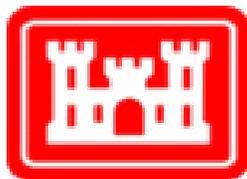


**2019 WATER QUALITY MONITORING  
F.E. WALTER RESERVOIR  
WHITE HAVEN, PENNSYLVANIA**



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

**January 2020**

**2019 Water Quality Monitoring  
F.E. Walter Reservoir  
White Haven, Pennsylvania**

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>PAGE NO.</u></b>
<b>1.0 INTRODUCTION</b>	<b>1-1</b>
<b>1.1 DESCRIPTION OF F.E. WALTER RESERVOIR</b>	<b>1-1</b>
<b>1.2 PURPOSE OF THE MONITORING PROGRAM</b>	<b>1-1</b>
<b>1.3 ELEMENTS OF THE STUDY</b>	<b>1-1</b>
<b>2.0 METHODS</b>	<b>2-1</b>
<b>2.1 PHYSICAL STRATIFICATION MONITORING</b>	<b>2-1</b>
<b>2.2 WATER COLUMN CHEMISTRY MONITORING</b>	<b>2-1</b>
<b>2.3 TROPHIC STATE DETERMINATION</b>	<b>2-5</b>
<b>2.4 RESERVOIR BACTERIA MONITORING</b>	<b>2-5</b>
<b>3.0 RESULTS AND DISCUSSION</b>	<b>3-1</b>
<b>3.1 STRATIFICATION MONITORING</b>	<b>3-1</b>
<b>3.1.1 Temperature</b>	<b>3-1</b>
<b>3.1.2 Dissolved Oxygen</b>	<b>3-2</b>
<b>3.1.3 pH</b>	<b>3-3</b>
<b>3.2 WATER COLUMN CHEMISTRY MONITORING</b>	<b>3-3</b>
<b>3.2.1 Ammonia</b>	<b>3-17</b>
<b>3.2.2 Nitrite and Nitrate</b>	<b>3-17</b>

**2019 Water Quality Monitoring  
F.E. Walter Reservoir  
White Haven, Pennsylvania**

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>PAGE NO.</u></b>
3.2.3 Total Kjeldahl Nitrogen	3-18
3.2.4 Total Phosphorus	3-18
3.2.5 Dissolved Phosphorus	3-18
3.2.6 Total Dissolved Solids	3-18
3.2.7 Total Suspended Solids	3-19
3.2.8 Biochemical Oxygen Demand	3-19
3.2.9 Alkalinity	3-19
3.2.10 Total Organic Carbon	3-20
3.2.11 Chlorophyll a	3-20
3.3 TROPHIC STATE DETERMINATION	3-20
3.4 RESERVOIR BACTERIA MONITORING	3-21
<b>4.0 REFERENCES</b>	
<b>APPENDIX A</b>	<b>Stratification Data Tables</b>
<b>APPENDIX B</b>	<b>Laboratory Custody Sheets</b>

**2019 Water Quality Monitoring  
F.E. Walter Reservoir  
White Haven, Pennsylvania**

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>		<b><u>PAGE NO.</u></b>
<b><u>LIST OF TABLES</u></b>		
<b>2-1</b>	F.E. Walter Reservoir water quality sampling schedule for 2019 monitoring.....	<b>2-2</b>
<b>2-2</b>	Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at F.E. Walter Reservoir 2019.....	<b>2-4</b>
<b>2-3</b>	Water quality test methods, detection limits, PADEP water quality standards, and sample holding times for bacteria parameters monitored at F.E. Walter Reservoir in 2019.....	<b>2-5</b>
<b>3-1</b>	Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019.....	<b>3-10</b>
<b>3-2</b>	Ammonium nitrogen criteria (USEPA 2013) Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater Specific.....	<b>3-17</b>
<b>3-3</b>	EPA trophic classification criteria and average monthly measures for F.E. Walter Reservoir in 2019.....	<b>3-21</b>
<b>3-4</b>	Bacteria counts (colonies/100ml) at F.E. Walter Reservoir surface stations during 2019.....	<b>3-23</b>

**2019 Water Quality Monitoring  
F.E. Walter Reservoir  
White Haven, Pennsylvania**

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>LIST OF FIGURES</u></b>	<b><u>PAGE NO.</u></b>
<b>2-1</b>	Location map for F.E. Walter Reservoir and Lehigh River monitoring stations in 2019.....	<b>2-3</b>
<b>3-1</b>	Temperatures measured in tributary surface waters of F.E. Walter Reservoir during 2019.....	<b>3-4</b>
<b>3-2</b>	Stratification of temperature measured in the water column of F.E. Walter Reservoir at station WA-2 during 2019.....	<b>3-5</b>
<b>3-3</b>	Dissolved oxygen measured in tributary surface waters of F.E. Walter Reservoir during 2019.....	<b>3-6</b>
<b>3-4</b>	Dissolved oxygen measured in the water column of F.E. Walter Reservoir at station WA-2 during 2019.....	<b>3-7</b>
<b>3-5</b>	Measures of pH in tributary surface waters of F.E. Walter Reservoir during 2019..	<b>3-8</b>
<b>3-6</b>	Stratification of pH measured in the water column of F.E. Walter Reservoir at station WA-2 during 2019.....	<b>3-9</b>
<b>3-7</b>	Carlson Trophic state indices calculated from secchi disk depth, concentrations of chlorophyll a and Total Phosphorus measured in surface waters of F.E. Walter Reservoir at station WA-2 during 2019.....	<b>3-22</b>

## **1.0 INTRODUCTION**

### **1.1 DESCRIPTION OF F.E. WALTER RESERVOIR**

The U.S. Army Corps of Engineers (USACE) manages F.E. Walter Reservoir located in northeastern Pennsylvania within the Delaware River Basin. F.E. Walter Reservoir is an integral part of the Lehigh River Flood Control Program. The authorized purpose of this project is flood control. The reservoir project was authorized for recreation and specifically white water recreation as part of Public Law 100-676, Section 6, dated November 17, 1988. Located about 9 miles southeast of Wilkes-Barre, PA, the reservoir dams a drainage area of 288 square miles. The dam can impound up to 35.8 billion gallons of floodwater. The primary surface water input into the reservoir is the Lehigh River as it flows west between Luzerne and Carbon Counties. Bear Creek, a secondary surface water input, enters the reservoir from the north. Tobyhanna Creek drains an area to the southeast and joins the Lehigh River near the headwaters of the reservoir. The reservoir is approximately 3 miles long and approximately 50 feet deep when not operating for flood control or recreation. In an effort to maximize recreational potential in the reservoir and on the Lehigh River downstream, specifically recreational boating and fishing, the normal operating pool of 50 feet is raised an additional 70 feet in April of most years. The additional storage is used to augment low flows in the Lehigh River downstream as a fishery management tool and increase the number of recreational boating releases throughout the summer whitewater recreation season.

### **1.2 PURPOSE OF THE MONITORING PROGRAM**

Foremost, F.E. Walter Reservoir provides flood control to downstream communities on the Lehigh River. Additionally, the reservoir provides important habitat for fish, waterfowl, and other wildlife, and recreational opportunities through fishing and boating both within the lake and downstream. Drinking water intakes exist at various locations on the Lehigh River downstream of the dam. Due to the broad range of uses and demands F.E. Walter Reservoir serves, the USACE monitors water quality and other aspects related to reservoir health primarily to ensure public health safety and protection of the environment. Water quality monitoring results are compared to state water quality standards and used to diagnose problems that commonly effect reservoir health such as nutrient enrichment and toxic loadings. This report summarizes the results of water quality monitoring at F.E. Walter Reservoir and its tributaries from June through September 2019.

### **1.3 ELEMENTS OF THE STUDY**

The USACE, Philadelphia District, has been monitoring the water quality of F.E. Walter Reservoir since 1975. Over this time, yearly monitoring program designs have evolved to address new areas of concern such as human health aspects of drinking water, sediment contaminants within the reservoir basin, and a 2002 investigation of a hydrogen sulfide release near the tail water of the dam. The 2019 monitoring program was similar to those in recent

years. The major element of the monitoring includes monthly physical and chemical water quality and bacteria monitoring from June through September to evaluate compliance with the Pennsylvania state water quality standards and to monitor the overall health of the reservoir.

## 2.0 METHODS

### 2.1 PHYSICAL STRATIFICATION MONITORING

Physical stratification monitoring of the water column of F.E. Walter Reservoir was conducted five times between June and September 2019 at all stations (Table 2-1). Physical stratification parameters included temperature, dissolved oxygen (DO), pH, ORP, Chlorophyll a, depth, turbidity, and conductivity. Monitoring was conducted at seven fixed stations located throughout the reservoir watershed (Fig. 2-1). Surface water quality was monitored at stations downstream (outfall discharge) of the reservoir (WA-1S) and upstream tributary stations on Tobyhanna Creek (WA-3S), the Lehigh River (WA-4S), and Bear Creek (WA-5S). Stratification monitoring was conducted within the reservoir at a reservoir tower station (WA-2), Bear Creek arm of the lake (WA-6), and Lehigh River arm of the lake (WA-7) with water quality measured from the water surface to the bottom at 5-ft intervals. All of the water quality monitoring was conducted with a calibrated YSI 6600 V2-4 multi-parameter water quality sonde.

In this report, when applicable, water quality data recorded from stratification monitoring was compared to water quality standards mandated by the Pennsylvania Department of Environmental Protection (PADEP Chapter 93). The standard for DO is a minimum concentration of 5 mg/L, and that for pH is an acceptable range from 6 to 9. Temperatures criteria are based on seasonal guidelines. All of the water quality data collected during physical stratification monitoring is summarized in Appendix A.

### 2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times at F.E. Walter Reservoir between June and September 2019 (Table 2-1). Water samples were collected at the seven fixed stations throughout the reservoir drainage area (Fig. 2-1). Surface water samples were collected at stations downstream of the reservoir (WA-1S) and upstream on Tobyhanna Creek (WA-3S), the Lehigh River (WA-4S), and Bear Creek (WA-5S). Surface, middle, and bottom water samples were collected at each of the reservoir-body stations WA-2, WA-6, and WA-7. Surface water samples were collected by opening the sample containers approximately 0.5-1 foot below the water's surface. Middle and bottom samples were collected with a Van Dorn design water bottle sampler. All samples were placed on ice in a cooler and shipped to a certified laboratory for testing. 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 collected from surface, middle, and bottom depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen (TKN), total phosphorus, soluble phosphorus, total dissolved solids (TDS), total suspended solids (TSS), biochemical oxygen demand (BOD), alkalinity, and total organic carbon (TOC). Table 2-2 summarizes the water quality parameters; laboratory method detection limits, laboratory required reporting limits, state water quality standards, and allowable maximum hold times for each.



