Category B	
3 Business Days	MA MCP Criteria	
2 Business Days"	[] Full Tier I (Level 4) [] CT RCP Criteria	
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JC93544XA: Chain of Custody Page 2 of 3



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SGS Sample Receipt Summary

Job Number: J	C93544 C	lient: USACE-PH	ILADELPHIA DIS	TRICT Proje	ect: PHILADELPHIA D	ISTRICT, R	ESERVO	OIR SAMPL
Date / Time Received: 8	/20/2019 4:32:00 PM	Delivery M	ethod:	Airb	ill #'s:			
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Quality Control Preserva 1. Trip Blank present / coole 2. Trip Blank listed on COC: 3. Samples preserved proper 4. VOCs headspace free:	Y or N r: rly:	<u>N/A</u>		Sample Integrity - Ins 1. Analysis requested is 2. Bottles received for u 3. Sufficient volume rec 4. Compositing instructi	- structions s clear: inspecified tests vd for analysis: ons clear:	<u>Y_or</u> ☑ ☑	• N	
Test Strip Lot #s:	рН 1-12:22	9517	pH 12+:	5. Filtering instructions 208717	clear: Other: (Specify)			✓

SM089-03 Rev. Date 12/7/17

> JC93544XA: Chain of Custody Page 3 of 3

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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

09/10/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93544X



Sampling Date: 08/20/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 29



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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3.1: Chain of Custody	27



Sample Summary

USACE-Philadelphia District

Job No:

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC93544-1F	08/20/19	07:20 GW	08/20/19	AQ	Surface H2O Filtered	BM-1S
JC93544-1X	08/20/19	07:20 GW	08/20/19	AQ	Surface Water	BM-1S
JC93544-2F	08/20/19	09:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-2S
JC93544-2X	08/20/19	09:30 GW	08/20/19	AQ	Surface Water	BM-2S
JC93544-3F	08/20/19	09:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-2M
JC93544-3X	08/20/19	09:30 GW	08/20/19	AQ	Surface Water	BM-2M
JC93544-4F	08/20/19	09:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-2D
JC93544-4X	08/20/19	09:30 GW	08/20/19	AQ	Surface Water	BM-2D
JC93544-5F	08/20/19	12:40 GW	08/20/19	AQ	Surface H2O Filtered	BM-5S
JC93544-5X	08/20/19	12:40 GW	08/20/19	AQ	Surface Water	BM-5S
JC93544-6F	08/20/19	08:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-6S
JC93544-6X	08/20/19	08:30 GW	08/20/19	AQ	Surface Water	BM-6S
JC93544-7F	08/20/19	08:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-6M



3 of 29

JC93544X

JC93544X

Sample Summary (continued)

USACE-Philadelphia District

Job No: JC93544X

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC93544-7X	08/20/19	08:30 GW	08/20/19	AQ	Surface Water	BM-6M
JC93544-8F	08/20/19	08:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-6D
JC93544-8X	08/20/19	08:30 GW	08/20/19	AQ	Surface Water	BM-6D
JC93544-9F	08/20/19	10:10 GW	08/20/19	AQ	Surface H2O Filtered	BM-7S
JC93544-9X	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7S
JC93544-10F	08/20/19	10:10 GW	08/20/19	AQ	Surface H2O Filtered	BM-7M
JC93544-10X	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7M
JC93544-11F	08/20/19	10:10 GW	08/20/19	AQ	Surface H2O Filtered	BM-7D
JC93544-11X	08/20/19	10:10 GW	08/20/19	AQ	Surface Water	BM-7D
JC93544-12F	08/20/19	11:40 GW	08/20/19	AQ	Surface H2O Filtered	BM-8S
JC93544-12X	08/20/19	11:40 GW	08/20/19	AQ	Surface Water	BM-8S
JC93544-13F	08/20/19	11:40 GW	08/20/19	AQ	Surface H2O Filtered	BM-8M
JC93544-13X	08/20/19	11:40 GW	08/20/19	AQ	Surface Water	BM-8M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC93544X

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC93544-14F	08/20/19	11:40 GW	08/20/19	AQ	Surface H2O Filtered	BM-8D
JC93544-14X	08/20/19	11:40 GW	08/20/19	AQ	Surface Water	BM-8D
JC93544-15F	08/20/19	10:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-9S
JC93544-15X	08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9S
JC93544-16F	08/20/19	10:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-9M
JC93544-16X	08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9M
JC93544-17F	08/20/19	10:30 GW	08/20/19	AQ	Surface H2O Filtered	BM-9D
JC93544-17X	08/20/19	10:30 GW	08/20/19	AQ	Surface Water	BM-9D
JC93544-18F	08/20/19	11:00 GW	08/20/19	AQ	Surface H2O Filtered	BM-10S
JC93544-18X	08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10S
JC93544-19F	08/20/19	11:00 GW	08/20/19	AQ	Surface H2O Filtered	BM-10M
JC93544-19X	08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10M
JC93544-20F	08/20/19	11:00 GW	08/20/19	AQ	Surface H2O Filtered	BM-10D



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC93544X

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC93544-20X	08/20/19	11:00 GW	08/20/19	AQ	Surface Water	BM-10D
JC93544-21F	08/20/19	12:40 GW	08/20/19	AQ	Surface H2O Filtered	BM-11S
JC93544-21X	08/20/19	12:40 GW	08/20/19	AQ	Surface Water	BM-11S



Section 2

Subcontract Lab Data

Report of Analysis





Attention:Tammy McCloskeyReported To:SGS North America2235 US Highway 130Dayton, NJ 08810

Lab ID:9030185-01Collected By:ClientSample Desc:BM-1S

Certificate of Analysis

Laboratory No.: 9030185 Report: 09/03/19 Lab Contact: Amy L Morriss

Project: Army Corp Reservoirs

Sampled: 08/20/19 09:30

Sampled: 08/20/19 07:20 Received: 08/27/19 09:39 Sample Type: Grab

Received: 08/27/19 09:39

Sample Type: Grab

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/28/19	J	JCL	

Lab ID:9030185-02Collected By:ClientSample Desc:BM-2S

				Rep.					
	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/28/19	J	JCL	

Lab ID:9030185-03Collected By:ClientSample Desc:BM-2M

Sampled: 08/20/19 09:30 Received: 08/27/19 09:39 Sample Type: Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	< 0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL	
General Chemistry									
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/28/19	J	JCL	



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Lab ID: 9030185- Sample Desc: BM-2D	04 Col	lected By:	Client		Sampled: 08/2	20/19 09:30	Received Sample Type	l: 08/27/19 09:39 2: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.03	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL
General Chemistry Phosphorus as P, Total	0.81	mg/l	0.01	0.05	SM 4500-P E	08/28/19		JCL
Lab ID: 9030185- Sample Desc: BM-5S	05 Col	lected By:	Client		Sampled: 08/2	20/19 12:40	Received Sample Type	l: 08/27/19 09:39 2: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.06	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11	JCL
Phosphorus as P, Total	0.06	mg/l	0.01	0.05	SM 4500-P E	08/28/19		JCL
Lab ID: 9030185- Sample Desc: BM-6S	06 Col	lected By:	Client		Sampled: 08/2	20/19 08:30	Received Sample Type	l: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-6S	06 Col	lected By:	Client	Rep. Limit	Sampled: 08/2 Procedure	20/19 08:30 Analyzed	Received Sample Type Notes	l: 08/27/19 09:39 :: Grab Analyst
Lab ID: 9030185- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved	06 Col Result	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E	20/19 08:30 Analyzed 08/28/19	Received Sample Type Notes G-11, J	l: 08/27/19 09:39 e: Grab Analyst JCL
Lab ID: 9030185- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	06 Col <u>Result</u> y 0.01 <0.01	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	20/19 08:30 Analyzed 08/28/19 08/28/19	Received Sample Type Notes G-11, J U	l: 08/27/19 09:39 e: Grab Analyst JCL JCL
Lab ID: 9030185- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-6M	06 Col Result ^Y 0.01 <0.01 07 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2	20/19 08:30 Analyzed 08/28/19 08/28/19 20/19 08:30	Received Sample Type Notes G-11, J U Received Sample Type	l: 08/27/19 09:39 e: Grab Analyst JCL JCL l: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-6M	06 Col Result (Y) 0.01 <0.01 07 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure	20/19 08:30 Analyzed 08/28/19 08/28/19 20/19 08:30 Analyzed	Received Sample Type Notes G-11, J U Received Sample Type Notes	I: 08/27/19 09:39 Y: Grab Analyst JCL JCL I: 08/27/19 09:39 Y: Grab Analyst
Lab ID: 9030185- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-6M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	06 COI Result Y 0.01 <0.01 07 COI 07 COI 9 0.02	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL 0.007	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure SM 4500-P E	20/19 08:30 Analyzed 08/28/19 08/28/19 20/19 08:30 Analyzed 08/28/19	Received Sample Type G-11, J U Received Sample Type Notes	I: 08/27/19 09:39 Y: Grab Analyst JCL JCL I: 08/27/19 09:39 Y: Grab Analyst JCL JCL JCL JCL JCL JCL JCL



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Lab ID: 9030185-0 Sample Desc: BM-6D	08 Col	lected By:	Client		Sampled: 08/2	20/19 08:30	Receive Sample Typ	d: 08/27/19 09:39 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	y 0.04	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL
General Chemistry Phosphorus as P, Total	0.11	mg/l	0.01	0.05	SM 4500-P E	08/28/19		JCL
Lab ID: 9030185-0 Sample Desc: BM-7S	09 Col	lected By:	Client		Sampled: 08/2	20/19 10:10	Receive Sample Typ	d: 08/27/19 09:39 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL
General Chemistry Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/28/19	J	JCL
Lab ID: 9030185 Sample Desc: BM-7M	10 Col	lected By:	Client		Sampled: 08/2	20/19 10:10	Receive Sample Typ	d: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-7M	10 Col	lected By: Unit	Client	Rep. Limit	Sampled: 08/2 Procedure	20/19 10:10 Analyzed	Receive Sample Typ Notes	d: 08/27/19 09:39 e: Grab Analyst
Lab ID: 9030185- Sample Desc: BM-7M Dissolved General Chemistr Phosphorus as P, Dissolved	10 Col Result	lected By: Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E	20/19 10:10 Analyzed 08/29/19	Receive Sample Typ Notes G-11, J	d: 08/27/19 09:39 e: Grab Analyst JCL
Lab ID: 9030185- Sample Desc: BM-7M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	10 Col Result Y 0.01 0.02	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E	20/19 10:10 Analyzed 08/29/19 08/29/19	Receive Sample Typ Notes G-11, J J	d: 08/27/19 09:39 e: Grab <u>Analyst</u> JCL JCL
Lab ID: 9030185- Sample Desc: BM-7M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-7D	10 Col <u>Result</u> y 0.01 0.02	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2	20/19 10:10 Analyzed 08/29/19 08/29/19 20/19 10:10	Receive Sample Typ Notes G-11, J J Receive Sample Typ	 d: 08/27/19 09:39 e: Grab Analyst JCL JCL d: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-7M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-7D	10 Col <u>Result</u> y 0.01 0.02 11 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure	20/19 10:10 Analyzed 08/29/19 08/29/19 20/19 10:10 Analyzed	Receive Sample Typ Notes G-11, J J Receive Sample Typ Notes	 d: 08/27/19 09:39 e: Grab Analyst JCL JCL d: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-7M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-7D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	10 Col <u>Result</u> y 0.01 0.02 11 Col <u>Result</u> y 0.04	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 0.01 Client MDL 0.007	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure SM 4500-P E	20/19 10:10 Analyzed 08/29/19 08/29/19 20/19 10:10 Analyzed 08/29/19	Receive Sample Typ Ontes G-11, J J Receive Sample Typ Notes G-11, J	 d: 08/27/19 09:39 e: Grab Analyst JCL JCL d: 08/27/19 09:39 e: Grab Analyst JCL



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N

Lab ID: 9030185-7 Sample Desc: BM-8S	2 Col	lected By:	Client		Sampled: 08/2	20/19 11:40	Receive Sample Typ	d: 08/27/19 09:39 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	y 0.02	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL
Lab ID: 9030185-3 Sample Desc: BM-8M	13 Col	lected By:	Client		Sampled: 08/2	20/19 11:40	Receive Sample Typ	d: 08/27/19 09:39 e: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	y 0.01	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL
Lab ID: 9030185-3 Sample Desc: BM-8D	14 Col	lected By:	Client		Sampled: 08/2	20/19 11:40	Receive Sample Typ	d: 08/27/19 09:39 e: Grab
Lab ID: 9030185-3 Sample Desc: BM-8D	4 Col	lected By: Unit	Client MDL	Rep. Limit	Sampled: 08/2 Procedure	20/19 11:40 Analyzed	Receive Sample Typ Notes	d: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved	14 Col Result 9 0.02	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E	20/19 11:40 Analyzed 08/29/19	Receive Sample Typ Notes G-11, J	d: 08/27/19 09:39 e: Grab Analyst JCL
Lab ID: 9030185- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	14 Col Result 9 0.02 0.13	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	20/19 11:40 Analyzed 08/29/19 08/29/19	Receive Sample Typ Notes G-11, J	d: 08/27/19 09:39 e: Grab Analyst JCL JCL
Lab ID:9030185-3Sample Desc:BM-8DDissolved GeneralChemistre Phosphorus as P, DissolvedGeneral Chemistre Phosphorus as P, TotalLab ID:9030185-3Sample Desc:BM-9S	14 Col Result 9 0.02 0.13 15 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2	20/19 11:40 Analyzed 08/29/19 08/29/19 20/19 10:30	Receive Sample Typ Notes G-11, J Receive Sample Typ	d: 08/27/19 09:39 e: Grab Analyst JCL JCL d: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-9S	14 Col Result 9 0.02 0.13 15 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure	20/19 11:40 Analyzed 08/29/19 08/29/19 20/19 10:30 Analyzed	Receive Sample Typ Notes G-11, J Receive Sample Typ Notes	d: 08/27/19 09:39 e: Grab Analyst JCL JCL d: 08/27/19 09:39 e: Grab
Lab ID: 9030185- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-9S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	14 Col Result 0.13 15 Col 8 8 9 0.02	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure SM 4500-P E	20/19 11:40 Analyzed 08/29/19 08/29/19 20/19 10:30 Analyzed 08/29/19	Receive Sample Typ Ontes G-11, J Receive Sample Typ Notes G-11, J	d: 08/27/19 09:39 e: Grab Analyst JCL JCL d: 08/27/19 09:39 e: Grab Analyst JCL



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Lab ID: 9030185- Sample Desc: BM-9M	16 Col l	lected By:	Client		Sampled: 08/2	20/19 10:30	Receive Sample Typ	ed: 08/27/19 09:39 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.05	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL
Lab ID: 9030185- Sample Desc: BM-9D	17 Col l	lected By:	Client		Sampled: 08/2	20/19 10:30	Receive Sample Typ	ed: 08/27/19 09:39 De: Grab
	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	су 0.07	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11	JCL
Phosphorus as P, Total	0.11	mg/l	0.01	0.05	SM 4500-P E	08/29/19		JCL
Lab ID: 9030185- Sample Desc: BM-10S	18 Col l	lected By:	Client		Sampled: 08/2	20/19 11:00	Receive Sample Typ	ed: 08/27/19 09:39 De: Grab
Lab ID: 9030185- Sample Desc: BM-10S	18 Coll Result	lected By: Unit	Client MDL	Rep. Limit	Sampled: 08/2 Procedure	20/19 11:00 Analyzed	Receive Sample Typ Notes	ed: 08/27/19 09:39 De: Grab
Lab ID: 9030185- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved	18 Coll Result	Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E	20/19 11:00 Analyzed 08/29/19	Receive Sample Typ Notes G-11, J	ed: 08/27/19 09:39 De: Grab Analyst JCL
Lab ID: 9030185- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	18 Coll <u>Result</u> y 0.03	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E	20/19 11:00 Analyzed 08/29/19 08/29/19	Receive Sample Typ Notes G-11, J J	ed: 08/27/19 09:39 De: Grab Analyst JCL JCL
Lab ID: 9030185- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-10M	18 Coll Result 79 0.03 0.03 19 Coll	Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E	20/19 11:00 Analyzed 08/29/19 08/29/19 20/19 11:00	Receive Sample Typ Notes G-11, J J Receive Sample Typ	ed: 08/27/19 09:39 De: Grab Analyst JCL JCL d: 08/27/19 09:39 De: Grab
Lab ID: 9030185- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-10M	18 Coll <u>Result</u> 9 0.03 19 Coll Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 08/2	20/19 11:00 Analyzed 08/29/19 08/29/19 20/19 11:00 Analyzed	Receive Sample Typ Notes G-11, J J Receive Sample Typ	ed: 08/27/19 09:39 pe: Grab Analyst JCL JCL ed: 08/27/19 09:39 pe: Grab Analyst
Lab ID: 9030185- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9030185- Sample Desc: BM-10M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	18 Coll Result Y 0.03 0.03 19 Coll Result	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 08/2 Procedure SM 4500-P E SM 4500-P E Sampled: 08/2 Procedure SM 4500-P E	20/19 11:00 Analyzed 08/29/19 08/29/19 20/19 11:00 Analyzed 08/29/19	Receive Sample Type G-11, J J Receive Sample Type Notes G-11, J	ed: 08/27/19 09:39 De: Grab Analyst JCL JCL ed: 08/27/19 09:39 De: Grab Analyst JCL



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Lab ID: Sample Desc:	9030185-20 BM-10D	Collected By: Client			Sampled: 08/2	20/19 11:00 Sa	Received: 08/27/19 09:39 Sample Type: Grab		
		Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved Genera	l Chemistry								
Phosphorus as P, Dissolved		0.10	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11	JCL
General Chemistr	У								
Phosphorus as P, T	otal	0.12	mg/l	0.01	0.05	SM 4500-P E	08/29/19		JCL
Lab ID: Sample Desc:	9030185-21 BM-11S	Coll	ected By:	Client		Sampled: 08/2	20/19 12:40 Sa	Receive ample Typ	:d: 08/27/19 09:39 De: Grab
		Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst

	Result	Unit	MDL	Limit	Procedure	Analyzed	Notes	Analyst	
Dissolved General Chemistr	ry								
Phosphorus as P,	0.05	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11	JCL	
Dissolved									
General Chemistry									
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	08/29/19		JCL	



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Quality Control

General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9H1637				,				
MB (B9H1637-BLK1)				Prepared & An	alyzed: 08/28/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
LFM (B9H1637-MS1)		Source: 9030185-01		Prepared & An	alyzed: 08/28/20	19		
Phosphorus as P, Total	1.01	0.05	mg/l	96.2	80-120			
LFMD (B9H1637-MSD1)		Source: 9030185-01		Prepared & An	alyzed: 08/28/20	19		
Phosphorus as P, Total	1.02	0.05	mg/l	97.7	80-120	1.48	20	
Batch B9H1705								
MB (B9H1705-BLK1)				Prepared & An	alyzed: 08/29/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9H1705-BLK2)				Prepared & An	alyzed: 08/29/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9H1705-BLK3)				Prepared & An	alyzed: 08/29/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
LFB (B9H1705-BS1)				Prepared & An	alyzed: 08/29/20	19		
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			
LFM (B9H1705-MS1)		Source: 9030185-12		Prepared & An	alyzed: 08/29/20	19		
Phosphorus as P, Total	1.00	0.05	mg/l	96.9	80-120			
LFMD (B9H1705-MSD1)		Source: 9030185-12		Prepared & An	alyzed: 08/29/20	19		
Phosphorus as P, Total	1.03	0.05	mg/l	99.6	80-120	2.65	20	

Dissolved General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9H1638								
MB (B9H1638-BLK1)				Prepared & Ana	alyzed: 08/28/20	19		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					G-11, U
LFB (B9H1638-BS1)				Prepared & Ana	alyzed: 08/28/20	19		
Phosphorus as P, Dissolved	1.00	0.05	mg/l	100	80-120			G-11
LFM (B9H1638-MS1)		Source: 9030185-09		Prepared & Ana	alyzed: 08/28/20	19		
Phosphorus as P, Dissolved	1.02	0.05	mg/l	100	80-120			
LFMD (B9H1638-MSD1)		Source: 9030185-09		Prepared & Ana	alyzed: 08/28/20	19		
Phosphorus as P, Dissolved	1.00	0.05	mg/l	98.9	80-120	1.58	20	
Batch B9H1707								

MB (B9H1707-BLK1)				Prepared & Analyzed: 08/29/2019	
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l		G-11, U



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		Dissolved (General Ch	emistry (Cor	ntinued)			
	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9H1707 (Continued)								
LFB (B9H1707-BS1)				Prepared & Ana	alyzed: 08/29/20)19		
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120			G-11



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Preparation Methods

Specific Method	Preparation Method	Prepared Date	Prepared By
9030185-01			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-02			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-03			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-04			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-05			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-06			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-07			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-08			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-09			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
9030185-10			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-11			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-12			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-13			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-14			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-15			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL



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9030185-16			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-17			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-18			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-19			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-20			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
9030185-21			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL

Notes and Definitions

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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ALM	1 of 4		C93544X	Matrix Codes		GW - Ground Water	WW - Water SW - Surface Water	SO - Soi SL- Skudge SED-sediment	01 - Oil LIQ - Other Liquid AIR - Air	SOL - Other Solid WP - Wipe FB - Field Blank	EB-Equipment Bfank RB - Rinse Blank TB - Trip Blank	LAB USE ONLY													ecial Instructions	2					/www.sgs.com/en/terms-and-conditions		2	1	On Ice Cooler Temp. *C
185 PM: <i>J</i>	merica	sservoirs																							Comments / Sp						http:/	very.	Date / Time: Received By 2	Date / Time: Received By	ved where applicable
90301	SGS North A	Army Corp Re							n	Zp	, 2 041,	LEO4 ' EILTERGN MEOH MEOH	×	×	×	×	×	×	×	×	×	×	×	×		ASP Category A	the Forms	D Format	her REDT2		mmary mmary + Partial Raw data	ssession, including courier deliv			Intact Preserv
	CUST	a Inc Day vton. NJ 088	1 / 32-329-34 Nehsusa					hatton (If different from Report to)		State		trix # of bottless HV Number of preserved Nano O, Preserved Nano Number of preserved Nano Number of Preserved	2	D 2	a 2	a 2	a 2	a 2	a 2	a 2	α 2	a 2	a 2	α 2	Data Deliverable Information	nerclai "A" (Level 1)	T1 (Level 3+4)	sduced ED	nerclal "C" X OI	Commercial "A" = Kesults Only Commercial "P" = Results - OC 5	Commercial b = Results + QC Sui Commercial "C" = Results + QC Sui	elow each time samples change po	Relfinquished By: 2	Y A Relinquished By:	C Custody Seal #
	CHAIN OF	2235 Route 130, Day 2235 Route 130, Day	1EL. / 32-329-0200 FAX WWW.Sgs.con	Project Information		voir Sampling		Billing Inform State Company Nan	Street Address	City	Attention:	Collection Sampled Na	7:20:00 AM GW A	7:20:00 AM GW A	9:30:00 AM GW A	9:30:00 AM GW A	9:30:00 AM GW A	9:30:00 AM GW A	9:30:00 AM GW A	9:30:00 AM GW A	12:40:00 PM GW A	12:40:00 PM GW A	8:30:00 AM GW A	8:30:00 AM GW A								istody must be dooumented by	d er .	Nec Alec	14278
)					Project Name:	Philadelphia District, Reser	Street	City	Prolect #	Client Purchase Order #	e Project Manager	MEOHIDI Vial # Date	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19		Approved By (SGS PM): / Date:					val needed for RUSH/Emergency TA	Sample Ct	19 17:00 F	Time: Receivery	Time: Received By:
		250		Client / Reporting Information	any Name:		Address	State	ct Contact E-mail nmy.mccloskey@sgs.com	#	ller(s) Name(s) Phone	 Field ID / Point of Collection 	BM-1S	BM-1S	BM-2S	BM-2S	BM-2M	BM-2M	BM-2D	BM-2D	BM-5S	BM-5S	BM-6S	BM-6S	Turnaround Time (Business days)	Standard 10 Business	5 Business Days RUSH	3 Business Days RUSH	2 Business Days RUSH 4 Business Days RUSH	V Other The Starts	LAJ Outer Day and a statistic via Lablink Approv		Data Sheet of Sheet of Sheet of Sheet	Inquished Re-PCO 600 bate 14	Inquished by: Date /
			L		Comp		Street	City	Project	Phone	Samul	SGS Sumplet	<u>∎</u>	+ +	,62 ^{2F}	× t	6,6 #	¥ ₹	4	+ ۲	ب ة م	7	S.	-)							<u>۳</u>		₽ ₽ ₩	3 Rel	5 76

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JC93544X.xls Rev. Date: 4/10/18

18 of 29 JC93544X

85 Page 2tof 4	Bettle Order Control #	· SGS Job # JC93544X	Requested Analysis Matrix Codes	DW - Drinking Water GW - Ground Water	WW - Water SW - Surface Water	S. S	LIC2 - Other Liquid LIC3 - Other Liquid	SOL Other Solid WP - Wpo FB - Field Blank	EB-Equipment Blank RB - Kinse Blank TB - Trip Blank		LAB USE ONLY													Comments / Special Instructions	8					http://www.sgs.com/en/terms-and-conditions	Date / Time: Received By: 2	Date / Time: Received By:	1 Where applicable 14 On Ice Cooler Temp. 'C D Therm, ID: D	icenter 1°C AN ice	201	のたいの
90301	FED-EX Tracking #	3GS Quote #					'n	, ·	, 1 041,	лекои 04,	LPG FIL	×	×	×	×	×	×	×	×	×	×	×	×		ry B					tiai Raw data noluding courier deliv			Intact Preserve Not Intact Dabsent			
торү	08810	-3499/3480	2 J			erent from Report to)		State Zip		Number of preserved Bottles														ta Deliverable Information	(Level 1) INVASP Catego (Level 2) NYASP Catego	I+4) State Forms	EDD Format	arcial "A" = Results Only	aroial "B" = Results + QC Summary	arcial "C" = Results + QC Summary + Par time samples change possession, i	Refinquished By: 2	Relinquished By:	Custody Seal #			
OF CUS	America Inc Dayton, NJ (00 FAX: 732-329. .sgs.com/ehsusa	ormation			iling Information (if diff mpany Name	eet Address	A	ention:		by Matrix # of both	GW AQ 2	3W AQ 2	GW AG 2	GW AQ 2	3W AQ 2	3W AQ 2	GW AQ 2	3W AQ 2	GW AQ 2	3W AQ 2	GW AQ 2	GW AQ 2	Dat	Commercial "A" Commercial "B" (FULLT1 { Level 3	NJ Reduced	Comme	Comme	Comme mented below each t		110002	H.9	139		
CHAIN	2235 Route	TEL. 732-329-020 www	Project Info	roir Sampling		State Co	13	5	Att	Collection	Time	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	10:10:00 AM	10:10:00 AM	10:10:00 AM	10:10:00 AM	10:10:00 AM	10:10:00 AM	11:40:00 AM	11:40:00 AM							stody must be docu	60 60	IN RU	212	0		
				ne: hia District, Resen				nase Order #	làqer		ial # Date	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19	8/20/19		(SGS PM): / Date:					RUSH/Emergency IA	t Old A	LN NJ	Respired By:			
				Project Nar Philadelp	Street	Zip City	Project#	Cilent Purd	Phone Project Mar		MEOH/DI V		-	-										_	Approved By					Approval needed for	E 472	Date / Time:	Date / Time;			
C	うちろ	•	Client / Reporting Information	any Name.	Address	State	t Contact E-mail 1my.mccloskey@sgs.com	#-	ler(s) Name(s) N		Field ID / Point of Collection	BM-6M	BM-6M	BM-6D	BM-6D	BM-7S	BM-7S	BM-7M	BM-7M	BM-7D	BM-7D	BM-8S	BM-8S	Turnaround Time (Business days)	Standard 10 Business Days	5 Business Days RUSH	3 Business Days RUSH	1 Business Day EMERGENCY	X Other Due 5/9/2019	nergency & Hush I/A data available via Lablink	Inquisibuti	Inquisive date of QL	Inquished by:			
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90 301 BS

CDM - Drinking Water CDW - Shound Water WW - Vieter SW - Sundar Water SO - Sulfaron Water SO - Sulfaron SO - Other LIQ - Other Liquid Alt - Afr SOL - Other Sold WP - Wipe Bark EB-Equipment Blank FB - Fined Blank FB - Fined Blank FB - Fined Blank LAB USE ONLY http://www.sgs.com/en/terms-and-conditions Matrix Codes Cooler Temp. 'C JC93544X Comments / Special Instructions on lee Bottle Order Control # Received By: 4 Received By: SGS Job # **Requested Analysis** Therm. ID: Preserved where applicable Date / Time: Date / Time: Commercial 'B' = Reaults + CC Summary + Partial Raw data Commercial 'C' = Results + CC Summary + Partial Raw data Inted below each thre sample of change possession, including counter delivery. Reinquiched By: FED-EX Tracking # × , 409T × × × × SGS Quote # aecial "A" (Level 1) INASP Category A tectal "B" (Level 2) INASP Category B 11 (Level 2)-4) IS the Porms dueed INC" IS Other REDT2 Commercial "A" Results Only C Intact Not Intact no FILTERGN, TPO4 × × × ENCORE DI Mater NONE *OS²H 271, 9 County Seal # Billing information (if different from Report to) Company Name SGS North America Inc. - Dayton 2235 Route 130, Dayton, NJ 08810 TEL. 732-329-0200 FAX: 732-3299/3480 www.sgs.comfehsusa ble State Commercial "A" (Level 1)
 Commercial "B" (Level 2)
 FULLT1 (Level 3+4)
 NJ Roduced
 NJ Roduced
 Commercial "C" N⁹OH HCI Data Deliver # of bottles 0939 2 2 19 2 'n ~ 2 2 2 2 N Matrix Å AQ Å Å Å AQ Å AQ Å Å РЧ Ч Aa Street Address Project Information МÖ 10:30:00 AM GW gW 11:00:00 AM GW by by 11:40:00 AM GW 11:40:00 AM GW 11:40:00 AM GW 10:30:00 AM GW 10:30:00 AM GW 10:30:00 AM GW 10:30:00 AM GW 11:00:00 AM GW 300 ₹ Fa % 10:30:00 AM 11:40:00 AM Philadelphia District, Reservoir Sampling MUNNOR State Time Collection 8/20/19 8/20/19 8/20/19 8/20/19 8/20/19 8/20/19 Lablink Approval needed for RUSH/Emergency TAT 8/20/19 8/20/19 8/20/19 8/20/19 8/20/19 8/20/19 Date id By: Approved By (SGS PM); / Date: 24 26/19 17 Receive Client Purchase Order # MEOH/DI Vial # Project Manager Project Name: Project # treet È Date / Time: anone Client / Reporting Information Company Name: Turnaround Time (Business days) Field ID / Point of Collection
 Standard to Business Days

 6 Business Days RUSH

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 1-ed 80 E-mail tammy.mccloskey@sgs.com state -16F BM-98 Sampler(s) Name(s) GW (9 18F BM-10S L 18X BM-10S BM-9S BM-9M D8-MB BM-8M BM-8D 13X BM-8M - 14X BM-8D -J 17F BM-9D Relinquished by: Relinquished b roject Contact Street Address hone # 16X SGS Sample # - 15 15F 17X 13F -14 14F -(0)-1

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		Time Sampled	7:20:00 AM	7:20:00 AM	9:30:00 AM	9:30:00 AM	9:30:00 AM	9:30:00 AM	9:30:00 AM	9:30:00 AM	12:40:00 PM	12:40:00 PM	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	10/10/000 AM 1. Page
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905	brtab: MJ Reider Associ dress: 107 Angelica Stre City: Reading State: PA Intact: Sample Receiving Phone: 610-374-5129	Location	SUB .		SUB.		<u>SUB.</u>		SUB.		SUB.		SUB. Construction		SUB_225	AT CONTRACTOR	SUBJE USER	AISE AVERAGE	SUB STELL TERC
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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

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MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

any L Mains

Amy L Morriss Project Manager



107 Angelica Street O Reading, PA 19611 O www.mjreider.com O (610) 374-5129 O fax (610) 374-7234

This certificate shall not be reproduced except in full without the written approval of M.J. Reider Associates, Inc. NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes. Additional accreditations by CT (PH-0210), MD (261), NY(12094)





Section 3 😀

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



SGS	SM CI	HAIN OF CUSTOD SGS North America Inc Dayto 2235 Route 130, Dayton, NJ 06810	Y	FED-EX Tracking #	Page 1 of 2
· · · · · · · · · · · · · · · · · · ·	TEL	. 732-329-0200 FAX: 732-329-3499/	3480	SGS Queza #	100-001219-3
Client / Reporting Information	. Proj	ect Information			5693544
Company Name.	Project Name:		· ,	Requested	Analysis Matrix Codes
Street Address	USACE Keseno	RS - Blue MAR	sh	3 3	DW - Drinking Weter
100 Peno Se East					GW - Ground Water WW - Water
City CState Zip	City State	Billing Information (If different from Report Company Name	t to)		SW - Surface Water SO - Scol
Ph.la. PA 19107	Keading PA				Si-Studge SED.Sectment
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3 Business Days	The session of the	NJ Raduced (Lovel 3)	MA MCP Criteria	1	
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JC93544X: Chain of Custody Page 1 of 3



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SGS	SGS North America Inc Dayton	Page	20f_2
	2235 Route 130, Dayton, NJ 08810	Bottle Onder Consrd #	1
	vww.sgs.com/ehsusa	SGS Job #	TIGZOUNI
Client / Reporting Information	Project Information Sequested		JE73544
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reel Address	Street		DW - Drinking Weter GW - Ground Water
00 Pen Sy East	Builing information (if different from Report to)		WW - Water SW - Surface Weter
Phila PA 19107	Broading PA Company Name		SO - Soli SL-Skirlon
rolect Contact E-mail	Protect # Street Address		SED-Sedmant
Joe Loeper	E T O		LIQ - Other Liquid
215-656-6545	Cary State Zp P to M		SOL - Other Satu
empler(s) Name(s) 6/0 - Phone	Project Manager Altertion:		'FB - Fletd Blank
reg Wacik 597.9780	TAMMy Mccloshey		R8 - Rinse Blank
	Consisten Number of preserved Bobban T T O		18 - inp Blank
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25 BM . 85	$\mathcal{F}_{[2,2]}(\alpha) \mathcal{U}_{\alpha} / \mathcal{U}_{\alpha} / \mathcal{U}_{\alpha} \mathcal{O}_{\alpha} = \mathcal{O}_{\alpha} \mathcal$		LAB USE ONLY
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JC93544X: Chain of Custody Page 2 of 3