<b>Table 2-1. F.E. Walter Reservoir water quality schedule for 2019 monitoring</b>							
Date of Sample Collection	(3) Physical Stratification Monitoring (All Stations)	Water Column Chemistry Monitoring (All Stations)	Trophic State Determination (WA-2)	Coliform Bacteria Monitoring (All Stations)	(4) Sediment Priority Pollutant Monitoring (WA-2)	(2) Lehigh Temperature Probes	(1) Drinking Water Monitoring
26 June	X	X	X	NS	NS	NS	NS
17 July	X	X	X	X	NS	NS	NS
31 July	X	X	X	X	NS	NS	NS
21 August	X	X	X	X	NS	NS	NS
11 September	X	X	X	X	NS	NS	NS
<p>(1) Drinking water samples are sampled quarterly by personnel at each reservoir.</p> <p>(2) Lehigh River temperature probes continuously monitor river temperatures throughout the sampling period. They are periodically downloaded.</p> <p>(3) Physical stratification monitoring is conducted at all stations during routine monthly sampling.</p> <p>(4) Sediment Sampling was not conducted in 2019 based on historic sampling results showing low probability of sediment contamination.</p> <p>NS- Not Sampled</p>							



**Table 2-2.** Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at F.E. Walter 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 CaCO <sub>3</sub>	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 a	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 10 mg/L (nitrate + nitrite)	28
Nitrite	SM4500NO2 B-11	0.01 mg/L		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", 22<sup>nd</sup> Edition, 2012.

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

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

### 2.3 TROPHIC STATE DETERMINATION

The trophic state of F.E. Walter Reservoir was determined by methods outlined by Carlson (1977) and EPA (1983). In general, these methods calculate trophic state indices (TSIs) independently for total phosphorus and chlorophyll *a* concentrations, and secchi disk depth. Surface water measures of total phosphorus and chlorophyll *a* from chemistry monitoring were used independently in determining monthly TSI values. Secchi disk depth was measured only in surface waters in the reservoir-body. Trophic state determinations were calculated only for Station WA-2 within the reservoir.

### 2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted five times at each sampling station between June and September 2019 at F.E. Walter Reservoir. Surface water samples were collected in the same manner as for chemical parameter samples, and analyzed for total and fecal coliform contamination. Table 2-3 presents the test methods, detection limits, PADEP standards, and sample holding times for the bacteria parameters monitored at F.E. Walter Reservoir in 2019. The bacteria analytical method was based on a membrane filtration technique. Laboratory analysis was conducted by Eurofins QC, LLC located in Horsham, Pennsylvania (NELAP/PA 46-05499).

Monthly coliform bacteria counts were compared to the PADEP single sample and swimming beach water quality standard for bacteria. 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 are most applicable at bathing beaches. Application of this standard is not necessary at F.E. Walter because swimming and other human/water contact recreation is prohibited in the reservoir. However, it is useful in evaluating the bacteria conditions in the lake and watershed.

<b>Table 2-3.</b> Water quality test methods, detection limits, PADEP standards, and sample holding times for bacteria parameters monitored at F.E. Walter Reservoir in 2019.		
<b>Parameter</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>
Test method	SM 9223 B	SM 9222 D
Limit of Quantification	10 clns/100-mls	1 clns/100-mls
PADEP standard	None	Geometric mean < 200 clns/100-mls or a single sample reading of < 1000 clns/100-mls
Max. allowable holding time	30 hours	30 hours
Achieved holding time	< 30 hours	< 30 hours

## 3.0 RESULTS AND DISCUSSION

### 3.1 STRATIFICATION MONITORING

The following sections describe temporal and spatial patterns for the water quality parameters of temperature, dissolved oxygen (DO) and pH measured throughout the F.E. Walter Reservoir and watershed during 2019. Additionally, patterns related to season and depths are described for station WA-2 which is located near the operations tower and maintains the greatest water depths in the reservoir. Maximum depths at station WA-2, during five separate monthly sampling days, vary between approximately 89 to 121 feet depending on 2019 reservoir operations (recreation and flood control) at the time of sampling. All of the stratification data collected during the 2019 monitoring period is presented in Appendix A.

#### 3.1.1 Temperature

Temperature is the primary influencing factor on water density, affects the solubility of many chemicals 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 temperature stratification patterns naturally occurring in lakes affect the distribution of dissolved and suspended compounds.

Temperatures of the tributary surface waters (Stations WA-3S, -4S, and -5S) of the F.E. Walter Reservoir watershed generally followed a similar seasonal pattern throughout the monitoring period. Monthly sampling showed temperatures rising from early summer with peak surface temperatures seen in late August along with a decline in September (Fig. 3-1). Downstream release (Station WA-1S) surface water temperatures showed a similar trend with late July through September temperatures slightly warmer than tributary inflow temperatures. A maximum inflow temperature of 21.86 °C (WA-5S) was measured in September and maximum outflow temperature of 22.28 °C (WA-1S) was also seen in September. Surface water temperatures of the reservoir-body (Stations WA-2S, -6S, and -7S) were generally warmer than in tributaries and downstream of the dam as a result of warming from the sun and deep reservoir pool downstream releases. In-lake reservoir surface temperatures peaked in early-July at approximately 26.50 °C (Station WA-7S). In 2019, tributary and release water temperatures, at times, exceeded the Pennsylvania state water quality criteria for cold water fisheries.

The water column of F.E. Walter Reservoir was temperature stratified during the 2019 sampling season (Fig. 3-2). Due to operations in 2019, specifically the raising of the base pool level and recreational release operations, the temperature stratification within the reservoir was likely affected by bottom flood gate releases and flood control storage on various occasions during the season. This was particular evident in late August and into September when the pool level was reduced for recreational operations and reservoir profile temperatures showed a breakup of stratification in the water column. The reservoir tower was constructed with bottom flood control gates only and does not have the flexibility to withdrawal water from other locations in the water column with the exception of a small bypass control at elevation 1297'. As a result, deeper and typically cooler bottom waters are withdrawn first, likely causing a disruption in

stratification and accelerated depletion of cooler bottom waters. Overall, reservoir lake temperatures in 2019 showed stratification in late June that extended into August. Cooler deep water temperatures (less than 20 °C as a fishery place marker) were available into the mid July time period of the recreational season which is typical for most years.

### 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.

In 2019, DO in the tributary surface waters (stations WA-3S, -4S, and -5S) of F.E. Walter Reservoir remained relatively constant and within acceptable freshwater concentrations from June through September with recorded values ranging from 8.21 mg/L to 9.42 mg/L. These values can be attributed to typically well oxygenated stream and river systems and seasonal changes in water temperature. Station WA-1S located downstream of F.E. Walter Reservoir also maintained a similar seasonal pattern with recorded values ranging from 8.21 mg/L to 9.42 mg/L. This can be attributed, in part, to the aeration of reservoir bottom waters as it passes through the conduit system of the dam and is released downstream.

The water column of F.E. Walter Reservoir was weakly stratified with respect to DO during most of the sampling season (Fig. 3-4). The reservoir profile showed the formation of a metalimnetic dissolved oxygen minimum in late August. As seen in some oxygen versus depth profiles of lakes or reservoirs, concentrations of dissolved oxygen may be depleted in the metalimnion of the lake profile. This depletion is termed a negative heterograde curve or metalimnetic oxygen minimum. Metalimnetic minimums of dissolved oxygen in deep mesotrophic reservoirs are often seen and have been shown to also exist in the US Army Corps of Engineers Philadelphia District's Beltzville Reservoir. This water column profile formation may be a natural occurrence and/or man induced. In the case of F.E. Walter Reservoir, the severity of this occurrence appears influenced by seasonal recreational and flood control operations. In either case, the potential exists for negative impacts on water quality, recreational use, and aquatic species such as fish. The occurrence and severity of this DO formation will be monitored during future sampling efforts. In all months sampled the DO concentrations remained above state epilimnion DO criteria (minimum 5 mg/l).

The health of aquatic ecosystems can be impaired by low DO concentrations in the water column (<5.0 mg/L). The lowest DO concentration (0.77 mg/L) was recorded at the bottom of the reservoir during the 17 July sampling event (Fig. 3-4). 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. F.E. Walter Reservoir did experience hypoxic conditions in deeper reservoir waters during the 2019 sampling season. Low oxygen reservoir waters are re-

aerated as they pass through the conduit system of the reservoir during releases downstream. As a result, water releases from the deeper portions of the reservoir containing lower DO concentration did not negatively impact the DO concentrations of the Lehigh River downstream.

### 3.1.3 pH

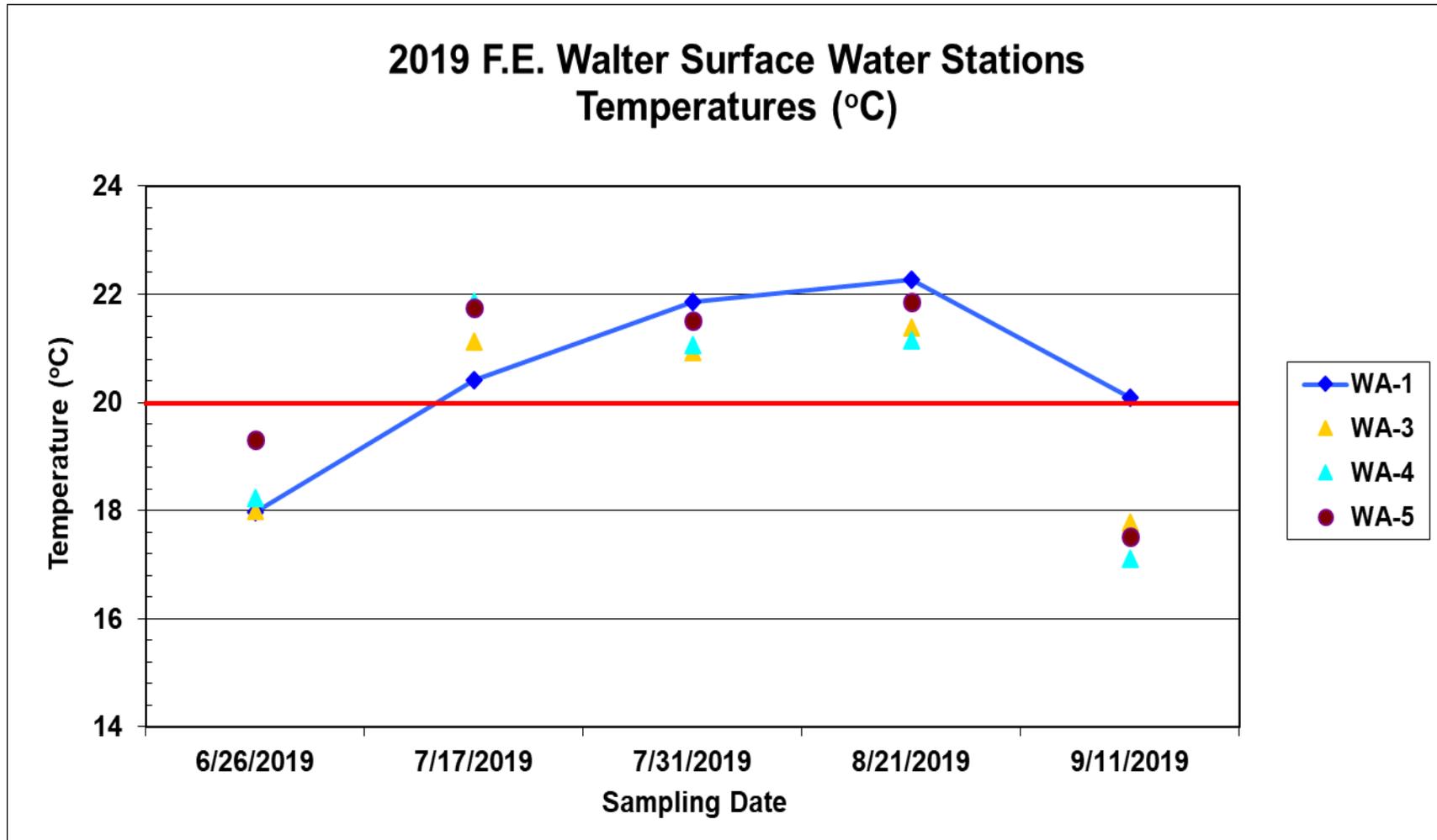
PH is the measure of the hydrogen –ion concentration in the water. A pH below 7 is considered acidic and a pH above 7 is basic. The pH scale is 0-14 with the lower numbers being more acidic and the higher numbers being more basic. High pH values tend to facilitate solubilization of ammonia, salts, and 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 tributary surface (WA-3S, -4S, and -5S) waters of F.E. Walter Reservoir generally followed a similar pattern during 2019 and remained relatively constant or within a narrow range of values (6.11-7.21) throughout the sampling season. The lowest pH level of 6.11 recorded during the sampling season occurred at station WA-5S during the 17 July sampling and the highest pH reading of 7.21 was recorded at Station WA-3S in September. Measures of pH at the downstream station WA-1S are directly influenced by bottom water column releases from the reservoir. Readings of pH at this station ranged from a high of 7.10 in late July to a low of 6.53 in early July (Fig. 3-5).