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SGS Sample Receipt Summary

Job Number: J	C93544 C	lient: USACE-PH	ILADELPHIA DIS	TRICT Proje	ect: PHILADELPHIA D	ISTRICT, R	ESERVO	OIR SAMPL
Date / Time Received: 8	/20/2019 4:32:00 PM	Delivery M	ethod:	Airb	ill #'s:			
Cooler Temps (Raw Meas Cooler Temps (Corre	ured) °C: Cooler 1: cted) °C: Cooler 1:	(3.8); Cooler 2: (3 (3.7); Cooler 2: (3	3.8); Cooler 3: (3. 3.7); Cooler 3: (3.	9); Cooler 4: (3.7); Cooler 4: (3.6); Co	oler 5: (3.7); Cooler 6: (oler 5: (3.6); Cooler 6: ((3.8); Coole (3.7); Coole	r 7: (3.8) r 7: (3.7)	;
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature	<u>Y or N</u> ✓ □ 3.4 ✓ □ 4. Sm <u>Y or N</u>	COC Present: pl Dates/Time OK	Y or N ✓ □ ✓ □	Sample Integrity - Do 1. Sample labels presen 2. Container labeling co 3. Sample container labe	cumentation t on bottles: mplete: el / COC agree:	<u>Y</u> ⊻ ⊻	<u>N</u>	
 Temp criteria achieved: Cooler temp verification: Cooler media: No. Coolers: 	☑ □ IR Gun Ice (Bag) 7			Sample Integrity - Cc 1. Sample recvd within H 2. All containers account 3. Condition of sample:	ndition IT: ted for:	You ☑ ☑ Inta	r <u>N</u>	
Quality Control Preserva 1. Trip Blank present / coole 2. Trip Blank listed on COC: 3. Samples preserved proper 4. VOCs headspace free:	Y or N r: rly:	<u>N/A</u>		Sample Integrity - Ins 1. Analysis requested is 2. Bottles received for u 3. Sufficient volume rec 4. Compositing instructi	- structions s clear: inspecified tests vd for analysis: ons clear:	<u>Y_or</u> ☑ ☑	• N	
Test Strip Lot #s:	рН 1-12:22	9517	pH 12+:	5. Filtering instructions	clear: Other: (Specify)			✓

SM089-03 Rev. Date 12/7/17

> JC93544X: Chain of Custody Page 3 of 3



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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

10/05/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94706



Sampling Date: 09/10/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 43



Laura Degenhardt General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Sample Summary

USACE-Philadelphia District

Job No: JC94706

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC94706-1	09/10/19	07:15 GW	09/10/19	AQ	Surface Water	BM-1S
JC94706-2	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2S
JC94706-3	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2M
JC94706-4	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2D
JC94706-5	09/10/19	12:30 GW	09/10/19	AQ	Surface Water	BM-5S
JC94706-6	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6S
JC94706-7	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6M
JC94706-8	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6D
JC94706-9	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7S
JC94706-10	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7M
JC94706-11	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7D
JC94706-12	09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8S
JC94706-13	09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8M

Sample Summary (continued)

USACE-Philadelphia District

Job No: JC94706

Philadelphia District, Reservoir Sampling Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected Date	Time By	Received	Matr Code	ix Type	Client Sample ID
JC94706-14	09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8D
JC94706-15	09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9S
JC94706-16	09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9M
JC94706-17	09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9D
JC94706-18	09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10S
JC94706-19	09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10M
JC94706-20	09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10D
JC94706-21	09/10/19	12:30 GW	09/10/19	AQ	Surface Water	BM-11S



CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	USACE-Philadelphia District	Job No	JC94706
Site:	Philadelphia District, Reservoir Sampling	Report Date	9/26/2019 9:15:46 AM

On 09/10/2019, 21 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 4.1 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC94706 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

General Chemistry By Method EPA 351.2/LACHAT

	Matrix: AQ	Batch ID:	GP23725
_	All complex were prepared within	the recommended metho	ad halding time

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94697-2DUP, JC94697-2MS were used as the QC samples for Nitrogen, Total Kjeldahl.

Matrix: AQ Batch ID: GP23726

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94706-13DUP, JC94706-13MS were used as the QC samples for Nitrogen, Total Kjeldahl.

General Chemistry By Method EPA 353.2/LACHAT

	Matrix: AQ	Batch ID:	GP23791
-	All samples were prepared within	the recommended metho	d holding time.
	All method blanks for this batch m	neet method specific crite	eria.

- Sample(s) JC94706-1DUP, JC94706-5MS, JC94706-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike recovery indicates possible matrix interference.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix: AQ	Batch ID: GP23792	
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All samples were prepared within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC94761-1DUP, JC94761-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

Matrix Spike Recovery(s) for Nitrogen, Nitrate + Nitrite are outside control limits. Spike recovery indicates possible matrix interference.

General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ Batch ID:	R181235
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181236
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181237
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181238
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC94706-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181239
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181240
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC94706-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181241
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181242
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC94706-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181243
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
	JC94706-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen,	Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181244
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181245
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181246
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
_	JC94706-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181247
-	The data for EPA353.2/SM4500NO2B meets quality cont	rol requirements.
-	JC94706-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ Batch ID:	R181248

The data for EPA353.2/SM4500NO2B meets quality control requirements.

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General Chemistry By Method EPA353.2/SM4500NO2B

	Matrix: AQ	Batch ID:	R181248
-	JC94706-14 for Nitrogen, Nitrate:	Calculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R181249
-	The data for EPA353.2/SM4500N	O2B meets quality cont	rol requirements.
-	JC94706-15 for Nitrogen, Nitrate:	Calculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R181250
-	The data for EPA353.2/SM4500N	O2B meets quality cont	rol requirements.
-	JC94706-16 for Nitrogen, Nitrate:	Calculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R181251
-	The data for EPA353.2/SM4500N	O2B meets quality cont	rol requirements.
-	JC94706-17 for Nitrogen, Nitrate:	Calculated as: (Nitroger	n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ	Batch ID:	R181252
	Matrix: AQ The data for EPA353.2/SM4500N	Batch ID: O2B meets quality cont	R181252 rol requirements.
L 	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate:	Batch ID: O2B meets quality cont Calculated as: (Nitroger	R181252 rol requirements. a, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID:	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-19 for Nitrogen, Nitrate:	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-19 for Nitrogen, Nitrate: Matrix: AQ	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID:	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181254
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-19 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181254 rol requirements.
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-19 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-20 for Nitrogen, Nitrate:	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181254 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite)
	Matrix: AQ The data for EPA353.2/SM4500N JC94706-18 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-19 for Nitrogen, Nitrate: Matrix: AQ The data for EPA353.2/SM4500N JC94706-20 for Nitrogen, Nitrate: Matrix: AQ	Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID: O2B meets quality cont Calculated as: (Nitroger Batch ID:	R181252 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181253 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181254 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181254 rol requirements. n, Nitrate + Nitrite) - (Nitrogen, Nitrite) R181255

JC94706-21 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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General Chemistry By Method SM2320 B-11

	Matrix: AQ Batch ID: GN141				
	 All samples were analyzed within the recommended method holding tir 	ne.			
	All method blanks for this batch meet method specific criteria.				
	Sample(s) JC94680-1DUP were used as the QC samples for Alkalinity	r, Total as CaCO3.			
	JC94706-1 for Alkalinity, Total as CaCO3: Sample was titrated to a fin	al pH of 4.5.			
Γ	Matrix: AQ Batch ID: GN142				
	 All samples were analyzed within the recommended method holding tir 	ne.			
	 All method blanks for this batch meet method specific criteria. 				
	Sample(s) JC94706-2DUP were used as the QC samples for Alkalinity	, Total as CaCO3.			
	 JC94706-8 for Alkalinity, Total as CaCO3: Sample was titrated to a fin 	al pH of 4.5.			
-	JC94706-6 for Alkalinity, Total as CaCO3: Sample was titrated to a fin	al pH of 4.5.			
	JC94706-15 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
-	JC94706-20 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
	 JC94706-16 for Alkalinity, Total as CaCO3: Sample was titrated to a fit 	nal pH of 4.5.			
-	JC94706-18 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
-	JC94706-7 for Alkalinity, Total as CaCO3: Sample was titrated to a fin	al pH of 4.5.			
	JC94706-5 for Alkalinity, Total as CaCO3: Sample was titrated to a fin	al pH of 4.5.			
	JC94706-9 for Alkalinity, Total as CaCO3: Sample was titrated to a fin	al pH of 4.5.			
	JC94706-14 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
	JC94706-13 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
	 JC94706-12 for Alkalinity, Total as CaCO3: Sample was titrated to a fi 	nal pH of 4.5.			
	 JC94706-11 for Alkalinity, Total as CaCO3: Sample was titrated to a fi 	nal pH of 4.5.			
	 JC94706-10 for Alkalinity, Total as CaCO3: Sample was titrated to a fi 	nal pH of 4.5.			
	JC94706-19 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
	 JC94706-2 for Alkalinity, Total as CaCO3: Sample was titrated to a fin 	al pH of 4.5.			
	JC94706-4 for Alkalinity, Total as CaCO3: Sample was titrated to a fin	al pH of 4.5.			
	 JC94706-17 for Alkalinity, Total as CaCO3: Sample was titrated to a fi 	nal pH of 4.5.			
	 JC94706-3 for Alkalinity, Total as CaCO3: Sample was titrated to a fin 	al pH of 4.5.			
	JC94706-21 for Alkalinity, Total as CaCO3: Sample was titrated to a fi	nal pH of 4.5.			
_					
G	General Chemistry By Method SM2540 C-11				
	Matrix: AQ Batch ID: GN30				

4.11		 	

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94706-1DUP, JC94706-2DUP were used as the QC samples for Solids, Total Dissolved.

	ľ	Matrix: AQ	Batch ID:	GN5
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All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC94634-11DUP were used as the QC samples for Solids, Total Dissolved.

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General Chemistry By Method SM2540 D-11

Matrix: AQ	Batch ID:	GN29

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94706-1DUP, JC94706-2DUP were used as the QC samples for Solids, Total Suspended.

Matrix: AQ	Batch ID: GN4	

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94679-2DUP were used as the QC samples for Solids, Total Suspended.

General Chemistry By Method SM4500NH3 H-11LACHAT

	Matrix: AQ	Batch ID:	GP23764
-	All samples were prepared within	the recommended metho	d holding time.
	All method blanks for this batch m	neet method specific crite	ria.

Sample(s) JC94697-1DUP, JC94697-1MS, JC94697-1MSD were used as the QC samples for Nitrogen, Ammonia.

Μ	atrix: AQ	Batch ID:	GP23766

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94706-14DUP, JC94706-14MS, JC94706-14MSD were used as the QC samples for Nitrogen, Ammonia.

General Chemistry By Method SM4500NO2 B-11

	Matrix: AQ	Batch ID:	GN99792
-	All samples were analyzed within	the recommended metho	od holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) JC94706-5DUP, JC94706-5MS were used as the QC samples for Nitrogen, Nitrite.



General Chemistry By Method SM5210 B-11

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Matrix: AQ	Batch ID:	GP23603
All samples were prepared within the recomm	mended metho	od holding time.
All method blanks for this batch meet metho	d specific crit	eria.
Sample(s) JC94706-1DUP, JC94706-21DU	P were used a	as the QC samples for BOD, 5 Day.
JC94706-12 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-13 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-9 for BOD, 5 Day: Sample set up v Results reported are from the lawest dilution	vith 3 separate	e dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-6 for BOD, 5 Day: Sample set up v Results reported are from the lawest dilution	vith 3 separate	e dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-11 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-15 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-7 for BOD, 5 Day: Sample set up v Results reported are from the lawest dilution	vith 3 separate	e dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-20 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-14 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.
JC94706-16 for BOD, 5 Day: Sample set up Results reported are from the lawest dilution	with 3 separa	te dilutions, but DO difference is less than 2 on all of the dilutions.

JC94706-2 for BOD, 5 Day: Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.

General Chemistry By Method SM5310 B-11

	Matrix: AQ	Batch ID:	GP23783		
-	All samples were prepared within the recommended method holding time.				
-	All method blanks for this batch meet method specific criteria.				
-	Sample(s) JC94702-11MS, JC947	02-11MSD were used as	s the QC samples for Total Organic Carbon.		
	Matrix: AQ	Batch ID:	GP23875		
-	All samples were prepared within	the recommended metho	d holding time.		
-	All method blanks for this batch meet method specific criteria.				
	Sample(s) JC94706-4MS, JC9470	6-4MSD were used as th	ne QC samples for Total Organic Carbon.		
Γ	Matrix: AQ	Batch ID:	GP23876		
1	All samples were prepared within the recommended method holding time				

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94706-14MS, JC94706-14MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

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Job Number:	JC94706
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	09/10/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC94706-1	BM-1S					
Alkalinity, Total BOD, 5 Day Nitrogen, Ammon Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Total Organic Ca	as CaCO3 ^a nia ^b + Nitrite Kjeldahl solved rbon	150 5.1 0.32 3.3 3.5 0.25 0.66 231 2.2	10 1.0 0.20 0.20 0.10 0.10 0.20 10 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM5310 B-11
JC94706-2	BM-2S				8	
Alkalinity, Total BOD, 5 Day ^c Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a b + Nitrite Kjeldahl solved pended rbon	100 1.1 2.2 2.3 0.12 0.45 184 4.9 2.7	$ \begin{array}{c} 10\\ 1.0\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC94706-3	BM-2M					
Alkalinity, Total BOD, 5 Day Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K Solids, Total Diss Solids, Total Susp Total Organic Ca	as CaCO3 ^a ^b + Nitrite Kjeldahl solved pended rbon	105 2.6 2.7 0.11 0.48 183 4.6 2.5	$ \begin{array}{c} 10\\ 1.0\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC94706-4	BM-2D					
Alkalinity, Total BOD, 5 Day Nitrogen, Ammon Nitrogen, Nitrate Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Total K	as CaCO3 ^a nia ^b + Nitrite Kjeldahl	150 4.3 0.52 3.4 3.5 0.053 0.98	10 1.0 0.20 0.11 0.10 0.010 0.20		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 SM4500NH3 H-11LACHAT EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT

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Job Number:	JC94706
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	09/10/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Solids, Total Dissolved	236	10		mg/l	SM2540 C-11
Solids, Total Suspended	12.2	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.8	1.0		mg/l	SM5310 B-11
JC94706-5 BM-5S					
Alkalinity, Total as CaCO3 ^a	210	10		mg/l	SM2320 B-11
BOD, 5 Day	3.2	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	7.9	0.41		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	7.9	0.40		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.94	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	332	10		mg/l	SM2540 C-11
Solids, Total Suspended	46.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.1	1.0		mg/l	SM5310 B-11
JC94706-6 BM-6S					
Alkalinity, Total as CaCO3 ^a	105	10		mg/l	SM2320 B-11
BOD, 5 Day ^c	2.2	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.3	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.38	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	194	10		mg/l	SM2540 C-11
Solids, Total Suspended	4.8	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.5	1.0		mg/l	SM5310 B-11
JC94706-7 BM-6M					
Alkalinity, Total as CaCO3 ^a	110	10		mg/l	SM2320 B-11
BOD, 5 Day ^c	1.4	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.4	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.5	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	188	10		mg/l	SM2540 C-11
Solids, Total Suspended	4.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.3	1.0		mg/l	SM5310 B-11
JC94706-8 BM-6D					
Alkalinity, Total as CaCO3 ^a	130	10		mg/l	SM2320 B-11
BOD, 5 Day	6.5	1.0		mg/l	SM5210 B-11
Nitrogen, Ammonia	0.26	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.3	0.20		mg/l	EPA353.2/SM4500NO2B
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JC94706

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Job Number:	JC94706
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	09/10/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Nitrogen, Nitrate + Nitrite	3.5	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.21	0.10		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.37	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	254	10		mg/l	SM2540 C-11
Total Organic Carbon	2.5	1.0		mg/l	SM5310 B-11
JC94706-9 BM-7S					
Alkalinity, Total as CaCO3 ^a	115	10		mg/l	SM2320 B-11
BOD, 5 Day ^c	1.0	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.3	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010		mg/l	SM4500NO2 B-11
Solids, Total Dissolved	193	10		mg/l	SM2540 C-11
Solids, Total Suspended	5.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.0	1.0		mg/l	SM5310 B-11
JC94706-10 BM-7M					
Alkalinity, Total as CaCO3 ^a	115	10		mg/l	SM2320 B-11
BOD, 5 Day	2.5	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.3	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.12	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.49	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	175	10		mg/l	SM2540 C-11
Solids, Total Suspended	5.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.0	1.0		mg/l	SM5310 B-11
JC94706-11 BM-7D					
Alkalinity, Total as CaCO3 ^a	129	10		mg/l	SM2320 B-11
BOD, 5 Day ^c	2.3	1.0		mg/l	SM5210 B-11
Nitrogen, Ammonia	0.22	0.20		mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.5	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.085	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.71	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	242	10		mg/l	SM2540 C-11
Solids, Total Suspended	20.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon	2.6	1.0		mg/l	SM5310 B-11
JC94706-12 BM-8S					
Alkalinity, Total as CaCO3 ^a	145	10		mg/l	SM2320 B-11