In 2019, measures of reservoir pH stayed within a tight range of values (6.15-7.19) from the surface to the bottom throughout the sampling season (Fig. 3-6). Slightly higher pH values were measured in the surface waters of the lake. Many factors can influence the pH of the reservoir water such as geology, wind, acid rain, algal productivity, deep water biological productivity and others. Measures of pH throughout the water column in all months sampled remained in compliance with PADEP water quality standards. The water quality standard for pH is a range of acceptable measures between 6 and 9.

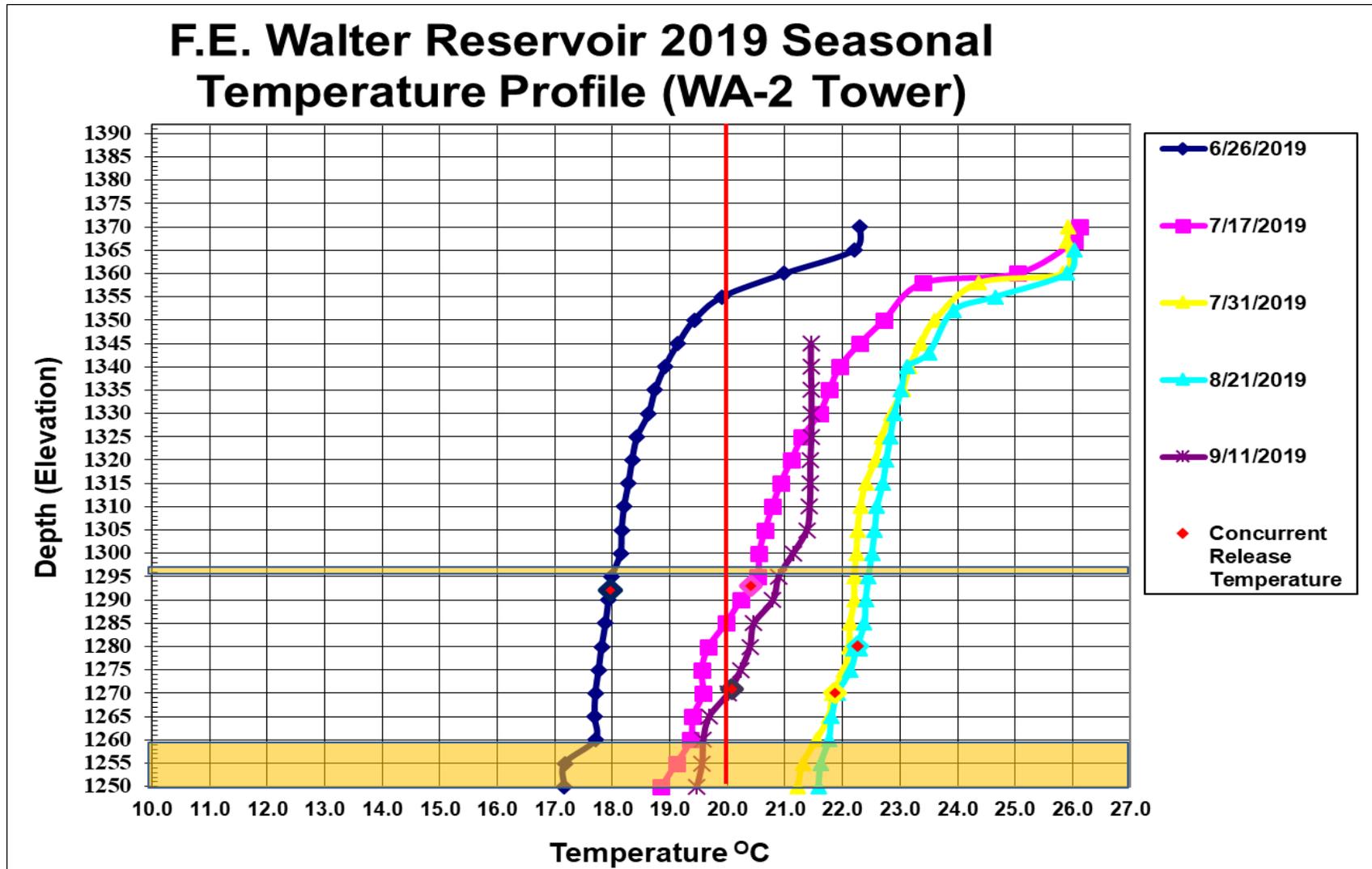
## 3.2 WATER COLUMN CHEMISTRY MONITORING

Table 3-1 provides a summary of water column chemistry sampling for all stations and dates sampled at F.E. Walter Reservoir in 2019. The following sections describe the temporal, spatial, and depth related patterns for these water quality measures.

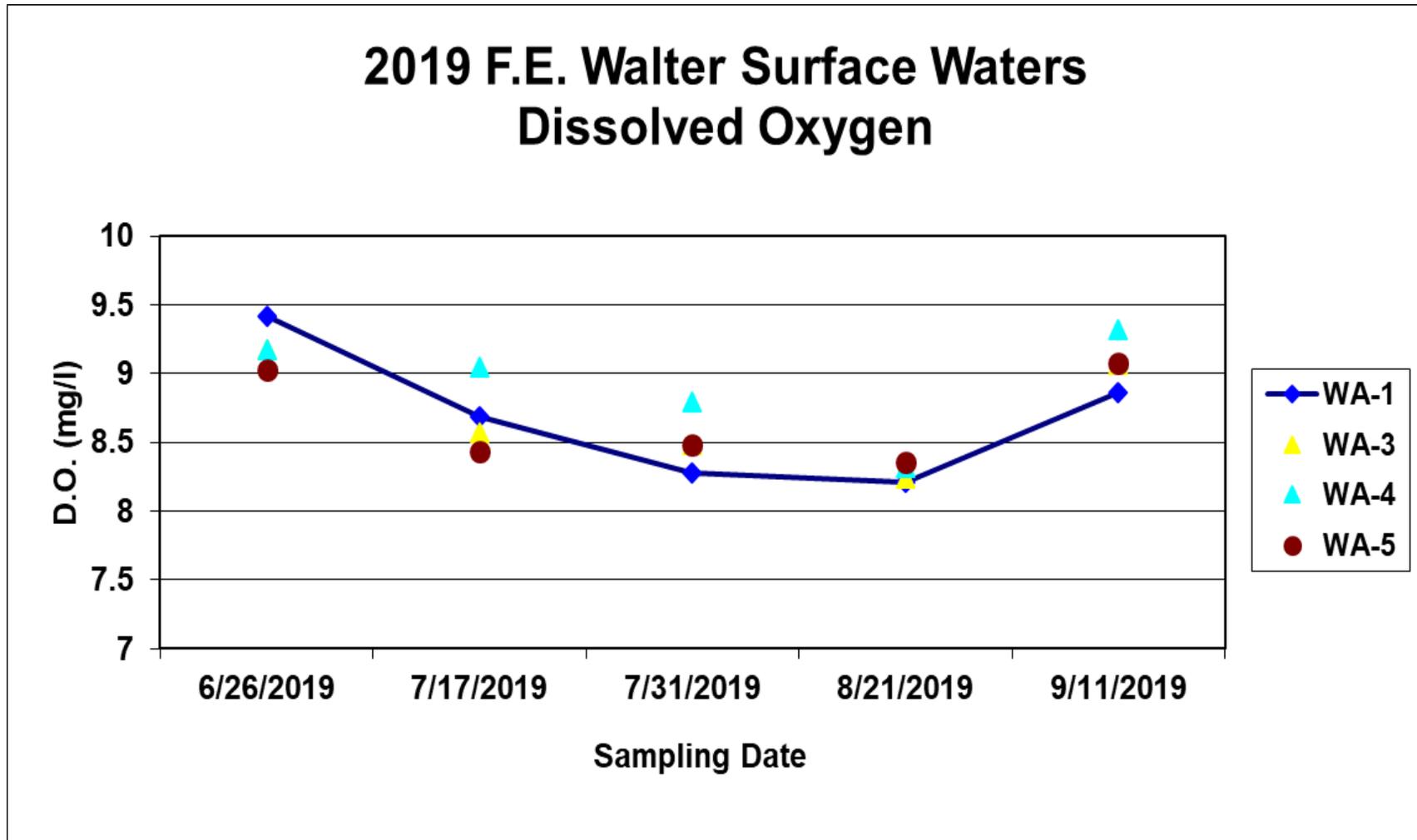


**Figure 3-1.** Temperature measured in tributary and release (WA-1) surface waters of F.E. Walter Reservoir during 2019. See Appendix A for a summary of the plotted values. The coldwater species preference temperature of 20°C is shown as a red line reference.