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Job Number:	JC94706
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	09/10/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
BOD, 5 Day ^c	1.8	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.2	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.3	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.10	0.010		mg/l	SM4500NO2 B-11
Solids, Total Dissolved	186	10		mg/l	SM2540 C-11
Solids, Total Suspended	5.9	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.2	1.0		mg/l	SM5310 B-11
JC94706-13 BM-8M					
Alkalinity, Total as CaCO3 ^a	110	10		mg/l	SM2320 B-11
BOD. 5 Day ^c	1.6	1.0		mg/l	SM5210 B-11
Nitrogen. Nitrate ^b	2.3	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen. Nitrate + Nitrite	2.4	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.074	0.010		mg/l	SM4500NO2 B-11
Solids, Total Dissolved	167	10		mg/l	SM2540 C-11
Solids, Total Suspended	4.3	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.2	1.0		mg/l	SM5310 B-11
JC94706-14 BM-8D					
Alkalinity Total as CaCO3 ^a	121	10		mø/l	SM2320 B-11
BOD. 5 Day ^c	2.1	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate ^b	2.6	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.7	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.056	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kieldahl	0.97	0.20		mg/l	EPA 351.2/LACHAT
Solids. Total Dissolved	189	10		mg/l	SM2540 C-11
Solids, Total Suspended	57.6	4.0		mg/l	SM2540 D-11
Total Organic Carbon	3.0	1.0		mg/l	SM5310 B-11
JC94706-15 BM-9S					
Alkalinity, Total as CaCO3 ^a	120	10		mg/l	SM2320 B-11
BOD. 5 Day ^c	2.3	1.0		mg/l	SM5210 B-11
Nitrogen Nitrate ^b	2.2	0.11		mg/l	EPA353 2/SM4500NO2B
Nitrogen Nitrate + Nitrite	2.3	0.10		mg/l	EPA 353 2/LACHAT
Nitrogen, Nitrite	0.11	0.010		mg/l	SM4500NO2 B-11
Nitrogen Total Kieldahl	0.46	0.20		mg/1	EPA 351 2/LACHAT
Solids Total Dissolved	186	10		mg/1	SM2540 C-11
Solids Total Suspended	5 5	4 0		mg/1	SM2540 D-11
Total Organic Carbon	3.2	1.0		mg/l	SM5310 B-11
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Job Number:	JC94706
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	09/10/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JC94706-16 BM-9M					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day ^c Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	110 1.5 2.5 2.6 0.057 188 4.2 3.0	10 1.0 0.11 0.10 0.010 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 SM2540 C-11 SM2540 D-11 SM5310 B-11
JC94706-17 BM-9D					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	160 2.7 4.6 4.6 0.038 0.52 255 60.0 2.3	$ \begin{array}{c} 10\\ 1.0\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC94706-18 BM-10S					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	130 3.3 2.5 2.6 0.068 0.51 183 6.3 3.3	$ \begin{array}{c} 10\\ 1.0\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ 1.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
JC94706-19 BM-10M					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended	117 4.1 2.6 2.7 0.060 0.48 188 6.9	$ \begin{array}{c} 10\\ 1.0\\ 0.11\\ 0.10\\ 0.010\\ 0.20\\ 10\\ 4.0\\ \end{array} $		mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11

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Job Number:	JC94706
Account:	USACE-Philadelphia District
Project:	Philadelphia District, Reservoir Sampling
Collected:	09/10/19

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Total Organic Carbon	3.4	1.0		mg/l	SM5310 B-11
JC94706-20 BM-10D					
Alkalinity, Total as CaCO3 ^a BOD, 5 Day ^c Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Nitrogen, Total Kjeldahl Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon JC94706-21 BM-11S	165 2.4 5.6 5.6 0.025 0.27 275 137 2.4	10 1.0 0.31 0.30 0.010 0.20 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 SM5210 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 EPA 351.2/LACHAT SM2540 C-11 SM2540 D-11 SM5310 B-11
Alkalinity, Total as CaCO3 ^a Nitrogen, Nitrate ^b Nitrogen, Nitrate + Nitrite Nitrogen, Nitrite Solids, Total Dissolved Solids, Total Suspended Total Organic Carbon	164 5.6 5.6 0.016 270 8.7 2.3	10 0.31 0.30 0.010 10 4.0 1.0		mg/l mg/l mg/l mg/l mg/l mg/l	SM2320 B-11 EPA353.2/SM4500NO2B EPA 353.2/LACHAT SM4500NO2 B-11 SM2540 C-11 SM2540 D-11 SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.





Dayton, NJ

Section 4

Sample Results

Report of Analysis



4



Client Sample ID:	BM-1S		
Lab Sample ID:	JC94706-1	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	150	10	mg/l	1	09/18/19 13:15	MS	SM2320 B-11
BOD, 5 Day	5.1	1.0	mg/l	1	09/11/19 19:42	EB	SM5210 B-11
Nitrogen, Ammonia	0.32	0.20	mg/l	1	09/19/19 15:27	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.3	0.20	mg/l	1	09/20/19 14:28	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.5	0.10	mg/l	1	09/20/19 14:28	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.25	0.10	mg/l	1	09/11/19 00:28	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.66	0.20	mg/l	1	09/19/19 11:11	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	231	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.2	1.0	mg/l	1	09/21/19 02:11	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Project:	Philadelphia District, Reservoir Sampling		
		Percent Solids:	n/a
Matrix:	AQ - Surface Water	Date Received:	09/10/19
Lab Sample ID:	JC94706-2	Date Sampled:	09/10/19
Client Sample ID:	BM-2S		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	100	10	mg/l	1	09/18/19 14:02	MS	SM2320 B-11
BOD, 5 Day ^b	1.1	1.0	mg/l	1	09/11/19 19:44	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.2	0.11	mg/l	1	09/20/19 14:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.3	0.10	mg/l	1	09/20/19 14:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.12	0.010	mg/l	1	09/10/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.45	0.20	mg/l	1	09/19/19 11:12	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	184	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	4.9	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.7	1.0	mg/l	1	09/21/19 02:45	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.







Client Sample ID:	BM-2M		
Lab Sample ID:	JC94706-3	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	105	10	mg/l	1	09/18/19 14:02	MS	SM2320 B-11
BOD, 5 Day	2.6	1.0	mg/l	1	09/11/19 19:46	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:29	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.6	0.11	mg/l	1	09/20/19 14:30	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.7	0.10	mg/l	1	09/20/19 14:30	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.11	0.010	mg/l	1	09/10/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20	mg/l	1	09/19/19 11:13	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	183	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	4.6	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.5	1.0	mg/l	1	09/21/19 02:56	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-2D		
Lab Sample ID:	JC94706-4	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	150	10	mg/l	1	09/18/19 14:02	MS	SM2320 B-11
BOD, 5 Day	4.3	1.0	mg/l	1	09/11/19 19:48	EB	SM5210 B-11
Nitrogen, Ammonia	0.52	0.20	mg/l	1	09/19/19 15:31	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.4	0.11	mg/l	1	09/20/19 14:31	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.5	0.10	mg/l	1	09/20/19 14:31	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.053	0.010	mg/l	1	09/10/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.98	0.20	mg/l	1	09/23/19 10:26	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	236	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	12.2	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.8	1.0	mg/l	1	09/25/19 21:47	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)





RL = Reporting Limit



Client Sample ID:	BM-5S		
Lab Sample ID:	JC94706-5	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	210	10	mg/l	1	09/18/19 14:02	MS	SM2320 B-11
BOD, 5 Day	3.2	1.0	mg/l	1	09/11/19 20:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:32	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	7.9	0.41	mg/l	1	09/20/19 15:48	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	7.9	0.40	mg/l	4	09/20/19 15:48	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/10/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.94	0.20	mg/l	1	09/19/19 11:14	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	332	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	46.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.1	1.0	mg/l	1	09/25/19 22:21	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.





Client Sample ID:	BM-6S		
Lab Sample ID:	JC94706-6	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	105	10	mg/l	1	09/18/19 14:02	MS	SM2320 B-11
BOD, 5 Day ^b	2.2	1.0	mg/l	1	09/11/19 20:02	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:34	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.3	0.11	mg/l	1	09/20/19 14:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	09/20/19 14:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010	mg/l	1	09/10/19 22:52	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.38	0.20	mg/l	1	09/19/19 11:15	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	194	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	4.8	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.5	1.0	mg/l	1	09/25/19 22:33	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.







Client Sample ID:	BM-6M		
Lab Sample ID:	JC94706-7	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	110	10	mg/l	1	09/18/19 14:02	MS	SM2320 B-11
BOD, 5 Day ^b	1.4	1.0	mg/l	1	09/11/19 20:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:35	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.4	0.11	mg/l	1	09/20/19 14:37	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.5	0.10	mg/l	1	09/20/19 14:37	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20	mg/l	1	09/19/19 11:16	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	188	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	4.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.3	1.0	mg/l	1	09/25/19 22:44	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.







Client Sample ID:	BM-6D		
Lab Sample ID:	JC94706-8	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	130	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day	6.5	1.0	mg/l	1	09/11/19 20:05	EB	SM5210 B-11
Nitrogen, Ammonia	0.26	0.20	mg/l	1	09/19/19 15:37	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	3.3	0.20	mg/l	1	09/20/19 14:38	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.5	0.10	mg/l	1	09/20/19 14:38	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.21	0.10	mg/l	1	09/11/19 00:47	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.37	0.20	mg/l	1	09/19/19 11:17	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	254	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.5	1.0	mg/l	1	09/25/19 22:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-7S		
Lab Sample ID:	JC94706-9	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	115	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	1.0	1.0	mg/l	1	09/11/19 20:07	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:41	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.3	0.11	mg/l	1	09/20/19 14:39	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	09/20/19 14:39	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.13	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/19/19 11:18	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	193	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	5.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.0	1.0	mg/l	1	09/25/19 23:07	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.





Client Sample ID:	BM-7M		
Lab Sample ID:	JC94706-10	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
	F	Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Bv	Method
•					·	v	
Alkalinity, Total as CaCO3 ^a	115	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day	2.5	1.0	mg/l	1	09/11/19 20:09	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:42	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.3	0.11	mg/l	1	09/20/19 14:40	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	09/20/19 14:40	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.12	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.49	0.20	mg/l	1	09/19/19 11:20	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	175	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	5.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.0	1.0	mg/l	1	09/25/19 23:45	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.







Client Sample ID:	BM-7D		
Lab Sample ID:	JC94706-11	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	129	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	2.3	1.0	mg/l	1	09/11/19 20:11	EB	SM5210 B-11
Nitrogen, Ammonia	0.22	0.20	mg/l	1	09/19/19 15:44	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	3.5	0.11	mg/l	1	09/20/19 14:42	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	3.6	0.10	mg/l	1	09/20/19 14:42	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.085	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.71	0.20	mg/l	1	09/19/19 11:21	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	242	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	20.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.6	1.0	mg/l	1	09/25/19 23:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.







Client Sample ID:	BM-8S		
Lab Sample ID:	JC94706-12	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	145	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	1.8	1.0	mg/l	1	09/11/19 20:13	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:45	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.2	0.11	mg/l	1	09/20/19 14:43	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.3	0.10	mg/l	1	09/20/19 14:43	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.10	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/19/19 11:22	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	186	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	5.9	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.2	1.0	mg/l	1	09/26/19 00:07	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.







Client Sample ID:	BM-8M		
Lab Sample ID:	JC94706-13	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	110	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	1.6	1.0	mg/l	1	09/11/19 20:14	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:47	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.3	0.11	mg/l	1	09/20/19 14:44	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.4	0.10	mg/l	1	09/20/19 14:44	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.074	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/19/19 11:27	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	167	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	4.3	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.2	1.0	mg/l	1	09/26/19 00:18	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.







Client Sample ID:	BM-8D		
Lab Sample ID:	JC94706-14	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	121	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	2.1	1.0	mg/l	1	09/11/19 20:16	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 15:58	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.6	0.11	mg/l	1	09/20/19 14:45	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.7	0.10	mg/l	1	09/20/19 14:45	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.056	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.97	0.20	mg/l	1	09/19/19 11:28	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	189	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	57.6	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.0	1.0	mg/l	1	09/26/19 01:07	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.






Client Sample ID:	BM-9S		
Lab Sample ID:	JC94706-15	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	120	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	2.3	1.0	mg/l	1	09/11/19 20:20	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:00	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.2	0.11	mg/l	1	09/20/19 14:46	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.3	0.10	mg/l	1	09/20/19 14:46	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.11	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.46	0.20	mg/l	1	09/19/19 11:31	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	186	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	5.5	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.2	1.0	mg/l	1	09/26/19 01:40	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)







Client Sample ID:	BM-9M		
Lab Sample ID:	JC94706-16	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	110	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day ^b	1.5	1.0	mg/l	1	09/11/19 20:22	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:01	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	2.5	0.11	mg/l	1	09/20/19 14:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.6	0.10	mg/l	1	09/20/19 14:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.057	0.010	mg/l	1	09/10/19 23:09	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/19/19 11:32	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	188	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	4.2	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.0	1.0	mg/l	1	09/26/19 02:17	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)







Client Sample ID:	BM-9D		
Lab Sample ID:	JC94706-17	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	160	10	mg/l	1	09/18/19 14:51	MS	SM2320 B-11
BOD, 5 Day	2.7	1.0	mg/l	1	09/11/19 20:24	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:03	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	4.6	0.11	mg/l	1	09/20/19 14:51	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	4.6	0.10	mg/l	1	09/20/19 14:51	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.038	0.010	mg/l	1	09/10/19 23:26	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.52	0.20	mg/l	1	09/19/19 11:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	255	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	60.0	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	09/26/19 02:28	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)







Client Sample ID:	BM-10S		
Lab Sample ID:	JC94706-18	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	130	10	mg/l	1	09/18/19 14:56	MS	SM2320 B-11
BOD, 5 Day	3.3	1.0	mg/l	1	09/11/19 20:26	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:04	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.5	0.11	mg/l	1	09/20/19 14:52	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.6	0.10	mg/l	1	09/20/19 14:52	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.068	0.010	mg/l	1	09/10/19 23:26	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.51	0.20	mg/l	1	09/19/19 11:34	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	183	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	6.3	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.3	1.0	mg/l	1	09/26/19 02:40	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)







Client Sample ID:	BM-10M		
Lab Sample ID:	JC94706-19	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	117	10	mg/l	1	09/18/19 14:56	MS	SM2320 B-11
BOD, 5 Day	4.1	1.0	mg/l	1	09/11/19 20:28	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:05	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	2.6	0.11	mg/l	1	09/20/19 14:53	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.7	0.10	mg/l	1	09/20/19 14:53	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.060	0.010	mg/l	1	09/10/19 23:26	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20	mg/l	1	09/19/19 11:35	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	188	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	6.9	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	3.4	1.0	mg/l	1	09/26/19 02:51	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)









Client Sample ID:	BM-10D		
Lab Sample ID:	JC94706-20	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 ^a	165	10	mg/l	1	09/18/19 14:56	MS	SM2320 B-11
BOD, 5 Day ^b	2.4	1.0	mg/l	1	09/11/19 20:30	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:07	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^c	5.6	0.31	mg/l	1	09/20/19 15:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.6	0.30	mg/l	3	09/20/19 15:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.025	0.010	mg/l	1	09/10/19 23:26	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.27	0.20	mg/l	1	09/19/19 11:36	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	275	10	mg/l	1	09/16/19 08:00	RC	SM2540 C-11
Solids, Total Suspended	137	4.0	mg/l	1	09/16/19 09:44	RC	SM2540 D-11
Total Organic Carbon	2.4	1.0	mg/l	1	09/26/19 03:02	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lawest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)







Client Sample ID:	BM-11S		
Lab Sample ID:	JC94706-21	Date Sampled:	09/10/19
Matrix:	AQ - Surface Water	Date Received:	09/10/19
		Percent Solids:	n/a
Project:	Philadelphia District, Reservoir Sampling		

General Chemistry

Analyta	Dogult	ы	Unita	DE	Analyzad	D	Mathad
Analyte	Kesuit	KL	Units	DF	Analyzeu	Бу	Method
Alkalinity, Total as CaCO3 ^a	164	10	mg/l	1	09/18/19 14:56	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/11/19 21:48	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/19/19 16:08	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate ^b	5.6	0.31	mg/l	1	09/20/19 15:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.6	0.30	mg/l	3	09/20/19 15:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.016	0.010	mg/l	1	09/10/19 23:26	СМ	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/19/19 11:44	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	270	10	mg/l	1	09/15/19 12:14	RC	SM2540 C-11
Solids, Total Suspended	8.7	4.0	mg/l	1	09/15/19 09:46	RC	SM2540 D-11
Total Organic Carbon	2.3	1.0	mg/l	1	09/26/19 03:14	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)