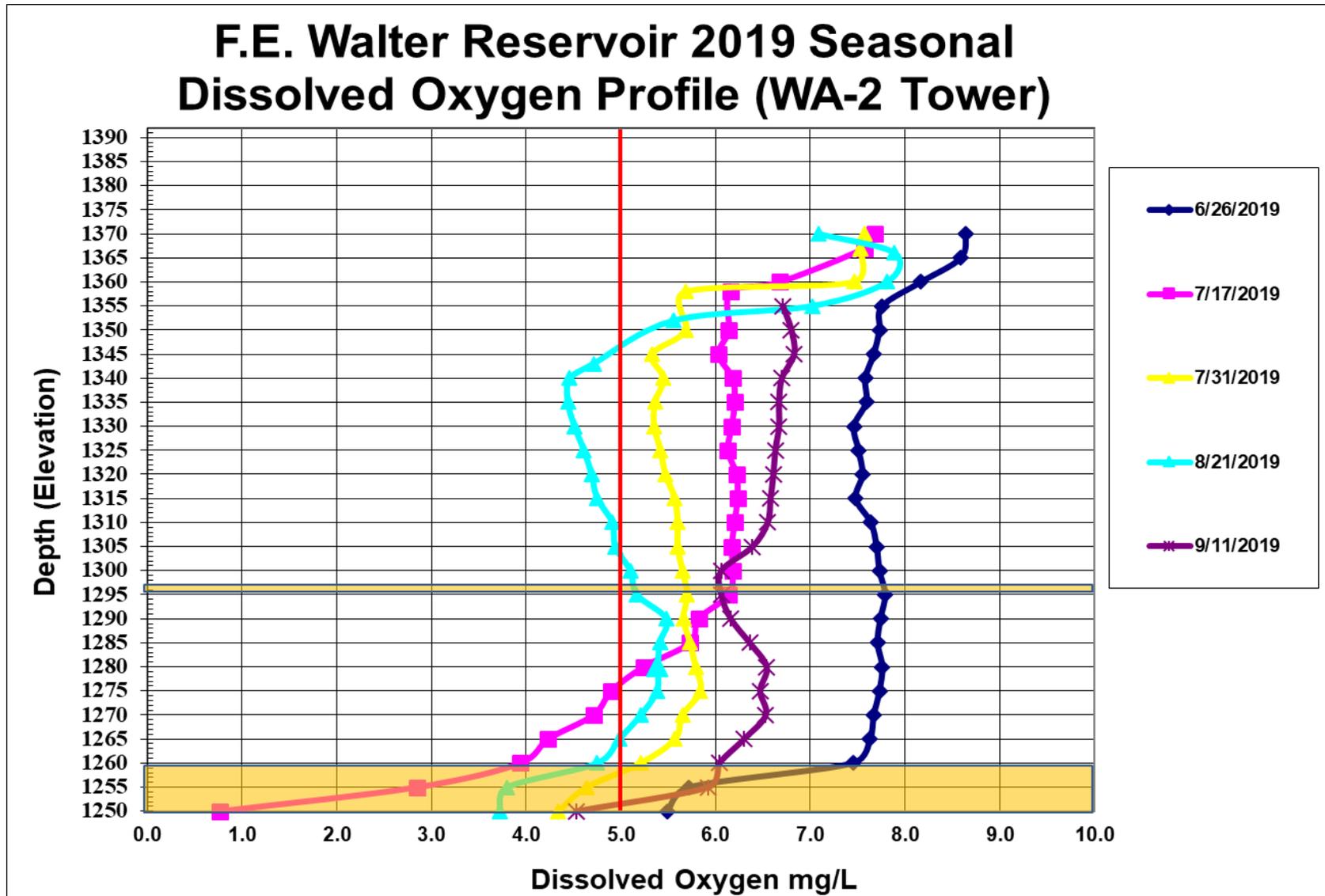




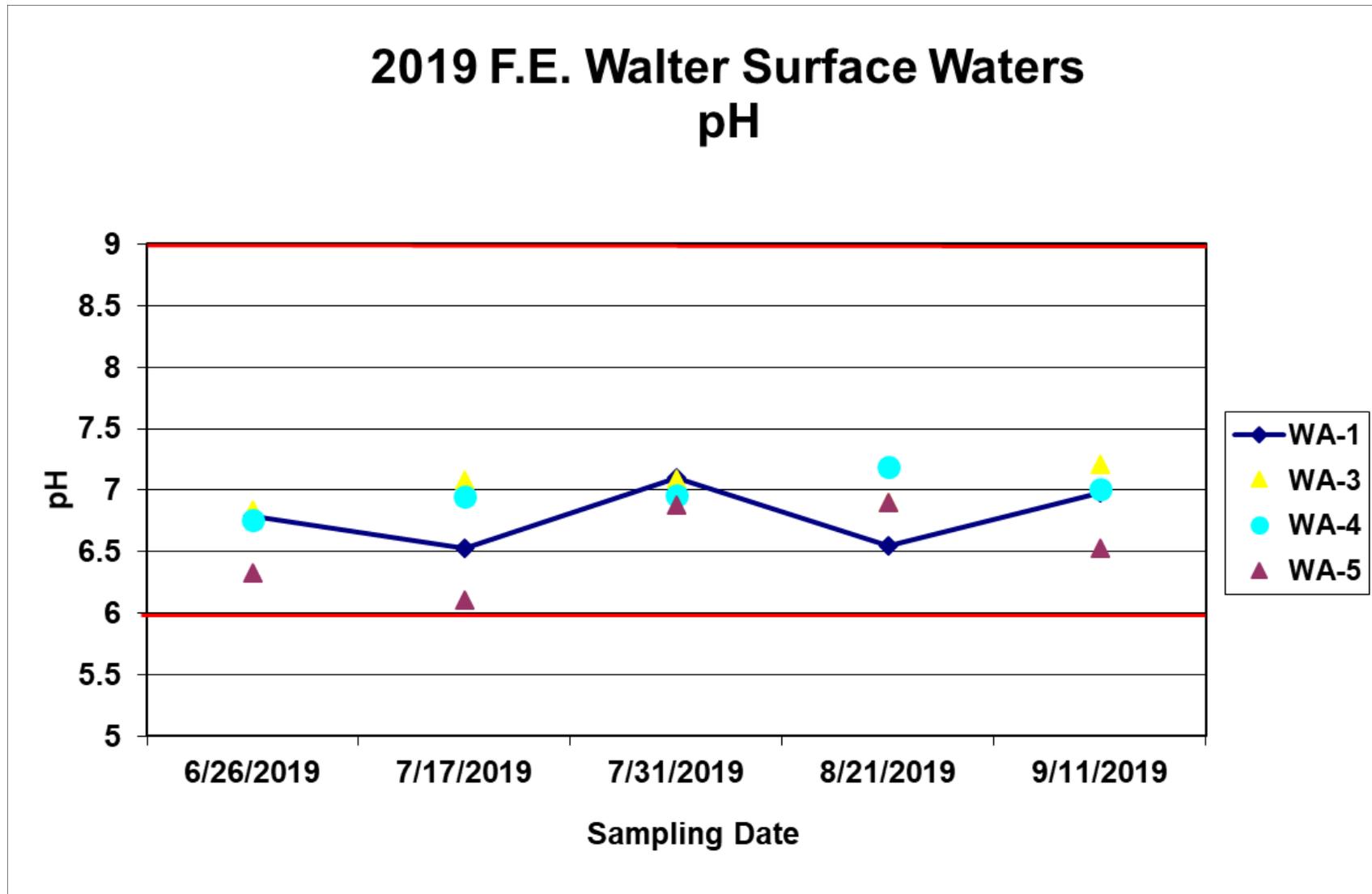
**Figure 3-2.** Stratification of temperature measured in the water column of F. E. Walter Reservoir at station WA-2 during 2019. See Appendix A for a summary of the plotted values. The coldwater species preference temperature of 20°C is shown as a red line reference.



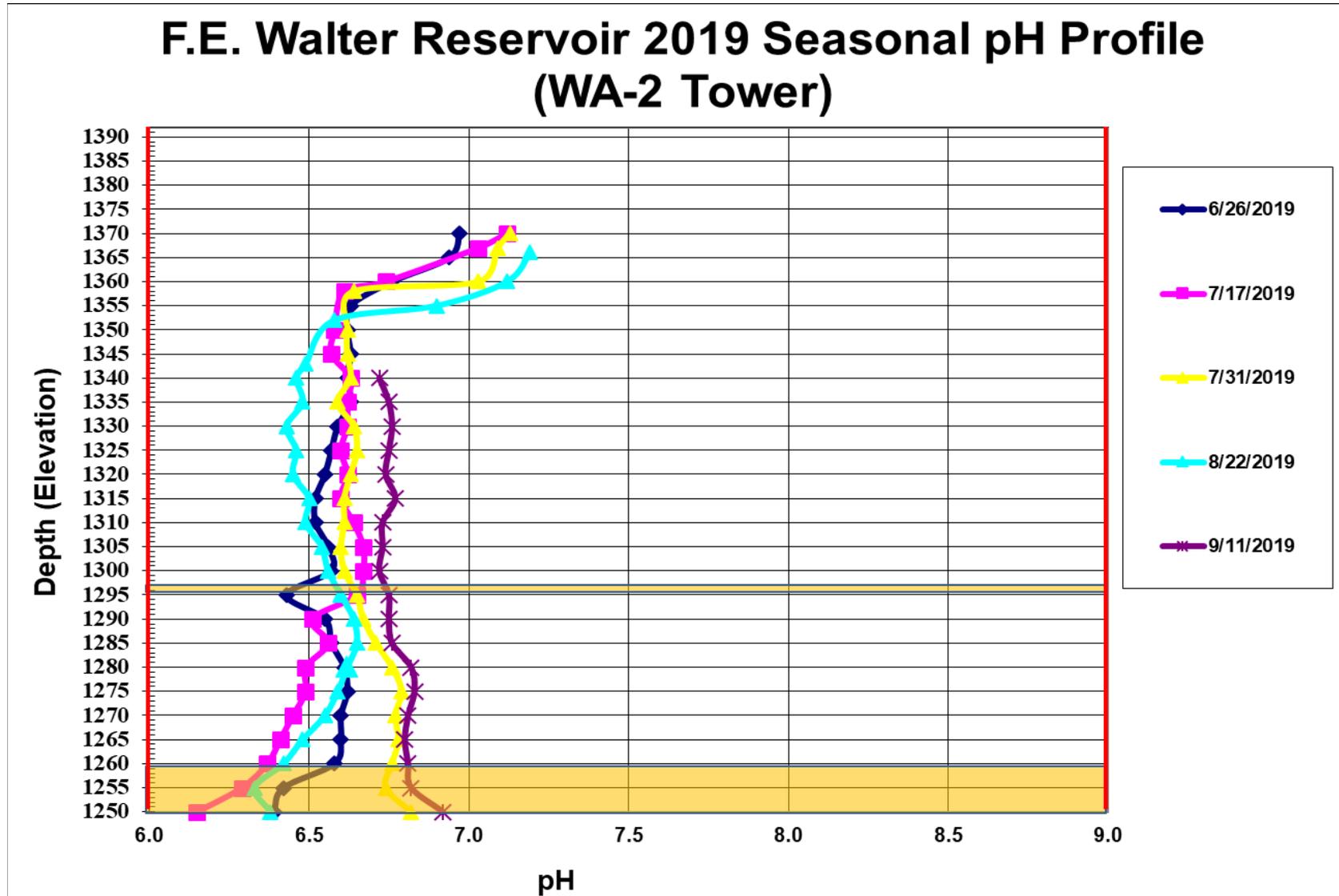
**Figure 3-3.** Dissolved oxygen measured in tributary and release (WA-1) surface waters of F. E. Walter Reservoir during 2019. See Appendix A for a summary of the plotted value.



**Figure 3-4.** Dissolved oxygen measured in the water column of F.E. Walter Reservoir at station WA-2 during 2019. The PADEP WQ standard for DO is an epilimnion minimum concentration of 5 mg/L. See Appendix A for a summary of the plotted values.



**Figure 3-5.** Measures of pH in tributary and release (WA-1) surface waters of F.E. Walter Reservoir during 2019. The PADEP WQ standard for pH is an acceptable range from 6 to 9. See Appendix A for a summary of the plotted values



**Figure 3-6.** Stratification of pH measured in the water column of F.E. Walter Reservoir at station WA-2 during 2019. The PADEP water quality standard pH is an acceptable range from 6 to 9. See Appendix A for a summary of the plotted value.

Table 3-1. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019														
Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WA-01S	6/26/2019	13	<10	<0.007	<0.20	<0.01	0.14	NS	36	0.36	5.5	<0.01	4.1	
	7/17/2019	20	<3.4	0.009	<0.20	<0.01	0.11	NS	49	0.4	4.9	0.02	<4.0	
	7/31/2019	35	<3.4	0.01	<0.20	<0.01	<0.11	NS	45	<0.20	6.7	<0.01	5	
	8/21/2019	<5.0	1.7	0.02	<0.20	<0.01	0.12	NS	49	0.37	5.6	0.02	4.2	
	9/11/2019	17	<1.0	0.008	<0.20	<0.01	<0.11	NS	53	0.33	4.2	0.02	16.8	
WA-02S	6/26/2019	20	<10	<0.007	<0.20	<0.01	0.11	NS	39	0.29	5.2	<0.01	<4.0	
	7/17/2019	<5.0	<3.4	<0.007	<0.20	<0.01	<0.11	NS	43	0.37	5.1	<0.01	<4.0	
	7/31/2019	<10	<3.4	0.01	<0.20	<0.01	<0.11	NS	39	0.36	5.3	<0.01	<4.0	
	8/21/2019	<5.0	1.3	0.01	<0.20	<0.01	<0.11	NS	43	0.29	5.2	<0.01	<4.0	
	9/11/2019	<10	<1.0	<0.007	<0.20	<0.01	<0.11	NS	54	<0.20	4.7	<0.01	<4.0	

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019													
Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WA-02M	6/26/2019	35	<10	<0.007	<0.20	<0.01	<0.11	NS	38	0.29	4.6	<0.01	<4.0
	7/17/2019	<5.0	4.3	<0.007	<0.20	<0.01	0.24	NS	43	0.32	4.8	<0.01	<4.0
	7/19/2019	<10	<3.4	0.01	<0.20	<0.01	<0.11	NS	45	0.27	6.1	<0.01	4.5
	8/21/2019	<10	1.3	0.01	<0.20	<0.01	<0.11	NS	43	0.31	5	<0.01	<4.0
	9/11/2019	14	<1.0	<0.007	<0.20	<0.01	0.22	NS	48	<0.20	4.5	<0.01	<4.0
WA-02B	6/26/2019	12	<10	0.01	<0.20	<0.01	0.27	NS	44	0.55	6.1	0.04	31.3
	7/17/2019	<5.0	<3.4	<0.007	<0.20	<0.01	0.16	NS	50	0.42	5.3	<0.01	<4.0
	7/19/2019	25	<3.4	0.02	<0.20	<0.01	<0.11	NS	42	0.55	6.7	0.02	10
	8/21/2019	<10	1.1	0.02	<0.20	<0.01	<0.11	NS	60	0.4	5.3	0.05	20.5
	9/11/2019	<10	1.2	0.008	<0.20	<0.01	<0.11	NS	49	<0.20	4.2	<0.01	9.8

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019													
Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WA-03S	6/26/2019	21	<10	0.01	<0.20	<0.01	0.16	NS	48	0.38	6.2	0.02	4.6
	7/17/2019	11.5	<3.4	0.02	<0.20	<0.01	0.23	NS	55	0.28	5	0.02	<4.0
	7/31/2019	35	<3.4	0.02	<0.20	<0.01	0.18	NS	58	0.42	6.5	0.02	<4.0
	8/21/2019	<10	1.5	0.02	<0.20	<0.01	0.15	NS	62	0.28	5.3	0.03	<4.0
	9/11/2019	14	<1.0	<0.007	<0.20	<0.01	0.23	NS	57	<0.20	4.1	<0.01	<4.0
WA-04S	6/26/2019	<10	<10	0.02	<0.20	<0.01	0.11	NS	42	0.36	4.7	0.05	<4.0
	7/17/2019	10.5	<4.4	0.01	<0.20	<0.01	0.13	NS	50	0.27	3.6	<0.01	<4.0
	7/31/2019	30	<3.4	0.01	<0.20	<0.01	<0.11	NS	36	0.49	5.7	0.02	<4.0
	8/21/2019	<10	3	0.01	<0.20	<0.01	0.35	NS	43	0.29	4.7	0.02	<4.0
	9/11/2019	<10	<1.0	0.01	<0.20	<0.01	0.12	NS	52	<0.20	2.9	0.02	<4.0



Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WA-05S	6/26/2019	33	<10	<0.007	<0.20	<0.01	<0.11	NS	28	0.38	4	<0.01	<4.0
	7/17/2019	<5.0	<3.4	0.009	<0.20	<0.01	0.24	NS	49	0.31	4.5	<0.01	<4.0
	7/31/2019	40	<3.4	<0.007	<0.20	<0.01	<0.11	NS	36	0.32	5.1	<0.01	<4.0
	8/21/2019	<5.0	1	0.01	<0.20	<0.01	<0.11	NS	43	0.31	5.7	0.02	<4.0
	9/11/2019	<10	1.7	<0.007	<0.20	<0.01	0.14	NS	42	<0.20	3.5	<0.01	<4.0
WA-06S	6/26/2019	25	<10	<0.007	<0.20	<0.01	<0.11	NS	40	0.33	4.6	<0.01	<4.0
	7/17/2019	5	<3.4	0.008	<0.20	<0.01	0.15	NS	50	0.33	4.9	<0.01	<4.0
	7/31/2019	<10	<3.4	0.01	<0.20	<0.01	<0.11	NS	44	0.37	5.2	<0.01	<4.0
	8/21/2019	<10	1.5	0.01	<0.20	<0.01	<0.11	NS	37	0.29	5	0.02	<4.0
	9/11/2019	<10	<1.0	0.008	<0.20	<0.01	0.19	NS	48	0.33	4.6	<0.01	<4.0

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WA-06M	6/26/2019	<10	<10	0.01	<0.20	<0.01	<0.11	NS	45	0.34	5.4	0.02	<4.0
	7/17/2019	<5.0	<3.4	0.008	<0.20	<0.01	0.3	NS	38	0.36	4.4	<0.01	<4.0
	7/31/2019	<10	<3.4	0.01	<0.20	<0.01	<0.11	NS	42	0.34	5.9	<0.01	<4.0
	8/21/2019	<10	<1.0	<0.007	<0.20	<0.01	<0.11	NS	39	0.27	5.2	<0.01	<4.0
	9/11/2019	<10	1.2	<0.007	<0.20	<0.01	<0.11	NS	44	0.31	4.5	<0.01	<4.0
WA-06B	6/26/2019	14	<10	0.01	<0.20	<0.01	<0.11	NS	49	0.32	5.4	<0.01	5.2
	7/17/2019	5.5	<3.4	0.01	<0.20	<0.01	0.17	NS	39	0.87	5	0.03	14.1
	7/31/2019	<10	<3.4	0.01	<0.20	<0.01	<0.11	NS	43	0.34	6.5	<0.01	<4.0
	8/21/2019	<10	<1.0	<0.007	<0.20	<0.01	<0.11	NS	41	0.28	5.1	<0.01	12
	9/11/2019	<10	1	0.01	<0.20	<0.01	<0.11	NS	57	0.28	4.2	<0.01	<4.0

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019														
Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
WA-07S	6/26/2019	11	<10	0.009	<0.20	<0.01	<0.11	NS	41	0.22	5.3	<0.01	<4.0	
	7/17/2019	7	<3.4	0.01	<0.20	<0.01	<0.11	NS	45	0.32	5.1	0.03	<4.0	
	7/31/2019	<10	<3.4	0.01	<0.20	<0.01	<0.11	NS	43	0.4	5.7	<0.01	<4.0	
	8/21/2019	<10	1.2	<0.007	<0.20	<0.01	<0.11	NS	32	0.27	4.5	<0.01	<4.0	
	9/11/2019	<10	<1.0	0.01	<0.20	<0.01	0.15	NS	42	<0.20	4.6	<0.01	<4.0	
WA-07M	6/26/2019	11	<10	0.009	<0.20	<0.01	<0.11	NS	46	0.48	5.4	<0.01	<4.0	
	7/17/2019	6.5	<3.4	0.01	<0.20	<0.01	0.13	NS	50	0.33	5	<0.01	<4.0	
	7/31/2019	<10	4.5	0.02	<0.20	<0.01	<0.11	NS	40	0.38	6.8	0.02	<4.0	
	8/21/2019	<10	1.8	<0.007	<0.20	<0.01	<0.11	NS	45	0.26	4.8	<0.01	<4.0	
	9/11/2019	<10	<1.0	0.02	<0.20	<0.01	<0.11	NS	47	<0.20	4.6	0.02	<4.0	

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2019

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
WA-07B	6/26/2019	14	<10	0.009	<0.20	<0.01	<0.11	NS	50	0.3	6.1	0.07	15.6	
	7/17/2019	7	<3.4	0.02	<0.20	<0.01	<0.11	NS	50	0.42	5.5	0.02	5.5	
	7/31/2019	<10	19	0.01	<0.20	<0.01	<0.11	NS	55	0.46	7	0.02	<4.0	
	8/21/2019	<10	1.1	0.02	<0.20	<0.01	<0.11	NS	61	0.25	5.1	0.02	30.6	
	9/11/2019	<10	<1.0	0.01	<0.20	<0.01	<0.11	NS	51	0.3	4.3	<0.01	9.8	

< Laboratory analysis result was less than the limit of quantification or limit of detection.

NS- Not Sampled

### 3.2.1 Ammonia

Total Ammonia (NH<sub>3</sub>) 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 is 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.

Ammonia in the water column of F.E. Walter Reservoir was consistently low throughout the monitoring period with all sample results less than the minimum laboratory reporting limit (<0.20 mg/L). F.E. Walter Reservoir was in compliance with the PADEP water quality standard for ammonia during 2019. The water quality standard of ammonia is dependent on temperature and pH (Table 3-2). Throughout the monitoring period, all measures of ammonia were less than their respective criteria values.

<b>Table 3.2 Environmental Protection Agency Ammonia Freshwater Criteria 2013</b>	
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.	

### 3.2.2 Nitrite and Nitrate

Nitrite (NO<sub>2</sub>) 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. Concentrations of nitrite at F.E. Walter Reservoir were consistently low at all sampling stations during 2019. Concentrations of nitrite measured at all stations and depths were less than the minimum laboratory reporting limit of 0.01 mg/L (Table 3-1).

Nitrate (NO<sub>3</sub>) 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 was also consistently low at F.E. Walter Reservoir during 2019. For all stations and depths, sample results ranged from less than the laboratory reporting limit of 0.11 mg/L to a maximum of 0.35 mg/L in the upstream surface waters at station WA-4S on 21 August.

In 2019, F.E. Walter Reservoir was in compliance with the PADEP water quality standard for nitrogen. The water quality standard for nitrogen is a summed concentration of

nitrite and nitrate of less than 10-mg/L. Throughout the monitoring period, the summed concentrations for each station were well below this standard. The maximum summed concentration for any one sampling station did not exceed 0.46 mg/L.

### 3.2.3 Total Kjeldahl Nitrogen

Total Kjeldahl nitrogen (TKN) is a measure of organic nitrogen that includes ammonia. Organic nitrogen is not immediately available for biological activity and is therefore not available for plant growth until decomposition to an inorganic form occurs. TKN in the water column of F.E. Walter Reservoir was low during 2019 (Table 3-1). Concentrations measured at all reservoir stations ranged from less than the minimum laboratory reporting limit of 0.20 mg/L to a high of 0.87 mg/L in the reservoir bottom waters at station WA-6B on 17 July.