RL = Reporting Limit







Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



Cilent / Reporting Information	Sw CHAIN OF CUS SGS North America Inc. 233 Route 130, Dayton, N TEL 732-329-0200 FAX: 732- www.sgs.com/ensu	TODY - Dayton J 06810 29-3459/3480 80 5050 Ounder #	Page 1 of 2- box Onco Conce of BOS 2007 JC 94700
Company Name:	Project Name:		Requested Analysis Matrix Codes
U.S. ARMY CORPS of Engineers	USACE RESERVOIRS - BIVE N	JARSH 3 3	DW - Drinking Weter
Bon Se. East Zp Zp <thzp< th=""> Zp Zp</thzp<>	City Suite Company Nene PA Protect 9 Street	Train Responsible)	CW-Ground Water WW-Water SV-Subtra Water SS-Subtra SE-Stathan CI-CB LL - Open Lights AR: Art SO Open Lights AR: Art SO Open Lights AR: Art SO Open Lights WP-WEps
Coo Ward Coo Goo Phone #	Project Manener Allention:	J 3 7	TB - Field Blank EB-Equipment Blank
Riski ID / Point of Collection			RB - Rives Bank TB - Trip Blank X
1F BM-15	9/10/19 07/5 HE G GUL		LAB USE ONLY
E DM. 25	AND		5 X (3)
E BM-2m	1 DIIS / G SW	XXXXX	X 63872
E 80.25	0715 6 300 0	XXXXXXX	X III
C BM-5C	- DIS GSW 9		X
5 90-45	250 6 50 9	XXXXXX	× SUB
F BM /m		XXXXXX	X
E Bm (a)D		<u> </u>	X
E BM . 75			×
Ban 700	0145 6 50 9	XXXXXX	X
E BM TD		XXXXXXX	X
	- V 0145 V G 5W 9	XXXXXX	x
Turn Around Time (Busi	ness Days)		
10 Businees Days 5 Businees Days 10 Businees Days 3 Businees Days 2 Businees Days 18 Businees Days		Learnerable 1) NYASP Category A DOD-0546 2) NYASP Category B MM MCC citeria Citeria State Forms	Comments / Special Instructore
Other	Commercial	A" = Results only: Commercial "B" = Results on C Summercial	
Approv	/si needed for 1-3 Business Day TAT Commen Sample Custody must be documented below each	tal "C" = Results + OC Summary + Perial Rew data	http://www.sgs.com/en/terms-and-conditions
and y Alar Alar	2:00 1 an that	Religentistic by:	Inno: Recolved By:
Relinguisher by: Dets / Time:	Racotties By:	Rolledwared By	17:002
Removished by: Dete / Time:	3 Resolved By: 5	4 Outo / Y Custody Seal d Intact Preserved where	me: Reculved By: 4 epplicable On les Contestant en
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JC94706: Chain of Custody Page 1 of 4

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608	CHAIN C SGS North 2235 Route	OF CUSTODY	FED-EX Tracking #	Page 2 of 2
•	TEL. 732-329-020	200 FAX: 732-329-3499/3480	SGS Crown #	
Client / Reporting Information	Best-station	w.sgs.com/ehsusa		JC94705
Company Name: Proje	sct Name:	don	Requested A	Analysis Matrix Codes
U.S. ARMY CORDS OF ENG	SACE Reservoirs	- Blue March		
Street Address Street	· · · · · · · · · · · · · · · · · · ·			GW - Ground Water
City State Zin City	Billing Infor	mation (if different from Report to)		WW - Water SW - Surface Water
Phila, PA 19107 Be	adiato PA	sme		SO - Sali SL- Studne
Protect Contact E-mail Protect	at # Street Addres	355	비원지	SED-Sedment
Joe Loeper			E E F O	UQ - Other Liquis
215-656-6545	Cây Cây	State Zip		SOL - Other Social
Semoleris) Name(a) 6/0 - Phone # Protec	ct Manenter Attention:		9703	FB - Field Blank
Greg Wacik 547.9780 TA	mmy Macloshey		K - S E	EB-Equipment Blank R8 - Rinae Blank
	Cottection	- Number of preserved Botton	귀엽자	TB - Trip Blank
ses	Senucled and		1 2 2 2 2 2 2	
INC. O ALL T	IDI Vial # Date Time MT Com	mpic, Macht bottles T Z I Z Z Z Z Z Z Z Z	1 H da G H	
12F BM-85	9/10/19/11/5/17 6	GSW 9 X X	XXXX	CAB USE ORLY
IJF BM- 8M	115 66	GSW 9 X V		┼╾┼╾┼╴┼╴┦────┤
14- BM - 80	1 1115 1 0	SU 9 V V	XXXX	
OF BM.95			XXXX	
IBE am 9m		JU YX X	XXXX	
120 1 00 92		2 SUYXX	XXXX	
102 00 100	/010 6	5 SW 9 X X	XXXX	
10F Bin-105	1045 G	JSW 9 X X	XXXX	
17F BM-10M	045 6	FUN 9 X N	XXXXX	
COF BA. IOD	1045 6	JSW 9 X X	XXXX	
21F BM - 115	N 1230 G	SUQNI		
		╺╋╼╼╉╼╌╉╾╉╴╉╶╂╏╋╋┥		
Turn Around Time (Business I	Days)			
Approve	nd By (SGS PM): / Date: Cor	ommercial "A" (Level 1) NYASP Category A		Comments / Special Instructions
10 Business Days	Cor	ommercial "B" (Level 2) NYASP Catagory B		
3 Business Days*		Reduced (Lovel 3) MA MCP Criteria		-
2 Businees Days"		di Tier i (Leval 4) CT RCP Criteria	-	
1 Business Day		DKQP DKQP		
All data availabindan Labint		Commercial "A" = Resuts only; Commercial "B" = Resut	a + QC Symmetry	
Approver nee	Sample Custody must be documa	Commercial "C" = Results + OC Stremmy + Parial Re arted below each time samples change	wdata	http://www.sgs.com/en/terms-and-conditions
and and glialia 2.	D Bacelos St. Ban Aut	Relinquistractor	pring counter delivery,	Recolved But
Relinquished by: Deto / Tima:	Roceived By:	2 men 10	~ Mol(1 (12	
3 Relinguished by:	3	RailgandShud By:	Date / Time:	lacalvod By:
5 Uero / Time:	Recolved By: 5	Custody Seal a I In	tact Preserved where applicable	On ice Coolor Temp. "C

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JC94706: Chain of Custody Page 2 of 4



JC94706



JC94706: Chain of Custody Page 3 of 4



JC94706

SGS Sample Receipt Summary

Job Number: JC94	4706 Clien	t: USACE-PHILADEI	ELPHIA DISTRICT	Project: PHILADELPHIA DIS	TRICT, RES	SERVOIR SAMPL
Date / Time Received: 9/10	/2019 5:20:00 PM	Delivery Method:	:	Airbill #'s:		
Cooler Temps (Raw Measure Cooler Temps (Correcte	•C: Cooler 1: (3.4 •C: Cooler 1: (3.4	5); Cooler 2: (3.2); C 5); Cooler 2: (3.1); C	Cooler 3: (4.2); Cooler 4: (3.8) Cooler 3: (4.1); Cooler 4: (3.7)	; Cooler 5: (3.9); Cooler 6: (4.1); Cooler 5: (3.8); Cooler 6: (4.0	1); Cooler 7)); Cooler 7	': (3.6); ': (3.5);
Cooler Security Y 1. Custody Seals Present: Image: Custody Seals Intact: 2. Custody Seals Intact: Image: Custody Seals Intact: Cooler Temperature Image: Custody Seals Intact: 1. Temp criteria achieved: Image: Custody Seals Intact: 2. Cooler temp verification: Image: Custody Seals Intact: 3. Cooler media: Image: Custody Seals Intact: 4. No. Coolers: Image: Custody Seals Intact:	or N 3. COC 4. Smpl Da Y or N IR Gun Ice (Bag) 7 7	Yo Present: ✓ ates/Time OK ✓	Sample Integrity Image: S	<u>- Documentation</u> resent on bottles: ng complete: er label / COC agree: <u>y - Condition</u> ithin HT: ccounted for: mple:	Y or ✓ ✓ Y or ✓ Intact	N
Quality Control Preservation 1. Trip Blank present / cooler: 2. Trip Blank listed on COC: 3. Samples preserved properly: 4. VOCs headspace free:		2	Sample Integrity 1. Analysis reques 2. Bottles received 3. Sufficient volum 4. Compositing ins 5. Filtering instruct	<u>/ - Instructions</u> sted is clear: d for unspecified tests ne recvd for analysis: structions clear: ctions clear:	<u>Y</u> or ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	
Test Strip Lot #s: pF	11-12:229517	рН	112+:	Other: (Specify)		

SM089-03 Rev. Date 12/7/17

> JC94706: Chain of Custody Page 4 of 4

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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

09/16/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94706XA



Sampling Date: 09/10/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 17



MEng

Mike Earp General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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Section 2: Subcontract Lab Data	4
Section 3: Misc. Forms	13
3.1: Chain of Custody	14

Sample Summary

USACE-Philadelphia District

Job No: JC94706XA

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC94706-1XA	09/10/19	07:15 GW	09/10/19	AQ	Surface Water	BM-1S
JC94706-2XA	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2S
JC94706-5XA	09/10/19	12:30 GW	09/10/19	AQ	Surface Water	BM-5S
JC94706-6XA	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6S
JC94706-9XA	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7S
JC94706-12X	A09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8S
JC94706-15X	A09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9S
JC94706-18X	A09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10S
JC94706-21X	A09/10/19	12:30 GW	09/10/19	AQ	Surface Water	BM-11S





Section 2

Subcontract Lab Data

Report of Analysis





KRISTIN DEGRAW SGS NORTH AMERICA, INC.

2235 ROUTE 130

DAYTON, NJ 08810



Serialized: 09/14/2019 08:25am QC35

Regarding:

SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

PROJECT ID:

W09769 USACE

LABORATORY REPORT NUMBER:

L7159333

DarJU

Authorized by: Douglas J. Gump Client Services Manager



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JC94706XA

Eurofins QC, LLC

Analytical Report Printed 09/14/19 08:25 QC35

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KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

ENVIRONMENTAL MICROBIOLOGY -- BM-2S

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Regarding: KRISTIN DEGRAW SGS NORTH AMERICA, INC. 2235 ROUTE 130 DAYTON, NJ 08810

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE				P.O. No:		Inv. No: PWSID No:	1991698 PI	
Sample ID L7159333-1	Sample Description BLUE MARSH, BM-1S Received Date/Tin	ne/Temp 09/ [.]	10/19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. D a 09/10/19 (ate/Time/Temp D7:15am NA C	Sampled by Customer	
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst	
ENVIRONM	IENTAL MICROBIOL	OGY BLU	E MARSH, BM-1S					
Total Coliform Fecal Coliform	n, MF n, MF	>2000 E 2	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK	
Sample ID Sample Description L7159333-2 BM-2S Received Date/Time/Temp 09/10/19 04:06pm 2.6 C		Iced (Y/N): Y	Samp. D a 09/10/19 (ate/Time/Temp 09:15am NA C	Sampled by Customer			
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst	

SM 9222B

SM 9222D

100

100

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PIN: 28748

Total Coliform, MF Fecal Coliform, MF

Serial Number: 6544141

cfu/100ml

cfu/100ml



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JC94706XA

09/10/19 07:49PM JG2

09/10/19 06:00PM SRK

Analytical Report Printed 09/14/19 08:25

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE		P.O. No:	Inv. No: PWSID No:		1991698 PI		
Sample ID L7159333-3	Sample Description BM-5S Received Date/Tin	n e/Temp 09/10,	/19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. Da 09/10/19 1	ate/Time/Temp 12:30pm NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-58	1				
Total Coliform Fecal Coliforn	n, MF n, MF	CONFLUENT >600 E	GROWTI d fu/100ml cfu/100ml	SM 9222B SM 9222D	10 10	10 10	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK
Sample ID L7159333-4	Sample Description BM-6S Received Date/Tin	n e/Temp 09/10/	/19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. Da 09/10/19 (ate/Time/Temp 08:30am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-68	1				
Total Coliform Fecal Coliforn	n, MF n, MF	>200 E 1	cfu/100ml cfu/100ml	SM 9222B SM 9222D	100 100	1 1	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK
Sample ID L7159333-5	Sample Description BM-7S Received Date/Tin	ne/Temp 09/10/	/19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. Da 09/10/19 (ate/Time/Temp 09:45am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-78	;				
Total Coliform Fecal Coliforn	n, MF n, MF	>2000 E <1	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK
Sample ID L7159333-6	Sample Description BM-8S Received Date/Tin	n e/Temp 09/10,	/19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. D a 09/10/19 1	ate/Time/Temp 11:15am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 28748

Serial Number: 6544141

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JC94706XA

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Analytical Report Printed 09/14/19 08:25

Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE		P.O. No:	Inv. No: PWSID No:		1991698 PI		
Sample ID L7159333-6	Sample Description BM-8S Received Date/Tim	e/Temp 09/10/1	19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. Da 09/10/19 1	ate/Time/Temp 11:15am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-8S					
Total Coliform Fecal Coliforn	n, MF n, MF	1380 E <1	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK
Sample ID L7159333-7	Sample Description BM-9S Received Date/Tim	e /Temp 09/10/1	19 04:06pm 2.6 C	iced (Y/N) : Y	Samp. Da 09/10/19 1	ate/Time/Temp 10:10am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-9S					
Total Coliform Fecal Coliforn	n, MF n, MF	>2000 E 4	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK
Sample ID L7159333-8	Sample Description BM-10S Received Date/Tim	e /Temp 09/10/1	19 04:06pm 2.6 C	Iced (Y/N): Y	Samp. Da 09/10/19 1	ate/Time/Temp 10:45am NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
ENVIRONM	IENTAL MICROBIOL	OGY BM-108	5				
Total Coliform Fecal Coliforn	n, MF n, MF	930 E 1	cfu/100ml cfu/100ml	SM 9222B SM 9222D	10 100	10 1	09/10/19 07:49PM JG2 09/10/19 06:00PM SRK
Sample ID L7159333-9	Sample Description BM-11S Received Date/Tim	e/Temp 09/10/1	19 04:06pm 2.6 C	Iced (Y/N) : Y	Samp. D a 09/10/19 1	ate/Time/Temp 12:30pm NA C	Sampled by Customer
Parameter		Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst

PIN: 28748

Serial Number: 6544141

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JC94706XA

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Analytical Report

Printed 09/14/19 08:25

Account No: W09769, SGS NORTH Project No: W09769 USACE, USAC	P.O. No:		Inv. No: PWSID No:	1991698 PI			
Sample ID Sample Description L7159333-9 BM-11S Received Date/Tin	n e/Temp 09/10/19 04	:06pm 2.6 C	Iced (Y/N): Y	Samp. Da 09/10/19 12	te/Time/Temp 2:30pm NA C	Sampled by Customer	
Parameter	Result Qua	al Units	Method	DF	RL	Test Date, Time,	Analyst
ENVIRONMENTAL MICROBIOL	OGY BM-11S						
Total Coliform, MF Fecal Coliform, MF	CONFLUENT GROV 310	/Tl d fu/100ml cfu/100ml	SM 9222B SM 9222D	10 10	10 10	09/10/19 07:49PM 09/10/19 06:00PM	JG2 SRK

Sample Comments | Result Qualifiers:

L7159333-1:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-2:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-3 :

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-4 :

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-5:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-6:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-7:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7159333-8:

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

PIN: 28748

Serial Number: 6544141





Account No: W09769, SGS NORTH AMERICA, INC. Project No: W09769 USACE, USACE

P.O. No:

Inv. No: 1991698 PI PWSID No:

Analytical Report Printed 09/14/19 08:25



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PIN: 28748

Serial Number: 6544141







DEFINITIONS

The following terms or abbreviations are used in this report:

QC

Less than: In conjunction with a numerical value, < indicates a concentration less than RL / MDL Greater than: In conjunction with a numerical value, > indicates a concentration greater than RL / MDL CFU Colony Forming Unit Dilution Factor (For Microbiology, DF = volume of DE sample tested) DRY Result was reported on a dry weight basis EPA recommended "Maximum Contaminant Level" MCL MDL Method Detection Limit MF Membrane Filtration **MPN** Most Probable Number For odor test: No Odor Observed ND For all other tests: Analyte concentration Not ND Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

Data Qualifiers

J	Estimated value MDL, but < RL
Т	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

Warranties, Terms, and Conditions

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
 - "ERF" = field staff performs tests under NJ State certification # 02015.
 - "VL" = field staff performs tests under NJ State certification # 06005.
 - "WG" = field staff performs tests under NJ State certification # PA001.
- · Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- · EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

EQC Accreditations

Horsham Facility	NELAP/State IDs-	PA:	46-05499	NJ:	PA093	NY:	12080	MD:	357
East Rutherford Facility Vineland Facility Wind Gap Facility	<u>State ID-</u> <u>State ID-</u> <u>State ID-</u>	NJ: NJ: NJ:	02015 06005 PA001						