### 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. For all stations and depths, concentrations ranged from less than the reporting limit of 0.01 mg/L to a high of 0.07 mg/L (Table 3-1). The maximum single sample concentration was measured on 26 June in the reservoir bottom waters at station WA-07B.

### 3.2.5 Dissolved Phosphorus

Dissolved or soluble phosphorus (DISS P) in the water column of F.E. Walter Reservoir remained consistently low during 2019. For all stations and depths, concentrations ranged from less than the reporting limit of 0.007 mg/L to a high of 0.02 mg/L (Table 3-1). In freshwater environments, dissolved phosphorus is usually a limiting nutrient and is utilized by freshwater plants and algae during photosynthesis.

### 3.2.6 Total Dissolved Solids

Total Dissolved Solids (TDS) is a measure of the amount of filterable dissolved material in the water. Dissolved salts such as sulfate, magnesium, chloride, and sodium contribute to elevated levels. TDS in the lake and tributary stations of F.E. Walter Reservoir remained relatively constant and low during 2019. Concentrations at all stations and depths ranged from 28 to 62 mg/L (Table 3-1). F.E. Walter Reservoir and its tributaries were in compliance with the PADEP water quality standard for total dissolved solids during 2019. The water quality standard is a maximum concentration of 500-mg/L.

### 3.2.7 Total Suspended Solids

Total Suspended Solids (TSS) is a measure of the amount of non-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). TSS measures in the water column of F.E. Walter Reservoir were low in 2019 with many most results less than the reporting limit of 4.0 mg/L and ranging to a maximum concentration of 31.3 mg/L (Table 3-1). Elevated results were predominantly seen in the lake bottom water samples. This is likely a result of sampling error and suspended lake bottom sediments being captured in the sample during lake bottom water sampling. On occasion, bottom sediments are re-suspended during the process of collecting a sample from deeper waters. These elevated results do not always accurately reflect conditions at those stations and depths.

### 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 F.E. Walter Reservoir were inconclusive in 2019 as a result of inconsistent laboratory reporting limits (Table 3-2). Recordable results ranged from 1.1 mg/L to 19.0 mg/L. In considering the overall infrequency of samples showing higher readings in addition to historical sampling results, it is inferred that F.E. Walter 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.

### 3.2.9 Alkalinity

Alkalinity (ALK) 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 CaCO<sub>3</sub> except where natural conditions are less.

Alkalinity measurements in the waters of F.E. Walter Reservoir were routinely low during 2019 but inconsistent laboratory reporting limits does not allow for an accurate assessment of conditions in the watershed. Concentrations measured at all stations and depths ranged from <5.0 mg/L to 40.0 mg/L CaCO<sub>3</sub> throughout the monitoring period (Table 3-1). The natural alkalinity of water is largely dependent on the underlying geology and soils within the surrounding watershed. The low alkalinity typically measured at F.E. Walter Reservoir probably results from the regional geology, which is primarily sandstone and shale (Van Diver 1990).

### 3.2.10 Total Organic Carbon

Total Organic Carbon (TOC) is a measure of the dissolved and particulate organic carbon in water. The bulk of organic carbon in water is composed of humic substances and partly degraded animal and plant materials. High levels of organic carbon coincide with a lowering of dissolved oxygen concentrations. Carbon is a nutrient required for biological processes. Total Organic Carbon (TOC) was measured in the water column and tributaries of F.E. Walter Reservoir (Table 3-1). Concentrations of TOC at all stations and depths ranged from 2.9 mg/L to 6.8 mg/L. Concentrations were similar across all stations and depths.

### 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. For the entire 2019 sampling season, chlorophyll a was low in the lake surface waters of F.E. Walter Reservoir (Appendix A). Concentrations for all sampling dates for lake stations at depths from 0-10 feet ranged from 3.0 ug/L to 5.8 ug/L.

## 3.3 TROPHIC STATE DETERMINATION

Carlson’s (1977) trophic state index (TSI) is a method of expressing the extent of eutrophication of a lake, quantitatively. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll a, and secchi disc 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. Classification of F.E. Walter Reservoir was based on a single sample each month during the sampling season. It is important to note that variability in measurements not captured between sampling events and the resulting classification can occur. Figure 3-7 graphically shows this potential variability between samples.

TSIs calculated for measures of total phosphorus classified F.E. Walter Reservoir as oligotrophic in June (37.35), early July (37.35), late July (37.35), August (37.35) and September (37.35). TSIs calculated for measures of secchi disk depth classified F.E. Walter Reservoir as mesotrophic in June (45.69), early July (46.23), late July (47.09), August (47.38) and September (45.42). TSIs calculated for measures of chlorophyll a classified F.E. Walter Reservoir as mesotrophic in June (45.20), early July (43.70), late July (43.43), August (44.68), and September (42.40).



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 trophic state of the reservoir, based on TSI's, was oligotrophic/mesotrophic throughout the 2019 sampling season. The EPA (1983) also provides criteria for classifying the trophic conditions of lakes of the North Temperate Zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi disk depth (Table 3-3). Taking into account the general agreement between the EPA classifications with that of the Carlson TSIs, the trophic condition of F.E. Walter Reservoir fluctuated between being mesotrophic and oligotrophic throughout much of the 2019 sampling season.

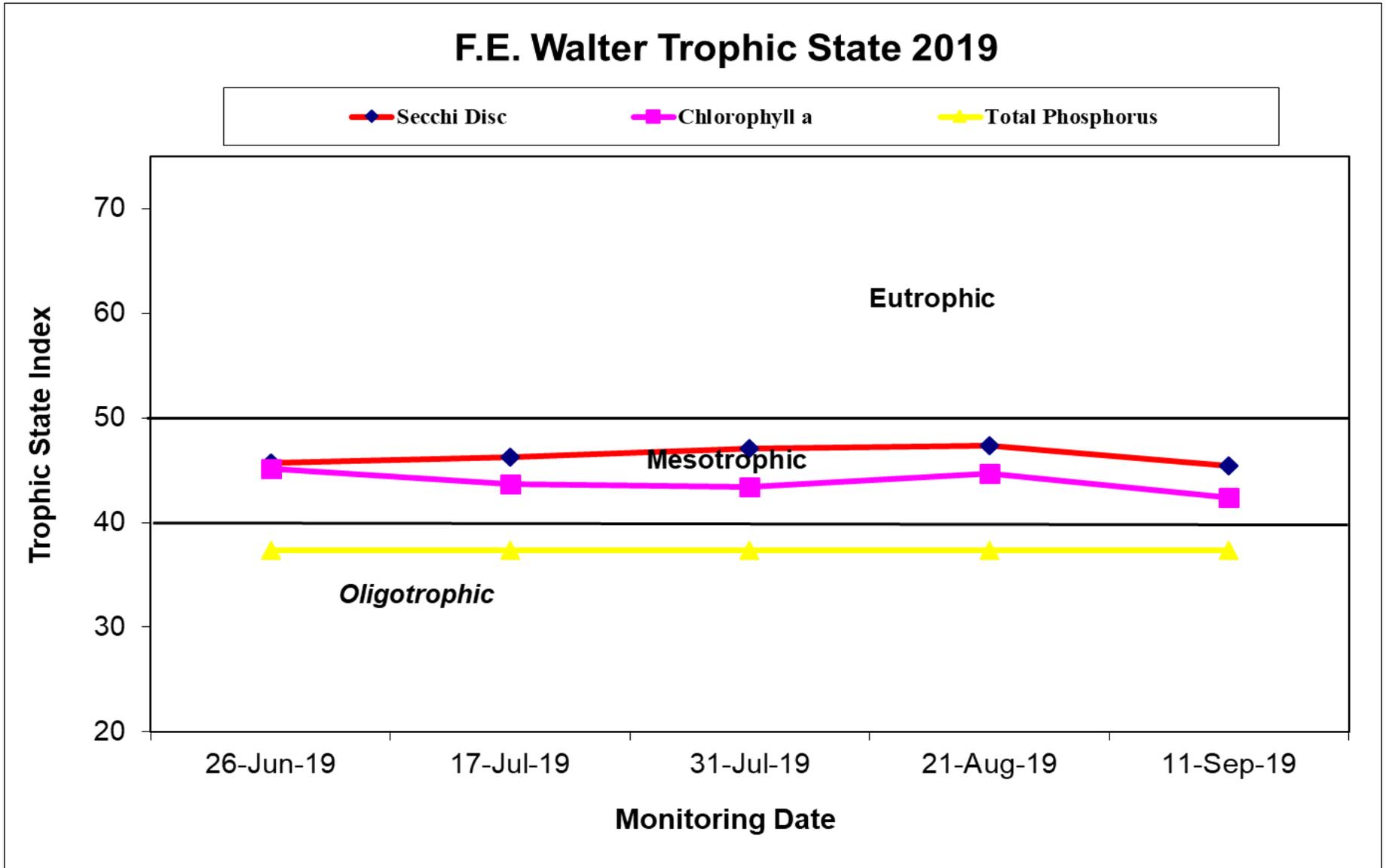
**Table 3-3.** EPA trophic classification criteria and average monthly measures for F.E. Walter Reservoir in 2019.

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	26 June	17 July	31 July	21 Aug.	11 Sep.
Total Phosphorus (ppb)	<10	10-20	>20	<10	<10	<10	<10	<10
Chlorophyll <i>a</i> (ppb)	<4	4-10	>10	4.43	3.80	3.70	4.20	3.30
Secchi Depth (m)	>4	2-4	<2	2.70	2.60	2.45	2.40	2.75

### 3.4 RESERVOIR BACTERIA MONITORING

Two forms of coliform bacteria contamination were monitored in the tributary and lake surface waters at F.E. Walter Reservoir during 2019 including total and fecal coliform (Table 3-4). Total coliform includes *escherichia 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 values for all stations and dates ranged from 510 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. With respect to PADEP water quality standards, fecal coliform bacteria has been replaced with an e-coli criteria. For purposes of the 2019 reservoir bacteria sampling, previous fecal coliform criteria was used to evaluate bacteria contamination in the reservoir. Fecal contamination was low in F.E. Walter Reservoir and higher in its upstream tributaries during 2019. 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 then compared to the Pennsylvania Department of Health single sample standard of <1000 colonies/100-ml. The fecal coliform samples collected at F.E. Walter Reservoir did not exceed this standard in 2019. Water contact recreation is not permitted at F.E. Walter Reservoir.



**Figure 3-7.** Carlson Trophic state indices calculated from secchi disk depth, concentrations of chlorophyll a and Total Phosphorus measured in surface waters of F.E. Walter Reservoir at Station WA-2 during 2019.

**Results and Discussion**

<b>Table 3-4.</b> Surface water bacteria counts (colonies/100 ml) at F.E. Walter Reservoir during 2019. Shaded values exceed State bacteria criteria. NS = Not Sampled in 2019 LE = Lab Error							
<b>STATION</b>	<b>DATE</b>		<b>Total Coliform</b>		<b>Fecal Coliform</b>		<b>Escherichia coli</b>
WA-1S	6/26/2019		LE		LE		NS
	7/17/2019		11300		3		NS
	7/31/2019	>	2000		9		NS
	8/21/2019	>	2000		32		NS
	9/11/2019	>	20000	>	600		NS
WA-2S	6/26/2019		LE		LE		NS
	7/17/2019		15300		2		NS
	7/31/2019	>	2000	<	1		NS
	8/21/2019		960	<	1		NS
	9/11/2019		709		22		NS
WA-3S	6/26/2019		LE		LE		NS
	7/17/2019	>	20000		23		NS
	7/31/2019	>	2000		28		NS
	8/21/2019	>	2000		38		NS
	9/11/2019		7100		20		NS
WA-4S	6/26/2019		LE		LE		NS
	7/17/2019	>	20000		70		NS
	7/31/2019	>	2000		68		NS
	8/21/2019	>	2000		50		NS
	9/11/2019		10000		26		NS
WA-5S	6/26/2019		LE		LE		NS
	7/17/2019		8300		10		NS
	7/31/2019	>	2000		16		NS
	8/21/2019	>	2000		18		NS
	9/11/2019		NS		NS		NS
WA-6S	6/26/2019		LE		LE		NS
	7/17/2019		7700		1		NS
	7/31/2019	>	2000	<	1		NS
	8/21/2019		850	<	1		NS
	9/11/2019		510	<	1		NS
WA-7S	6/26/2019		LE		LE		NS
	7/17/2019	>	20000		1		NS
	7/31/2019	>	2000	<	1		NS
	8/21/2019		1080		1		NS
	9/11/2019		670		18		NS

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# **APPENDIX A**

## **STRATIFICATION DATA TABLES**

### 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
<b>WA-1 Outfall</b>	6/26/2019	6:46:03	0.5	17.97	99.4	9.42	6.79	5	138.8	3.9	3.8	0.058
	7/17/2019	9:38:12	0.5	20.41	96.4	8.69	6.53	20.2	181	2.3	3.9	0.068
	7/31/2019	7:01:39	0.5	21.86	94.5	8.28	7.1	-12.9	172.7	4.8	4.1	0.071
	8/21/2019	9:10:56	0.5	22.28	94.4	8.21	6.55	19.8	189.3	3.3	2.7	0.076
	9/11/2019	9:06:50	0.5	20.08	97.6	8.86	6.98	-5.9	175.8	5.4	3.9	0.077
<b>WA-2  Lake Tower  Secchi 2.70 M</b>	6/26/2019	7:55:05	0.5	22.3	99.4	8.64	6.97	-5.2	178.7	-0.3	4.2	0.067
		7:54:02	5	22.2	98.7	8.59	6.94	-3.4	178.7	-0.3	4.4	0.067
		7:53:04	10	20.99	91.6	8.17	6.76	6.8	183.3	0.0	4.7	0.065
		7:51:49	15	19.91	85.2	7.76	6.63	14.4	185.8	-0.1	4.7	0.064
		7:50:57	20	19.42	84.1	7.73	6.62	15.3	185.6	0.2	5.2	0.062
		7:50:02	25	19.14	82.9	7.67	6.63	14.7	185.1	0.6	4.9	0.064
		7:49:21	30	18.91	81.6	7.58	6.62	15	184.9	0.8	5.1	0.065
		7:48:35	35	18.74	81.4	7.59	6.63	14.7	184.2	0.6	4.2	0.065
		7:46:32	40	18.63	79.9	7.46	6.59	16.6	183.5	0.4	4.5	0.065
		7:44:21	45	18.43	80	7.51	6.57	18	181.7	0.8	4.3	0.064
		7:43:31	50	18.34	80.3	7.55	6.55	19.1	181.4	0.1	4.6	0.061
		7:42:38	55	18.28	79.5	7.48	6.52	21	180.6	0.9	3.5	0.061
		7:41:43	60	18.2	81.1	7.64	6.52	20.9	179.6	1.5	4.2	0.056
		7:40:55	65	18.16	81.7	7.70	6.56	18.4	178.2	1.0	4.6	0.059
		7:40:15	70	18.14	81.9	7.73	6.57	18.2	177.8	1.3	4.3	0.06
		7:38:53	75	17.99	82.3	7.79	6.43	25.9	177.4	0.9	3.1	0.049
		7:37:39	80	17.93	81.7	7.74	6.55	19.1	175.3	1.7	3.9	0.056
		7:36:49	85	17.88	81.3	7.71	6.57	17.6	175	2.0	5.1	0.058
		7:35:48	90	17.81	81.7	7.76	6.61	15.4	173.4	2.5	4.4	0.059
		7:34:41	95	17.76	81.2	7.73	6.62	15.2	173.3	2.4	4.6	0.06
7:33:25	100	17.7	80.6	7.67	6.60	16	172.9	2.7	5.0	0.06		
7:32:28	105	17.69	80.1	7.63	6.60	16	171.3	3.1	4.4	0.059		
7:31:18	110	17.7	78.2	7.45	6.58	17.4	169.4	5.2	5.0	0.06		
7:29:31	115	17.17	59.4	5.72	6.42	26.5	168.6	16.6	4.9	0.06		
7:27:41	120	17.16	57	5.49	6.39	28.2	167.4	17.5	4.9	0.06		

## 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
WA-2 Lake Tower  Secchi 2.6 M	7/17/2019	7:40:21	0.5	26.12	94.9	7.68	7.12	-14.5	190.9	-0.8	3.8	0.077
		7:38:45	5	26.03	93.4	7.57	7.03	-9	192.0	-1	3.3	0.077
		7:37:46	10	25.04	80.9	6.68	6.74	8.4	198.2	-0.5	4.3	0.075
		7:37:07	15	23.40	72.4	6.16	6.61	16	201.7	-0.8	4	0.073
		7:36:30	20	22.72	71.2	6.14	6.58	17.8	201.9	-0.6	3.5	0.068
		7:35:55	25	22.30	69.4	6.03	6.57	18	202.3	-0.5	3.7	0.072
		7:35:15	30	21.95	70.6	6.18	6.63	15	200.7	-0.4	3.3	0.074
		7:34:36	35	21.77	70.6	6.20	6.62	15.3	200.1	-0.5	2.9	0.072
		7:33:56	40	21.60	70.0	6.17	6.62	15.2	199.6	-0.5	3.8	0.074
		7:33:22	45	21.30	69.1	6.13	6.60	16.4	199.6	-0.4	3.7	0.072
		7:30:08	50	21.11	69.9	6.22	6.62	15.4	194.7	-0.3	3.4	0.07
		7:29:12	55	20.92	69.7	6.23	6.60	16.2	194.0	-0.2	3.6	0.067
		7:28:40	60	20.78	69.3	6.20	6.64	13.9	192.7	-0.3	3.4	0.071
		7:25:20	65	20.65	68.8	6.17	6.67	12.4	186.9	-0.4	3.3	0.071
		7:24:48	70	20.55	68.7	6.18	6.67	12.1	187.1	0.1	4.4	0.073
		7:24:11	75	20.52	68.3	6.14	6.65	13.7	187.1	0	3.8	0.075
		7:22:31	80	20.23	64.3	5.82	6.51	21.5	185.9	0.3	3.1	0.062
		7:21:21	85	19.97	63.0	5.73	6.56	18.4	182.2	0.3	3.6	0.069
		7:19:14	90	19.67	57.2	5.24	6.49	22.8	177.4	1.5	3.4	0.067
		7:18:27	95	19.55	53.4	4.90	6.49	22.6	173.4	2.6	3.2	0.068
7:16:59	100	19.57	51.4	4.71	6.45	25.2	169.5	2.3	3	0.068		
7:15:57	105	19.40	46.0	4.23	6.41	27.5	165.2	5.7	3.5	0.068		
7:13:34	110	19.36	42.8	3.94	6.37	29.5	149.7	6.5	3.2	0.068		
7:12:28	115	19.11	30.8	2.85	6.29	34.2	138.7	16.1	3.7	0.069		
7:09:04	120	18.85	8.3	0.77	6.15	42.7	100.2	35.3	0	0.072		
WA-2 Lake Tower  Secchi 2.45 M	7/31/2019	7:58:27	0.5	25.92	93.2	7.57	7.13	-14.9	207.6	0.0	3.8	0.078
		7:57:34	5	25.90	92.6	7.53	7.09	-12.7	207.9	-0.5	3.7	0.078
		7:56:35	10	25.83	91.7	7.46	7.03	-8.9	208.3	0.1	3.6	0.078
		7:54:57	15	24.36	68.0	5.69	6.64	14.1	217.8	-0.7	3.4	0.076
		7:54:20	20	23.60	67.1	5.69	6.62	15.3	218.1	-0.1	3.9	0.072
		7:53:39	25	23.36	62.6	5.33	6.62	15.2	217.9	-0.2	3.6	0.077
		7:53:02	30	23.16	63.7	5.45	6.63	15.1	217.6	-0.7	3.7	0.076
		7:52:16	35	23.04	62.5	5.36	6.59	17.3	218.4	-0.9	3.3	0.075
		7:50:51	40	22.84	62.2	5.35	6.64	14.1	215.1	-0.5	3.8	0.075
		7:50:01	45	22.68	62.8	5.42	6.65	13.5	213.9	-0.1	3.7	0.074
		7:49:10	50	22.57	63.3	5.47	6.63	14.7	213.4	0.1	3.8	0.073
		7:48:30	55	22.40	64.2	5.57	6.61	16.1	213.2	0.1	4.2	0.072
		7:48:02	60	22.31	64.4	5.60	6.61	16.1	212.4	-0.1	4.2	0.066
		7:47:20	65	22.26	64.3	5.60	6.60	16.4	212.2	0.0	3.5	0.066
		7:46:50	70	22.24	64.9	5.65	6.61	15.7	212	0.4	3.9	0.067
		7:46:14	75	22.20	65.4	5.70	6.65	13.4	210.1	0.5	3.8	0.067
		7:45:37	80	22.20	65.0	5.66	6.67	12.5	209.4	0.3	3.5	0.067
		7:45:04	85	22.13	65.7	5.73	6.71	9.9	207.7	0.8	3.1	0.068
		7:44:30	90	22.11	66.4	5.79	6.76	7.2	206	0.6	3.4	0.068
		7:43:51	95	22.03	66.8	5.84	6.79	5.3	204.7	1.0	4.4	0.072
7:42:50	100	21.83	64.4	5.65	6.77	6.4	203.3	2.4	4.3	0.072		
7:42:15	105	21.76	63.5	5.57	6.78	6.1	202	3.0	4.3	0.072		
7:41:16	110	21.54	59.1	5.21	6.76	6.9	200	5.3	3.9	0.073		
7:40:26	115	21.31	52.4	4.64	6.74	8.3	198.2	10.6	4.1	0.073		
7:38:54	120	21.22	48.9	4.34	6.82	3.4	197	18.6	3.8	0.073		