P7150225	Matrix Codes	Dur - Drawing Weiter	WW Water SW Surface Water SSN SAM	S.S.Sudder	LO -01-03 LO -0108-L1444 NR - AT	WP - Who PH- Who FB - Fred Blank	EB-Calabonert Blank R3 Ethere Blank 116 - 17to Elank		ATHO BARE ONLY											Comments / Special Instructions	7160000	L-100000-1	2.6C lced:Y	- JAP CII/MCS 00/10/10 1606	09/10/19 1649	htta://www.sos.com/en/terms-and-conditions	179 10. The Muther of Muther Salar	i Time. Received By: 4	O spelledio Date Cooler Tom. C
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	Client / Reportin	Company Name: USACE - Philo	100 Pann Sg.	Phila. PA.	Protect Contact E	Prone # 215- (0570 -	Sampler(s) Name(s)	VINUA RAIN	scs Barress # Field ID / Point of	Bm - IS	Bm-25	8m-55	BM-4S	Bm-7S	Bm- 85	Bm - 95	&m - 10;	Bm - 115				10 Businers Days	ster series [2 Business Days'	1 Bustness Day	All date evaluation	Railinguetinente	Relinquished by	Railigherstroct byc S

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JC94706XA



Section 3 😀

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody





<u>666</u>	Sω CHAIN OF C SGS North Americ 2235 Route 130, Da TEL 732-329-0200 FAX	CUSTODY 33 Inc Dayton yton, NJ 08810 : 732-329-3499/3480	FED-EX Yingsley &	Page 1 of 2
Client / Reporting Information	Project information	nrensusa		JC94700
Company Name:	Project Nema:		Requested A	Analysis Matrix Codes
U.S. ARMY CORPS of Engineers	Street Reservoirs - Biu	e Marsh	The state	DW - Orinking Weter GW - Ground Water WW - Water
City Cistate Zip	City Stata Company Name	iffierent from Report to)		SW - Surface Weter
Phila. PA 19107	Reaching PA		17 8 2 9	SU-SOM SL-Skudge
Project Contact E-mail	Protect # Street Address		- F E Z Z L	SED-Sadmant OI-OS
Lee Loeper				LIQ - Other Liquid
215-056-0545 Sempledel Nemple)	Cây	State Zip	C C L F	SOL - Other Solid WP - Wipe
Grea Wacik 597-9780	Tommy De Clas Kuy		S 3 7 F K	EB-Equipment Blank
	Collection	Number of pressount Patron	172018	TB - Trip Blank
sos Berros a Field ID / Point of Collection	ATEOH/D/ Val # Date Time Dry Comy C, Mach		XX XX XX	
1F BM - 15	9/10/19 07/5 HE G S.			LAB USE ONLY
2F BM-2S	1915 6 6		XXXXX	(31
3F BM-2M	0915 6 81		XXXXX	G3872
YE BM. 2D	0915 6-54		XXXXX	19B
SF BM-55	230 6 54		XXXXX	
6F BM-65	6830 654		XXXXX	SUB
7F BM-6M	0830 4 500	9 x 1 x 1	XXXXX	
8F BM-6D	0830 (754)	9 1 1	XXXXX	┝╍┼╶┼╌┼╌┥╴╴╸┥
F BM . 75	0945 G 54			
IOF BM.7M	0945 6500			
IF BM-70	V 5945 V G 5W	a x x IIII		
Turn Around Time (Bus	iness Days)	Deliverable		Comments / Special Instructions
10 Businese Days 5 Businese Days INITIAL ASI	ESSMENT ATT Commercial *	A" (Level 1) NYASP Category A B" (Level 2) NYASP Category B Lovel 3) MA MCP Category A		ASESSMENT
3 Businese Days*	IFICATION Full Tier I (Len	c" State Forms		ERIFICATION
Other		EDD Format		·
All date available via bablink Appro	vel needed for 1-3 Business Day TAT	emercial "A" = Results only, Commercial "B" = Results Commercial "C" = Results + QC Summercial Contact on	s + QC Summary	
Relingentiled by:	Sample Custody must be documented belo	Religiousity by:	uding courler delivery.	TUP:///////.sgs.com/en/terms-and-conditions
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3 Reinquisted by:	3	Rail dulated By:	Date / Yime:	Received By:
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JC94706XA: Chain of Custody Page 1 of 4



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<u>666</u>	CHAIN OF CUS SGS North America Inc 2235 Route 130, Dayton,							OD Dayte)Y on				FED.E	X Tractory	<u>.</u>				Battle O	Pa	ge _	Zof	2
•			TEL.	732-329	-0200	FAX: 1	732-32	-3499	, /3480				565.0	inte E						mos canu			
Client / Reporting Information	1		Proje	t Inform	ww.sgs	s.com/e	hsusa												SGS Ja	58		DC.	14705
Company Name:	Project Name	r.		LI Inform	nation									T	.		Reque	sted A	nalysis	3			Matrix Codes
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City State Zip	City		Sinta	Billing	monnatio Name	on (if diffe	erent fro	m Repo	rt to)										SW - Surface Water				
Phila, PA 19107	Readi	Ng	PA										a	1	2								SU-Sol SL-Studge
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215-656-6545	ł			,,					State		2	ζφ	I A	1	1 0	1 1							SOL - Other Solid WP - Wibe
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JC94706XA: Chain of Custody

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JC94706XA: Chain of Custody Page 3 of 4

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SGS Sample Receipt Summary

Job Number: _	C94706	Client:	USACE-PHILADELPHIA DISTE	RICT PHIL	ADELPHIA DISTRI	CT, RES	SERVOIR SAMPL
Date / Time Received:	/10/2019 5:20:00	PM	Delivery Method:	Airbill #'s:			
Cooler Temps (Raw Meas Cooler Temps (Corre	ured) °C: Coole ected) °C: Coole	er 1: (3.6); er 1: (3.5);	Cooler 2: (3.2); Cooler 3: (4.2) Cooler 2: (3.1); Cooler 3: (4.1)); Cooler 4: (3.8); Cooler 5: (3.8);); Cooler 4: (3.7); Cooler 5: (3.8	9); Cooler 6: (4.1); 8); Cooler 6: (4.0);	Cooler 7 Cooler 7	: (3.6); : (3.5);
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature	<u>Y or N</u> ✓ □ ✓ □ 4. <u>Y or N</u>	3. COC Pr Smpl Date:	YorN S esent: V □	Cample Integrity - Documentat 1. Sample labels present on bottles 2. Container labeling complete: 3. Sample container label / COC ag	ion : 5 ree:5	<u>r or</u> 2 2	
 Temp criteria achieved: Cooler temp verification: Cooler media: No. Coolers: 	IR Gun)	5	Sample Integrity - Condition 1. Sample recvd within HT: 2. All containers accounted for: 3. Condition of sample:	5	Y or 2 2 Intact	
Quality Control_Preserva 1. Trip Blank present / coole 2. Trip Blank listed on COC: 3. Samples preserved prope 4. VOCs headspace free:	Y or N r:	N/A □ □ □ □ □ □ □ □ □ □	5	Sample Integrity - Instructions 1. Analysis requested is clear: 2. Bottles received for unspecified 3. Sufficient volume recvd for analy 4. Compositing instructions clear:	i L tests [vsis: 5	(or 2 3 2 2	<u>N N/A</u>
Test Strip Lot #s:	рН 1-12:	229517	pH 12+:	5. Filtering instructions clear:	Specify)		
Comments							

SM089-03 Rev. Date 12/7/17

> JC94706XA: Chain of Custody Page 4 of 4

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Dayton, NJ

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0 Automated Report

10/07/19

Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94706X



Sampling Date: 09/10/19

Report to:

USACE-Philadelphia District 100 Penn Square East Philadelphia, PA 19107 Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 30



Laura Degenhardt General Manager

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

Please share your ideas about how we can serve you better at: EHS.US.CustomerCare@sgs.com



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3.1: Chain of Custody	27



Sample Summary

USACE-Philadelphia District

Job No: JC94706X

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC94706-1FX	09/10/19	07:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-1S
JC94706-1X	09/10/19	07:15 GW	09/10/19	AQ	Surface Water	BM-1S
JC94706-2FX	09/10/19	09:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-2S
JC94706-2X	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2S
JC94706-3FX	09/10/19	09:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-2M
JC94706-3X	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2M
JC94706-4FX	09/10/19	09:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-2D
JC94706-4X	09/10/19	09:15 GW	09/10/19	AQ	Surface Water	BM-2D
JC94706-5FX	09/10/19	12:30 GW	09/10/19	AQ	Surface H2O Filtered	BM-5S
JC94706-5X	09/10/19	12:30 GW	09/10/19	AQ	Surface Water	BM-5S
JC94706-6FX	09/10/19	08:30 GW	09/10/19	AQ	Surface H2O Filtered	BM-6S
JC94706-6X	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6S
JC94706-7FX	09/10/19	08:30 GW	09/10/19	AQ	Surface H2O Filtered	BM-6M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC94706X

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC94706-7X	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6M
JC94706-8FX	09/10/19	08:30 GW	09/10/19	AQ	Surface H2O Filtered	BM-6D
JC94706-8X	09/10/19	08:30 GW	09/10/19	AQ	Surface Water	BM-6D
JC94706-9FX	09/10/19	09:45 GW	09/10/19	AQ	Surface H2O Filtered	BM-7S
JC94706-9X	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7S
JC94706-10F2	X09/10/19	09:45 GW	09/10/19	AQ	Surface H2O Filtered	BM-7M
JC94706-10X	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7M
JC94706-11F2	X09/10/19	09:45 GW	09/10/19	AQ	Surface H2O Filtered	BM-7D
JC94706-11X	09/10/19	09:45 GW	09/10/19	AQ	Surface Water	BM-7D
JC94706-12F2	X09/10/19	11:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-8S
JC94706-12X	09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8S
JC94706-13F2	X09/10/19	11:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-8M
JC94706-13X	09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8M



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC94706X

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC94706-14F2	X09/10/19	11:15 GW	09/10/19	AQ	Surface H2O Filtered	BM-8D
JC94706-14X	09/10/19	11:15 GW	09/10/19	AQ	Surface Water	BM-8D
JC94706-15F2	X09/10/19	10:10 GW	09/10/19	AQ	Surface H2O Filtered	BM-9S
JC94706-15X	09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9S
JC94706-16F2	X09/10/19	10:10 GW	09/10/19	AQ	Surface H2O Filtered	BM-9M
JC94706-16X	09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9M
JC94706-17F2	X09/10/19	10:10 GW	09/10/19	AQ	Surface H2O Filtered	BM-9D
JC94706-17X	09/10/19	10:10 GW	09/10/19	AQ	Surface Water	BM-9D
JC94706-18F2	X09/10/19	10:45 GW	09/10/19	AQ	Surface H2O Filtered	BM-10S
JC94706-18X	09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10S
JC94706-19F2	X09/10/19	10:45 GW	09/10/19	AQ	Surface H2O Filtered	BM-10M
JC94706-19X	09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10M
JC94706-20F2	X09/10/19	10:45 GW	09/10/19	AQ	Surface H2O Filtered	BM-10D



Sample Summary (continued)

USACE-Philadelphia District

Job No: JC94706X

Sample Number	Collected Date	Time By	Received	Matri Code	ix Type	Client Sample ID
JC94706-20X	09/10/19	10:45 GW	09/10/19	AQ	Surface Water	BM-10D
1004706 215	200/10/10	12.20 CW	00/10/10	10	Surface U20 Filtered	DM 115
JC94700-21172	109/10/19	12.30 G W	09/10/19	AQ	Surface H2O Filtered	DWI-115
JC94706-21X	09/10/19	12:30 GW	09/10/19	AQ	Surface Water	BM-11S





Section 2

Subcontract Lab Data

Report of Analysis




Attention:Tammy McCloskeyReported To:SGS North America2235 US Highway 130Dayton, NJ 08810

Lab ID:9033115-01Collected By:ClientSample Desc:BM-1S

Certificate of Analysis

 Laboratory No.:
 9033115

 Report:
 09/23/19

 Lab Contact:
 Amy L Morriss

Project: Army Corp Reservoirs

Sampled: 09/10/19 07:15 Received: 09/18/19 10:15 Sample Type: Grab

				Rep.					
	Result	Unit	MDL	Limit	Analysis Method	Analyzed	Notes	Analyst	
Dissolved General Chemist	ry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL	

Lab ID:9033115-02Collected By:ClientSample Desc:BM-2S

Sampled: 09/10/19 09:15 Received Sample Typ

Received: 09/18/19 10:15 **Sample Type:** Grab

				Rep.				
	Result	Unit	MDL	Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemist	ry							
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL

Lab ID:9033115-03Collected By:ClientSample Desc:BM-2M

Sampled: 09/10/19 09:15

Received: 09/18/19 10:15 **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemist	ry							
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.03	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL



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Lab ID: 9033115- Sample Desc: BM-2D	04 Col	lected By:	Client		Sampled: 09/10)/19 09:15	Received: Sample Type:	09/18/19 10:15 Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes A	nalyst
Dissolved General Chemist Phosphorus as P, Dissolved	ry 0.05	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
Phosphorus as P, Total	0.07	mg/l	0.01	0.05	SM 4500-P E	09/19/19		JCL
Lab ID: 9033115- Sample Desc: BM-5S	05 Col l	lected By:	Client		Sampled: 09/10)/19 12:30	Received: Sample Type:	09/18/19 10:15 Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes A	nalyst
Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry	0.05	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL
Lab ID: 9033115- Sample Desc: BM-6S	06 Col	lected By:	Client		Sampled: 09/10)/19 08:30	Received: Sample Type:	09/18/19 10:15 Grab
Lab ID: 9033115- Sample Desc: BM-68	06 Col l	lected By:	Client	Rep. Limit	Sampled: 09/10)/19 08:30 Analyzed	Received: Sample Type: Notes A	09/18/19 10:15 Grab nalyst
Lab ID: 9033115- Sample Desc: BM-6S Dissolved General Chemist Phosphorus as P, Dissolved	06 Coll Result	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E	0/19 08:30 Analyzed 09/19/19	Received: Sample Type: Notes A G-11, J	09/18/19 10:15 Grab nalyst JCL
Lab ID: 9033115- Sample Desc: BM-6S Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	06 Col Result 79 0.01 0.02	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E	0/19 08:30 Analyzed 09/19/19 09/19/19	Received: Sample Type: Notes A G-11, J	09/18/19 10:15 Grab nalyst JCL JCL
Lab ID: 9033115- Sample Desc: BM-6S Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-6M	06 Coll <u>Result</u> ^{Ty} 0.01 0.02 07 Coll	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 09/10	0/19 08:30 Analyzed 09/19/19 09/19/19 0/19 08:30	Received: Sample Type: Notes A G-11, J J Received: Sample Type:	09/18/19 10:15 Grab nalyst JCL JCL 09/18/19 10:15 Grab
Lab ID: 9033115- Sample Desc: BM-6S Dissolved General Chemist Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-6M	06 Coll Result (0.02 07 Coll Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 0.01 Client MDL	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10 Analysis Method	0/19 08:30 Analyzed 09/19/19 09/19/19 0/19 08:30 Analyzed	Received: Sample Type: Notes A G-11, J J Received: Sample Type:	09/18/19 10:15 Grab nalyst JCL JCL 09/18/19 10:15 Grab
Lab ID: 9033115- Sample Desc: BM-6S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-6M Dissolved General Chemistry	06 Coll Result V 0.01 0.02 07 Coll 07 Coll V 0.007	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client MDL 0.007 Client MDL 0.007	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E Analysis Method Sampled: 09/10 Analysis Method SM 4500-P E	0/19 08:30 Analyzed 09/19/19 09/19/19 0/19 08:30 Analyzed 09/23/19	Received: Sample Type: G-11, J J Sample Type: Sample Type: G-11, U	09/18/19 10:15 Grab JCL 09/18/19 10:15 Grab 10:15 Grab



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Lab ID: 9033115-0 Sample Desc: BM-6D	8 Col	lected By:	Client		Sampled: 09/10)/19 08:30	Receive Sample Typ	ed: 09/18/19 10:15 De: Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry Phosphorus as P, Dissolved	< 0.007	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, U	JCL
Phosphorus as P, Total	< 0.01	mg/l	0.01	0.05	SM 4500-P E	09/23/19	U	JCL
Lab ID: 9033115-0 Sample Desc: BM-78	9 Col	lected By:	Client		Sampled: 09/10)/19 09:45	Receive Sample Tyr	ed: 09/18/19 10:15 De: Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry	< 0.007	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, U	JCL
Phosphorus as P, Total	< 0.01	mg/l	0.01	0.05	SM 4500-P E	09/23/19	U	JCL
Lab ID: 9033115-1 Sample Desc: BM-7M	0 Col	lected By:	Client		Sampled: 09/10)/19 09:45	Receive	ed: 09/18/19 10:15
•							Sample Typ	De: Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Sample Typ	De: Grab
Dissolved General Chemistry Phosphorus as P, Dissolved	Result 7 0.01	Unit mg/l	MDL 0.007	Rep. Limit	Analysis Method SM 4500-P E	Analyzed 09/23/19	Sample Typ Notes	De: Grab Analyst JCL
Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	7 0.01 <0.01	Unit mg/l mg/l	MDL 0.007 0.01	Rep. Limit	Analysis Method SM 4500-P E SM 4500-P E	Analyzed 09/23/19 09/23/19	Sample Typ Notes G-11, J U	De: Grab Analyst JCL JCL
Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115-1 Sample Desc: BM-7D	Result 7 0.01 <0.01 1 Col	Unit mg/l mg/l	MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10	Analyzed 09/23/19 09/23/19 0/19 09:45	Sample Typ Notes G-11, J U Receive Sample Typ	e: Grab Analyst JCL JCL ed: 09/18/19 10:15 pe: Grab
Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115-1 Sample Desc: BM-7D	Result 0.01 <0.01	Unit mg/l mg/l lected By: Unit	MDL 0.007 0.01 Client MDL	Rep. Limit	Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10 Analysis Method	Analyzed 09/23/19 09/23/19 0/19 09:45 Analyzed	Sample Type Notes G-11, J U Receive Sample Type Notes	De: Grab Analyst JCL JCL id: 09/18/19 10:15 De: Grab Analyst
Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115-1 Sample Desc: BM-7D Dissolved General Chemistry Phosphorus as P, Dissolved General Chemistry	Result 0.01 <0.01	Unit mg/l mg/l lected By: Unit mg/l	MDL 0.007 0.01 Client MDL 0.007	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10 Analysis Method SM 4500-P E	Analyzed 09/23/19 09/23/19 0/19 09:45 Analyzed 09/23/19	Sample Type Notes G-11, J U Receive Sample Type Sample Type G-11, J	e: Grab Analyst JCL JCL ed: 09/18/19 10:15 pe: Grab



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Lab ID: 9033115- Sample Desc: BM-8S	12 Col	lected By:	Client		Sampled: 09/10)/19 11:15	Receive Sample Typ	d: 09/18/19 10:15 pe: Grab
	Result	Unit	MDL.	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, J	JCL
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/23/19	U	JCL
Lab ID: 9033115- Sample Desc: BM-8M	13 Col	lected By:	Client		Sampled: 09/10)/19 11:15	Receive Sample Typ	d: 09/18/19 10:15 De: Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	ey <0.007	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, U	JCL
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	09/23/19	J	JCL
Lab ID: 9033115- Sample Desc: BM-8D	14 Col	lected By:	Client		Sampled: 09/10)/19 11:15	Receive Sample Typ	d: 09/18/19 10:15 De: Grab
Lab ID: 9033115- Sample Desc: BM-8D	14 Col	lected By:	Client MDL	Rep. Limit	Sampled: 09/10)/19 11:15 Analyzed	Receive Sample Typ Notes	d: 09/18/19 10:15 pe: Grab
Lab ID: 9033115- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved	14 Col Result	Unit mg/l	Client MDL 0.007	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E	0/19 11:15 Analyzed 09/23/19	Receive Sample Typ Notes G-11, J	ed: 09/18/19 10:15 pe: Grab <u>Analyst</u> JCL
Lab ID: 9033115- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	14 Col <u>Result</u> y 0.01 0.18	lected By: Unit mg/l mg/l	Client <u>MDL</u> 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E	0/19 11:15 Analyzed 09/23/19 09/23/19	Receive Sample Typ Notes G-11, J	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL
Lab ID: 9033115- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-9S	14 Col Result 9 0.18 15 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E SM 4500-P E Sampled: 09/10	0/19 11:15 Analyzed 09/23/19 09/23/19 0/19 10:10	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL d: 09/18/19 10:15 pe: Grab
Lab ID: 9033115- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-9S	14 Col Result 9 0.01 0.18 15 Col Result	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10 Analysis Method	0/19 11:15 Analyzed 09/23/19 09/23/19 0/19 10:10 Analyzed	Receive Sample Typ Notes G-11, J Receive Sample Typ	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL d: 09/18/19 10:15 pe: Grab Analyst
Lab ID: 9033115- Sample Desc: BM-8D Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-9S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	14 Col Result 9 0.01 0.18 15 Col 15 Col 9 <0.007	lected By: Unit mg/l lected By: Unit mg/l	Client	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10 Analysis Method SM 4500-P E Sampled: 09/10 Sampled: 09/10 SM 4500-P E	0/19 11:15 Analyzed 09/23/19 09/23/19 0/19 10:10 Analyzed 09/23/19	Receive Sample Typ Otes G-11, J Receive Sample Typ Notes G-11, U	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL d: 09/18/19 10:15 pe: Grab Analyst JCL



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Lab ID: 9033115- Sample Desc: BM-9M	16 Col	lected By:	Client		Sampled: 09/10	0/19 10:10	Receive Sample Typ	ed: 09/18/19 10:15 pe: Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, J	JCL
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	09/23/19	J	JCL
Lab ID: 9033115- Sample Desc: BM-9D	17 Col	lected By:	Client		Sampled: 09/10	0/19 10:10	Receive Sample Typ	ed: 09/18/19 10:15 pe: Grab
	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry	cy 0.05	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, J	JCL.
Phosphorus as P, Total	0.10	mg/l	0.01	0.05	SM 4500-P E	09/23/19		JCL
Lab ID: 9033115- Sample Desc: BM-10S	18 Col	lected By:	Client		Sampled: 09/10	0/19 10:45	Receive Sample Tyj	ed: 09/18/19 10:15 De: Grab
Lab ID: 9033115- Sample Desc: BM-108	18 Col	lected By: Unit	Client MDL	Rep. Limit	Sampled: 09/10	0/19 10:45 Analyzed	Receive Sample Typ Notes	ed: 09/18/19 10:15 De: Grab
Lab ID: 9033115- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved	18 Col Result	lected By: Unit mg/l	Client MDL	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E	0/19 10:45 Analyzed 09/23/19	Receive Sample Typ Notes G-11, J	ed: 09/18/19 10:15 pe: Grab Analyst JCL
Lab ID: 9033115- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total	18 Col <u>Result</u> ^{Ty} 0.02	lected By: Unit mg/l mg/l	Client MDL 0.007 0.01	Rep. Limit 0.05 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E SM 4500-P E	0/19 10:45 Analyzed 09/23/19 09/23/19	Receive Sample Typ Notes G-11, J J	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL
Lab ID: 9033115- Sample Desc: BM-10S Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-10M	18 Col Result 9 0.02 0.02 19 Col	lected By: Unit mg/l mg/l lected By:	Client MDL 0.007 0.01 Client	Rep. Limit 0.05 0.05	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10	0/19 10:45 Analyzed 09/23/19 09/23/19 0/19 10:45	Receive Sample Typ Notes G-11, J J Receive Sample Typ	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL ed: 09/18/19 10:15 pe: Grab
Lab ID: 9033115- Sample Desc: BM-108 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-10M	 18 Col <u>Result</u> 0.02 0.02 19 Col Result 	lected By: Unit mg/l mg/l lected By: Unit	Client MDL 0.007 Client MDL	Rep. Limit	Sampled: 09/10 Analysis Method SM 4500-P E SM 4500-P E Sampled: 09/10 Analysis Method	 2)/19 10:45 Analyzed 09/23/19 09/23/19 0)/19 10:45 Analyzed 	Receive Sample Typ Notes G-11, J J Receive Sample Typ Notes	ed: 09/18/19 10:15 pe: Grab Analyst JCL JCL ed: 09/18/19 10:15 pe: Grab Analyst
Lab ID: 9033115- Sample Desc: BM-108 Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistry Phosphorus as P, Total Lab ID: 9033115- Sample Desc: BM-10M Dissolved General Chemistr Phosphorus as P, Dissolved General Chemistr	18 Col Result Y 0.02 0.02 19 Col Result Y 0.03	lected By: Unit mg/l mg/l lected By: Unit mg/l	Client	Rep. Limit 0.05 0.05 Rep. Limit 0.05	Sampled: 09/10 Analysis Method SM 4500-P E Sampled: 09/10 Analysis Method Sampled: 09/10 SM 4500-P E	0/19 10:45 Analyzed 09/23/19 09/23/19 0/19 10:45 Analyzed 09/23/19	Receive Sample Typ G-11, J J Sample Typ Sample Typ Otes G-11, J	ed: 09/18/19 10:15 pe: Grab Analyst JCL jCL ed: 09/18/19 10:15 pe: Grab Analyst JCL



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Lab ID: 903 Sample Desc: BM	33115-20 [-10D	Collected By:	Client		Sampled: 09/10)/19 10:45	Receive Sample Typ	d: 09/18/19 10:15 pe: Grab
	Resu	lt Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Ch	emistry							
Phosphorus as P, Dissolved	0.05	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11	JCL
General Chemistry								
Phosphorus as P, Total	0.07	mg/l	0.01	0.05	SM 4500-P E	09/23/19		JCL
Lab ID: 903 Sample Desc: BM	33115-21 I-11S	Collected By:	Client		Sampled: 09/10)/19 12:30	Receive Sample Typ	d: 09/18/19 10:15 e: Grab
	Resu	lt Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst

	Result	Unit	MDL	Limit	Analysis Method	Analyzed	Notes	Analyst	
Dissolved General Chemistr	ry								
Phosphorus as P, Dissolved	0.04	mg/l	0.007	0.05	SM 4500-P E	09/23/19	G-11, J	JCL	
General Chemistry									
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	09/23/19	J	JCL	



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Certificate of Analysis

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Quality Control

General Chemistry

		Reporting			%REC		RPD	Analyte
	Result	Limit	Units	%REC	Limits	RPD	Limit	Notes
Batch B9I1192								
MB (B9I1192-BLK1)				Prepared & Ana	alyzed: 09/19/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MR (R011102 RI K2)				Prepared & An	luzed: 09/19/20	10		
NIB (BHIII)2-BLK2)				i iepared & ma	uyzed. 07/17/20	1)		
Phosphorus as P, Total	<0.05	0.05	mg/l					U
MB (B9I1192-BLK3)				Prepared & Ana	alyzed: 09/19/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
LED (D014403 D04)				D 10 4	1 . 1 00 /10 /20	10		
LFB (B911192-B81)				Prepared & Ana	uyzed: 09/19/20	19		
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			
Ratab B011222								
Baten B711555								
MB (B9I1333-BLK1)				Prepared & Ana	alyzed: 09/23/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
MB (B9I1333-BLK2)				Prepared & Ana	alvzed: 09/23/20	19		
Phosphorus as P. Total	< 0.05	0.05	ma/1					II
Thosphorus as 1, Total	<0.05	0.05	iiig/ i					0
MB (B9I1333-BLK3)				Prepared & Ana	alyzed: 09/23/20	19		
Phosphorus as P, Total	< 0.05	0.05	mg/l					U
I ER (R0I1222 RS1)				Prepared & An	luzed: 09/23/20	10		
LFB (В911555-В91)				Fiepared & Alla	uyzeu. 09/23/20	19		
Phosphorus as P, Total	1.01	0.05	mg/l	101	80-120			
LFM (B9I1333-MS1)		Source: 9033115-09		Prepared & Ana	alyzed: 09/23/20	19		
Phosphorus as P, Total	0.98	0.05	mg/l	98.2	80-120			



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		General	Chemi	stry (Continue	ed)			
	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9I1333 (Continued)								
LFMD (B9I1333-MSD1)		Source: 9033115-09		Prepared & An	alyzed: 09/23/2	019		
Phosphorus as P, Total	0.98	0.05	mg/l	97.6	80-120	0.613	20	
		Dissolv	ved Ger	ieral Chemisti	ч			
	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
Batch B9I1193								
MB (B9I1193-BLK1)				Prepared & An	alyzed: 09/19/2	019		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					G-11, U
LFB (B9I1193-BS1)				Prepared & An	alyzed: 09/19/2	019		
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120			G-11
LFM (B9I1193-MS1)		Source: 9033115-01		Prepared & An	alyzed: 09/19/2	019		
Phosphorus as P, Dissolved	1.00	0.05	mg/l	97.7	80-120			
LFMD (B9I1193-MSD1)		Source: 9033115-01		Prepared & An	alyzed: 09/19/2	019		
Phosphorus as P, Dissolved	0.99	0.05	mg/l	97.0	80-120	0.702	20	
Batch B9I1334								
MB (B9I1334-BLK1)				Prepared & An	alyzed: 09/23/2	019		
Phosphorus as P, Dissolved	< 0.05	0.05	mg/l					G-11, U
LFB (B9I1334-BS1)				Prepared & An	alyzed: 09/23/2	019		
Phosphorus as P, Dissolved	1.02	0.05	mg/l	102	80-120			G-11
LFM (B9I1334-MS1)		Source: 9033115-21		Prepared & An	alyzed: 09/23/2	019		
Phosphorus as P, Dissolved	1.01	0.05	mg/l	97.1	80-120			
LFMD (B9I1334-MSD1)		Source: 9033115-21		Prepared & An	alyzed: 09/23/2	019		
Phosphorus as P, Dissolved	1.00	0.05	mg/l	96.4	80-120	0.697	20	



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Preparation Methods

Specific Method	Preparation Method	Prepared Date	Prepared By
9033115-01			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
9033115-02			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
9033115-03			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
9033115-04			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
9033115-05			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
9033115-06			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
9033115-07			
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9033115-16			
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SM 4500-P E	SM 4500-P B	09/23/2019	JCL
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SM 4500-P E	SM 4500-P B	09/23/2019	JCL

Notes and Definitions

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



107 Angelica Street 🔾 Reading, PA 19611 🔾 www.mjreider.com 🔾 (610) 374-5129 🔾 fax (610) 374-7234

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Page 1 of 4	brdier Control #	JC34/06X	s Matrix Codes	DW - Drinking Water GW - Ground Water	WW - Water SW - Surface Water		Strange SEC-Sediment	LIQ - Other Liquid	SOL - Other Solid WP - Wipe	EB-Equipment Blank RB - Rinse Blank	TB - Trip Blank														nents / Special Instructions				•			2 DALONDE C	tecelved By	On Ice Cooler Temp. 'C
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			Client / Reporting Informati	Company reams.	Street Address	Chv Stata		Proiect Contact E-mail tammy.mccloskey@sgs.com	Phone #	Sampler(s) Name(s)	GW	sos servis a Telald ID / Point of Collection	1X BM-1S	1FX BM-15 7-01	2FX BM-2S	2X BM-2S 7-07	3X BM-2M	3FX BM-2M /-03	4X BM-2D	4FX BM-2D /- 04	5X BM-5S	5FX BM-5S /-05	6FX BM-6S	6X BM-6S /-010	Turnaround Time (Business da	Standard 10 Bushness Dave	5 Business Days RUSH	3 Business Days RUSH	1 Business Day EMERGENCY	X Other Due 10/2/2019		, refright with the Andrew	Relinquished by:	Relinquished by: 5

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33115	Matrix Codes	DW - Drinking Water	GW - Ground Water WW - Water SM - Surfoce Mater	SFD-Settiment	OI - Offer LEG - Other Liquid AIR - Air	SOL - Other Solid WP - Wipe	FB - Freid Blank E8-Equipment Blank RB - Rinse Blank TP - The Plank																/terms-and-conditions		2060		Cooler Temp. 'C
Page 4 of Boder control #	sis																	tts / Special Instructions				·	http://www.sas.com/er		elved By: A RARA	eived B	On Ice
	Requested Analy			· · · ·				•								 		Comme						ery.	Date / Time: Rec 9-15-19 2	Date / Time: 10:12 A	d where applicable Therm, ID:
FED-EX Tracking # SGS Quote #							. 4041,	FILTERGN	×	×	×	×	×	×					bry A				tial Raw data	including courier deliv	X		Intact Preserve Not Intact Absent
۰ ۲				Report to)		ζip		HEOH MEOH MEOH MEOH Matrick Ma			-	1	1	~				e Information	NYASP Categ	State Forms	EDD Format	sufts Only	sults + QC Summary sults + QC Summary + Pa	s change possession,	Here Feals	ed By: ,	tal#
CUSTOD a Inc Dayton Yon, N3 0810 : 732-329-3499/348	14 14			lation (If different from F		State		Nurr Nurr Mortlies 2 2 40 0 40 0 40 0 40 0 40 0 40 0 40 0	-	-	4 4	с -	-	-				Data Deliverabl	nercial "A" (Level 1)	ft (Level 3+4)	duced hercial "C"	Commercial "A" = Re	Commercial "B" = Re Commercial "C" = Re	how each time sample	Relinquish 2	Relinquish 4	Custody So
AIN OF S North Americ 35 Routh Americ 2-329-0200 FAX 2-329-0200 FAX	roject Information	Suijd		ate Company Nam	Street Address	City	Attention:	n Sampled by Mat	00 AM GW A	00 AM GW A	00 AM GW A	00 AM GW AG	00 PM GW AG	00 PM GW AG][]]		t be documented be	dex	ı	
CH S05 TEL. 73	d.	rict, Reservoir Sam		55		1.4		Collection Date Ti	9/10/19 10:45:	9/10/19 10:45:	9/10/19 10:45:	9/10/19 10:45:	9/10/19 12:30:	9/10/19 12:30:	-	 			:/Date:				lergency TAT	Sample Custody mus	elved By:	elved By:	elved By:
-		Project Name: Philadelphia Dist	Street	city	Project #	Client Purchase Orde	ne Project Manager a 1	MEOHUDI Visi #											Approved By (SGS PM)				wal needed for RUSH/En	00		Time: Rec 3	Time: Rec
	ting Information			Zp	E-mail om		Pho	It of Collection		19		20		9				ne (Business days)	less Days	HSUT	RUSH	MERGENCY	v2/2019 1 evailable via Lablink Appro		North St	Date /	Date /
S	Client / Report	ompany Name:	reet Address	ity State	rolect Contact [tammy.mccloskey@sgs.cc	hone #	ampler(s) Name(s) GW	sas mine # Field ID / Poin	9FX BM-10M	19X BM-10M 🖍	20FX BM-10D	20X BM-10D	1FX BM-11S	21X BM-11S			· · · · · · · · · · · · · · · · · · ·	 Turnaround Tin	Standard 10 Busin	6 Business Days F	2 Business Days i	1 Business Day El	Emergefrey & Bugh T/A data	aV. M.	Numbro	Relingaisted by	Relinquished by:

JC94706X.xls Rev. Date: 4/10/18

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033115	ories	Time Sampled	7:15:00 AM	7:15:00 AM	<u>9:15:00 AM</u>	9:15:00 AM	<u>9:15:00 AM</u>	9:15:00 AM	9:15:00 AM	9:15:00 AM	12:30:00 PM	12:30:00 PM	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	8:30:00 AM	9:45:00 AM
6	Testing Laborat 311 er	Date Sampled	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019
	es Inc, Env. Zip. 196 Rich Wheel	Sampled By	GW	GW	GW	GW	GW	<u>GW</u>	GW	GW	<u>GW</u>	GW	GW	GW	GW	GW	GW	GW	GW
	 Lub Lab: MJ Reider Associate Angelica Street City: Reading State: PA Contact: Sample Receiving / Phone: 610-374-5129 	Location															· .		
	servoir Sampling	Analysis	TPO4.	FILTERGN, TPO4	FILTERGN, TPO4.	TP04.	TPO4	FILTERGN, TPO4.	TPO4.	FILTERGN, TPO4	TP04	FILTERGN, TPO4,	FILTERGN, TPO4	TPO4_	FILTERGN, TPO4	1248000 100 TPO4.	ि हिंदी होLTERGN , TPO4 , मिहिर हो	1. 2. 2. 1. 1. TPO4 . 5. 2. 2. 3.	4 5.8 <u>FILTERGN (TPO4 , 034-75</u>
	e: 9/17/2019 10:36:19 AM R: TAMMY #: JC94706X ct: Philadelphia District, Re e: REDT2 T: Due 10/2/2019	Client Sample Description	<u>BM-1S</u>	BM-1S	BM-2S	<u>BM-2S</u>	<u>BM-2M</u>	<u>BM-2M</u>	<u>BM-2D</u>	<u>BM-2D</u>	BM-5S	BM-5S	BM-6S	BM-6S	BM-6M	BM-6M	BM-6D	<u>BM-6D</u>	BM-7S
	Date / Tim CSI Job Client Projec Deliverabl TA	SGS Sample #	<u>JC94706-1X</u>	JC94706-1FX	JC94706-2FX	<u>JC94706-2X</u>	<u>JC94706-3X</u>	<u> JC94706-3FX</u>	<u>JC94706-4X</u>	JC94706-4FX	<u> JC94706-5X</u>	<u>JC94706-5FX</u>	<u>JC94706-6FX</u>	<u> JC94706-6X</u>	JC94706-7FX	<u> JC94706-7X</u>	JC94706-8FX	<u> JC94706-8X</u>	JC94706-9FX

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				903	3115
<u>JC94706-9X</u>	BM-7S	. 1	GW	9/10/2019	<u>9:45:00 AM</u>
JC94706-10X	<u>BM-7M</u>	· <u>TPO4 ·</u>	<u>GW</u>	9/10/2019	9:45:00 AM
JC94706-10FX	BM-7M	EILTERGN, TPO4 P.S	GW	9/10/2019	9:45:00 AM
JC94706-11FX	<u>BM-7D</u>	FILTERGN, TPO4	GW	9/10/2019	9:45:00 AM
<u> JC94706-11X</u>	BM-7D	TPO4	GW	9/10/2019	9:45:00 AM
<u>JC94706-12FX</u>	BM-8S	FILTERGN, TPO4.	GW	9/10/2019	11:15:00 AM
<u>JC94706-12X</u>	BM-8S	<u>TPO4 .</u>	GW	9/10/2019	11:15:00 AM
JC94706-13FX	BM-8M	FILTERGN , TPO4 .	GW	9/10/2019	11:15:00 AM
JC94706-13X	BM-8M	TPO4.	GW	9/10/2019	11:15:00 AM
<u>JC94706-14X</u>	BM-8D	<u>TPO4</u>	GW	<u>9/10/2019</u>	11:15:00 AM
<u> JC94706-14FX</u>	BM-8D	FILTERGN, TPO4	GW	<u>9/10/2019</u>	11:15:00 AM
<u>JC94706-15X</u>	BM-9S	<u>TPO4.</u>	GW	9/10/2019	10:10:00 AM
JC94706-15FX	S6-MB	FILTERGN, TPO4	GW	<u>9/10/2019</u>	10:10:00 AM
<u>JC94706-16FX</u>	BM-9M	FILTERGN, TPO4	GW	<u>9/10/2019</u>	10:10:00 AM
JC94706-16X	<u>BM-9M</u>	<u>TPO4 .</u>	GW	9/10/2019	10:10:00 AM
<u>JC94706-17FX</u>	BM-9D	FILTERGN, TPO4	GW	9/10/2019	10:10:00 AM
JC94706-17X	BM-9D	<u>TPO4</u>	GW	9/10/2019	10:10:00 AM
<u> JC94706-18FX</u>	BM-10S	FILTERGN , TPO4 .	<u>GW</u>	<u>9/10/2019</u>	10:45:00 AM
<u>JC94706-18X</u>	<u>BM-10S</u>	TPO4	GW	9/10/2019	<u>10:45:00 AM</u>
<u> JC94706-19FX</u>	<u>BM-10M</u>	FILTERGN , TPO4 .	GW	9/10/2019	<u>10:45:00 AM</u>
<u>JC94706-19X</u>	<u>BM-10M</u>	<u>TPO4.</u>	GW	9/10/2019	10:45:00 AM
<u> JC94706-20FX</u>	BM-10D	FILTERGN TPO4	GW	9/10/2019	10:45:00 AM
<u>JC94706-20X</u>	<u>BM-10D</u>	<u>TPO4.</u>	GW	9/10/2019	10:45:00 AM
JC94706-21FX	<u>BM-11S</u>	FILTERGN, TPO4	GW	9/10/2019	12:30:00 PM
<u>JC94706-21X</u>	<u>BM-11S</u>	<u>TPO4</u>	GW	9/10/2019	12:30:00 PM

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Comments:

Sample Management Receipt:

Date:

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ENVIRONMENTAL TESTING LABORATORY U.S. EPA/PA DEP #06-00003

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

any L Mains

Amy L Morriss Project Manager



107 Angelica Street 🔾 Reading, PA 19611 🔾 www.mjreider.com 🔾 (610) 374-5129 🔾 fax (610) 374-7234

This certificate shall not be reproduced except in full without the written approval of M.J. Reider Associates, Inc. NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes. Additional accreditations by CT (PH-0210), MD (261), NY(12094)

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Section 3 😀

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



<u>666</u>	Sω CHAIN OF (SGS North Ameri 2235 Route 130, D TEL 732-329-0200 Fa3	CUSTODY ca lnc Dayton ayton, NJ 08810 K: 732-329-3499/3480	FED-EX Yingsley &	Page 1 of 2
Client / Reporting Information	Project information	ovensusa		JC94700
Company Name:	Project Name:		Requested A	Inalysis Matrix Codes
U.S. ARMY CORPS of Engineers	Street Reservoirs - BIL	re Marsh	The state	DW - Orinking Weter GW - Ground Water WW - Water
City CState Zip	City Stata Company Name	different from Report to)		SW - Surface Water
Phila. PA 19107	Reading PA		17 8 2 9	SU-Som SL-Studge
Project Contact E-mail	Protect Street Address		- F E Z Z L	SED-Sedment OI-OS
Lee Loeper				LIQ - Other Liquid
215-056-0545 Sempledel Nemple)	CElent Purchase Order CBy	State Zp	C C L F	SOL - Other Solid WP - Wipe
Grea Wacik 597.9780	Tommy De Clacky		33748	EB-Equipment Blank
	Collection	Number of present Patros	172018	TB - Trip Blank
sos Berros a Field ID / Point of Collection	MECH/D/Val# Data Time Samuled Gravita, Mac		XX XX XX	
1F BM - 15	9/10/19 0715 15-16-6			LAB USE ONLY
2F BM-2S	1915 6 5		XXXXX	(31
3F BM-2M	0915 6 5		XXXXX	G3872
YE BM. 2D	0915 65		XXXXX	19B
SF BM-55	230 6 54		XXXXX	
6F BM-65	0830 654		XXXXX	SUB
7F BM-6M	0830 6 54		XXXXX	
8F BM-6D	0830 G 54		XXXXX	<u>├──┼ ╎ ╎ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ ╷ </u>
F BM . 75	0945 G 54			
IOF BM.7M	0945 6554	29 x x		
IF BM-70	V 5945 V G Su	9 x 1x 11		
Turn Around Time (Bus	iness Days)	Deliverable		Comments / Special Instructions
10 Businese Days 5 Businese Days INITIAL ASI	ESSMENT ATT Commercial	"A" (Level 1) NYASP Category A "B" (Level 2) NYASP Category B (Level 3) MA MCP Category A		ASESSMENT
3 Businese Days* 2 Businese Days* LASEL VER	IFICATION Gommercial	svol 4)		ERIFICATION
Other		EDD Format		. · Tr
All date available via bablink Appro	vel needed for 1-3 Business Day TAT	mmercial "A" = Results only, Commercial "B" = Results Commercial "C" = Results + QC Summary + Deviat Deviation	s + QC Summary	
Relingentiled by:	Sample Custody must be documented bein	ow each time samples change possession, inclu Religious by	uding courler delivery.	IIUD.//WWW.SQS.com/en/terms-and-conditions
Relinguishgroy:	2.00 1 Jan Mor	2 Sieve Mut	9/10/19 17:20	tooolvad By:
3 Retinguished by:	3	Roll due hed By:	Date / Timer.	Received By:
5	5	Custody Seal #	taci Preserved where applicable	On ice Goolar Temp. "C
,			Abaent Them. iD:	
				4.2 393.6

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SGS	CHAIN OF CUSTODY SGS North America Inc Dayton 2235 Route 130, Dayton, NJ 06810 TEL 732-329-0200 FAX: 732-3293/080											FED-EX Tracking #						Page Zof Z					
Client / Reporting Information	www.sgs.com/ehsusa												SGS C	CON COME A					SGS Ja	20		JCG	4705
Company Name:	Project Nar	ne:	. Proje	ct Inform	nation												Reque	sted A	nalvsis				
U.S. ARMY CORDS OF ENG	USI	ACE A	reser	2010	<u>s</u>	Blu	r í	ηα	Ins	h			1		30	[T	Π		1	DW - Drinking Weter
100 Penn Sy East	Surea			Billing t	nformatio	on (11 diffe	erent from	n Reco	rt to)				E P	3	ŀ								GW - Ground Water WW - Water
Phila. PA 19107	Reading PA Company Name											- 3	- Singh	2	t							SO - Sall SL- Studge	
Fredeci Contact E-mail	Protect #			Straut A	idress								5	1	ĬĚ								SED-Sedment OI-Ot UQ-Other Liquid
Phone # 215-656-6545	Client Purchaso Order i Cây						Stato Zip					1		- 53								AIR - Air SOL - Other Solid WP - Wine	
Semoleris) Name(s) 6/0 - Phone	Project Manener Altention:												1 4	2	tρ	Š							FB - Field Blank
Greg Wacik 597.9780	TAMA	ny Mac	loshey										13	5	-	\mathbf{X}							R8 - Rinse Blank
		1	Cottactor				<u> </u>	1.	Namb	r d pres	arved Bobs	ios.	1 3	1 - 23	1								TB - Trip Blank
sos Barreato # Field ID / Point of Collection	MECH/DI Vial	¢ Date	Time	Sempled	Graa (G)	Marrie	#of		ž	og a	OH Notes	CORE	٦ å	N N	00	55							·
12F BM - 85	1	alin/19	ILIC	Ľ?	1	Cul	0	1 I	2 1	21	0 2	16	<u> </u>		i ch	H							LAB USE ONLY
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14- BM-80		17	1115	7	1 in	SU	9	1ST			++	++	+5	X	X	7			·	\vdash	\rightarrow		
OF BM-95		11	1010	1	0	0.1	-	14		17-	++-	++	+ ×	X	X	×							
16F B.M. 9M	1	1/	1210	1	9	200				Å.	++	++	X	X	x	X		_					
17F BM. 92		╫───	1010		G	500	1	신		A	_	11	X	X	×	×							
187 BM-105		<u> </u>	1010	+	6	2001	7_	A		N-	++	\square	X	X	X	X							
19E BM-10M			015	++	G	500	1	N		N.	$\left \right $	\square	1X	X	X	X							
ZOF BA.IOD		1	075	++	3	500	7	A.		X	$\left \right $	- -	X	X	X	\times							
218 Bm - 115			1220	+	9	20	4	X		X			X	\times	X	X							,
0		4	1230		6	500	4	X		X		-	X	X	X	X							
Turn Around Time (Bu	iness Days	,				ŀ.									_ •		1				1		
	Approved By (5	GS PMI: / Date:			Comme	reint "A T			De	liverat	le								(Commer	its / Sp	ecial Inst	tructions
🔲 10 Business Days				H	Comme	inclat "R"	(Cever 1)	,	H	NYAS	P Categ	ory A			000-0	5445							1
5 Business Cays			1	Ы	NJ Rod	uced (Lev	(cave, 2) rel 3)		H	MAM	P Cillago CP Cilla	ory 8 ute										•	1
3 Businese Days*				$\overline{\Box}$	Full Ties	ri (Leval	• •		Н	CTRO	P Crite	rfa	·									-	
2 Businees Days"					Comme	rclal "C"			П	Stato	Forms												
			1		NJ DKQ	P	-			EDD F	ormat_									2			
All data availability in Labirty Appr	ovel needed fo	r 1-3 Business D	AV TAT			Comme	encial "A"	= Resu	ts only:	Comme	rcial "B"	* Resu	fts + QC S	lummary									
		Sample	ustody mu	st be doo	unyinte	d below a	each tim	e comp	ples ch	CC Sur	control + 1	Pariat R	law data Iuding cr	verlee de	liner	<u>_</u>	/		http:	//www.s	gs.con	<u>/en/term</u>	s-and-conditions
angel allotte	7 2.00	Racelver OF:	harl	w	1-		ľ	Relinquis	shock of	27/	2	1	1		OF	101 110	8	17-1R	ecolved B			A	
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JC94706X: Chain of Custody Page 2 of 4





JC94706X: Chain of Custody Page 3 of 4



SGS Sample Receipt Summary

Job Number:	IC94706	Client:	USACE-PHILADELPHIA DISTR	TRICT Project: PHILADELPHIA DISTRICT, RESERVOIR								
Date / Time Received:	9/10/2019 5:20:00 F	PM	Delivery Method:	Airbill #s:								
Cooler Temps (Raw Meas Cooler Temps (Corre	ected) °C: Cooler	1: (3.6); 1: (3.5);	Cooler 2: (3.2); Cooler 3: (4.2); Cooler 2: (3.1); Cooler 3: (4.1);	Cooler 4: (3.8); Cooler 5: Cooler 4: (3.7); Cooler 5:	(3.9); Cooler 6: (4 (3.8); Cooler 6: (4	4.1); Coole 4.0); Coole	er 7: (3.6); er 7: (3.5);					
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact: Cooler Temperature	<u>Y or N</u> ✓ □ 3 ✓ □ 4.5 <u>Y or N</u>	3. COC Pre	Y or N Sa esent: ☑ □ /Time OK ☑ □ 3.	ample Integrity - Docume Sample labels present on bo Container labeling complete Sample container label / CC	ntation ottles: : C agree:	<u>Y</u> V V V	<u>r N</u>					
 Temp criteria achieved: Cooler temp verification: Cooler media: No. Coolers: 	✓ □ IR Gun Ice (Bag) 7		S 1. 2. 3.	ample Integrity - Condition Sample recvd within HT: All containers accounted for Condition of sample:	<u>on</u> :	Yo ✓ ✓ Int	r <u>N</u> □ □ act					
Quality Control_Preserva 1. Trip Blank present / coole 2. Trip Blank listed on COC: 3. Samples preserved proper 4. VOCs headspace free:	Y or N err: errly:	<u>N/A</u> □ □	S 1 2 3 4 5	ample Integrity - Instruct Analysis requested is clear Bottles received for unspec Sufficient volume recvd for Compositing instructions clear:	ions ified tests analysis: ear:	<u>Y</u> ₀ ✓ ✓ □	r N	 				
Test Strip Lot #s:	рН 1-12:	229517	pH 12+:2	208717 Oth	ner: (Specify)							
Comments												

SM089-03 Rev. Date 12/7/17

> JC94706X: Chain of Custody Page 4 of 4



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