## 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
<b>WA-2 Lake Tower</b>	8/21/2019	7:31:16	0.5	26.02	97.3	7.89	7.19	-18.3	172.8	-0.30	3.9	0.078
		7:30:18	5	25.91	96.1	7.81	7.12	-14.3	173.5	-0.10	3.8	0.078
		7:28:57	10	24.65	84.4	7.02	6.9	-1.4	180.0	-0.40	4.9	0.075
		7:26:45	15	23.92	66	5.56	6.58	17.6	186.1	-0.50	4.6	0.072
		7:25:43	20	23.50	55.4	4.71	6.49	23.0	187.7	-0.20	3.6	0.072
		7:24:37	25	23.12	52.1	4.46	6.46	24.9	188.2	-0.50	4.0	0.073
		7:23:31	30	23.02	51.7	4.44	6.48	23.6	186.1	-0.90	4.1	0.074
		7:21:50	35	22.90	52.4	4.51	6.43	26.6	186.7	-0.60	4.1	0.072
		7:20:58	40	22.83	53.6	4.61	6.46	24.8	183.9	-0.80	3.3	0.071
		7:19:53	45	22.76	54.4	4.69	6.45	25.2	182.9	-0.30	3.6	0.070
		7:18:49	50	22.70	55.1	4.75	6.5	22.4	179.2	-0.60	2.9	0.070
		7:17:53	55	22.60	56.8	4.91	6.49	23.3	179.0	-0.40	3.8	0.069
		7:17:18	60	22.56	57.2	4.94	6.54	20.3	175.8	-0.10	3.4	0.069
		7:16:26	65	22.51	58.9	5.10	6.56	18.6	174.0	0.30	3.3	0.071
		7:15:50	70	22.45	59.6	5.17	6.6	16.5	171.8	0.60	3.0	0.071
		7:14:57	75	22.40	63.2	5.48	6.64	14.2	169.3	1.10	3.1	0.072
		7:14:12	80	22.38	62.3	5.41	6.65	13.8	168.1	1.10	2.9	0.073
		7:13:19	85	22.25	62	5.39	6.62	15.1	168.7	1.60	3.3	0.076
7:12:26	90	22.14	61.7	5.38	6.59	17.2	169.6	2.70	3.1	0.078		
7:11:39	95	21.91	59.5	5.21	6.55	19.4	170.2	4.40	2.3	0.080		
7:10:38	100	21.81	56.8	4.98	6.48	23.3	171.1	6.40	3.9	0.080		
7:09:28	105	21.76	54.1	4.75	6.42	27.1	170.9	9.60	2.6	0.080		
7:08:06	110	21.62	43.1	3.80	6.33	32.6	169.0	19.80	3.8	0.081		
7:06:21	115	21.58	42.2	3.72	6.38	29.3	169.4	29.30	4.5	0.082		
<b>WA-2 Lake Tower</b>	9/11/2019	7:28:13	0.5	21.45	75.8	6.7	6.72	9.4	208.1	-0.20	3.5	0.071
		7:27:13	5	21.46	75.5	6.67	6.75	7.7	206.0	0.00	3.1	0.071
		7:26:07	10	21.46	75.5	6.67	6.76	7.3	204.8	-0.20	3.4	0.071
		7:25:10	15	21.46	75.1	6.63	6.75	7.7	204.2	-0.20	2.9	0.071
		7:24:20	20	21.44	74.9	6.61	6.74	8.4	204.1	-0.20	2.4	0.071
		7:23:21	25	21.44	74.4	6.58	6.77	6.6	201.3	-0.10	3.6	0.071
		7:22:11	30	21.43	74.1	6.55	6.73	8.5	201.7	0.00	3.2	0.071
		7:20:57	35	21.38	72.2	6.39	6.73	9.1	200.4	-0.50	2.8	0.071
		7:18:49	40	21.14	68.1	6.06	6.72	9.2	197.4	0.20	2.2	0.073
		7:17:21	45	20.89	67.9	6.06	6.75	7.9	194.4	0.80	3.0	0.073
		7:16:10	50	20.79	68.8	6.16	6.75	7.5	193.2	1.00	2.2	0.072
		7:15:05	55	20.46	70.6	6.36	6.76	7.2	192.4	2.20	2.8	0.072
		7:13:59	60	20.39	72.4	6.54	6.82	3.6	188.6	1.90	3.1	0.074
		7:12:49	65	20.23	71.5	6.47	6.83	3.0	186.8	1.90	2.9	0.075
		7:10:03	70	20.01	71.8	6.53	6.81	4.1	183.4	3.30	2.3	0.077
		7:09:08	75	19.68	68.9	6.3	6.8	4.7	181.9	6.70	3.0	0.077
		7:06:25	80	19.58	65.9	6.04	6.81	3.8	173.9	6.90	3.2	0.078
		7:04:05	85	19.56	64.6	5.92	6.82	3.3	166.7	17.10	2.6	0.078
7:01:07	88	19.47	49.3	4.53	6.92	-2.5	163.4	18.60	3.1	0.079		



## 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
WA-3 Tobyhanna Creek Upstream	6/26/2019	10:08:29	0.5	17.99	96.8	9.17	6.84	2.4	183.9	1.8	5.8	0.077
	7/17/2019	10:29:23	0.5	21.13	96.4	8.57	7.08	-12.1	202.4	0.5	3.4	0.096
	7/31/2019	10:30:14	0.5	20.93	95	8.48	7.09	-12.6	213.6	0.4	4.1	0.091
	8/21/2019	9:30:27	0.5	21.39	93.1	8.24	6.9	-1.3	199.1	1	3.7	0.096
	9/11/2019	9:56:30	0.5	17.78	95.4	9.07	7.21	-19.6	209.1	0	3.1	0.096
WA-4 Lehigh River Upstream	6/26/2019	9:58:01	0.5	18.24	97.3	9.17	6.76	7.1	148.5	14.6	5	0.058
	7/17/2019	10:17:14	0.5	21.87	103.3	9.05	6.95	-4.4	170.8	-0.1	1.7	0.085
	7/31/2019	10:19:18	0.5	21.05	98.7	8.79	6.96	-4.6	199.3	3.5	3.5	0.074
	8/21/2019	9:52:32	0.5	21.15	93.6	8.32	7.19	-18.2	193.3	0.3	4.1	0.081
	9/11/2019	9:43:48	0.5	17.1	96.6	9.32	7.01	-7.7	214.7	-0.6	2.3	0.077
WA-5 Bear Creek Upstream	6/26/2019	09:37:59	0.5	19.31	97.9	9.03	6.33	31.9	193.6	0.2	3.3	0.041
	7/17/2019	9:58:08	0.5	21.75	96.0	8.43	6.11	45.4	200.3	3.6	2.9	0.059
	7/31/2019	10:00:19	0.5	21.51	96.1	8.48	6.88	0.0	193.6	-0.1	2.9	0.057
	8/21/2019	10:16:34	0.5	21.86	95.4	8.36	6.9	-1.0	179.0	0.3	4.7	0.056
	9/11/2019	9:24:54	0.5	17.51	94.9	9.08	6.53	20.3	231.0	-0.4	2.5	0.065
WA-6 Bear Creek Lake Arm	6/26/2019	8:26:40	0.5	22.51	100.1	8.66	6.99	-6.4	178.7	-0.2	4.2	0.067
		8:25:34	5	22.27	98.7	8.59	6.93	-2.9	180.8	-0.3	4.9	0.067
		8:24:33	10	20.85	91.1	8.14	6.72	9.3	186.2	0.1	4.3	0.064
		8:23:34	15	19.96	85.9	7.82	6.65	13.6	187.5	0.5	4.2	0.064
		8:22:46	20	19.51	84.1	7.72	6.62	14.9	187.6	0.2	4.9	0.064
		8:21:56	25	19.12	83.2	7.70	6.62	15.1	187.0	0.6	5.2	0.064
		8:21:00	30	18.91	81.7	7.59	6.58	17.5	186.5	0.4	4.7	0.064
		8:20:07	35	18.69	81.0	7.56	6.55	18.9	185.7	0.5	4.2	0.063
		8:19:09	40	18.58	81.1	7.58	6.51	21.2	184.4	0.6	4.0	0.060
		8:18:03	45	18.47	80.9	7.59	6.48	23.1	182.4	0.9	4.3	0.058
		8:17:11	50	18.42	81.6	7.66	6.46	24.6	180.4	0.6	4.1	0.056
		8:16:09	55	18.37	82.4	7.75	6.44	25.6	177.5	0.5	3.6	0.053
		8:15:02	60	18.27	82.9	7.80	6.41	27.2	174.3	1.2	3.4	0.051
		8:13:53	65	18.14	82.2	7.76	6.42	26.6	170.6	1.4	4.5	0.052
		8:12:44	70	18.05	81.8	7.74	6.40	28.1	166.3	2.2	3.9	0.051
		8:11:53	75	17.79	79.4	7.55	6.36	30.2	162.0	6.7	3.3	0.050
8:11:02	80	17.75	79.4	7.56	6.36	30.1	153.3	7.4	3.6	0.049		
8:09:21	85	17.67	78.7	7.50	6.54	19.6	101.5	7.0	5.2	0.057		
WA-6 Bear Creek Lake Arm	7/17/2019	8:07:18	0.5	26.22	94.9	7.67	7.04	-9.4	202.6	-0.7	3.5	0.075
		8:06:26	5	26.18	93.2	7.53	6.93	-3.1	203.9	-0.9	3.6	0.075
		8:05:43	10	24.96	83.5	6.9	6.75	8.1	208.5	-0.7	4.7	0.074
		8:04:22	15	23.49	74.0	6.29	6.58	17.5	212.3	-0.7	3.8	0.07
		8:01:50	20	22.80	72.2	6.22	6.54	20.3	213.2	-1.1	3.3	0.068
		8:01:14	25	22.37	71.6	6.21	6.55	19.8	213.5	-0.8	3.7	0.071
		8:00:25	30	22.05	70.8	6.18	6.54	20	212.8	-0.1	3.3	0.073
		7:59:18	35	21.75	70.6	6.2	6.43	26.7	214.3	-0.8	3.6	0.065
		7:58:27	40	21.57	69.9	6.17	6.35	31.1	215.4	-0.1	3.5	0.06
		7:57:40	45	21.45	69.4	6.14	6.34	32	215.9	0.1	3.2	0.06
		7:56:50	50	21.14	68.6	6.1	6.31	33.4	216.6	0.7	3.5	0.062
		7:56:07	55	20.86	67.5	6.04	6.23	37.9	218.6	0	3.5	0.059
		7:55:06	60	20.64	64.0	5.74	6.11	44.9	222	2.4	3.1	0.056
		7:54:12	65	20.43	64.3	5.8	6.13	44.2	223	1.5	2.9	0.057
		7:53:16	70	20.33	63.5	5.73	6.17	41.4	222.9	1.1	3.5	0.07
		7:52:39	75	20.19	62.1	5.62	6.13	43.9	223.4	1.4	3.5	0.069
7:51:20	80	20.08	58.9	5.35	5.99	51.9	224.4	4	3.8	0.063		
7:49:37	85	19.8	57.8	5.27	6.32	32.7	200.6	9.2	3.5	0.068		

## 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
WA-6 Bear Creek Lake Arm	7/31/2019	9:20:04	0.5	26.05	92.2	7.48	6.96	-4.5	225.0	0.1	3.1	0.077
		9:19:10	5	26.02	91.2	7.39	6.91	-2.0	224.8	-0.3	3.7	0.077
		9:18:27	10	25.38	86.8	7.12	6.78	6.0	228.5	-0.1	3.0	0.077
		9:17:32	15	24.21	67.0	5.62	6.49	23.1	235.3	-0.5	3.2	0.071
		9:16:55	20	23.74	63.5	5.37	6.51	21.7	235.2	-0.6	3.9	0.077
		9:16:11	25	23.37	63.8	5.43	6.51	21.8	235.0	-0.3	3.9	0.077
		9:15:23	30	23.19	64.7	5.53	6.50	22.3	234.7	-0.1	4.6	0.076
		9:14:55	35	23.02	64.7	5.55	6.47	24.0	235.4	0.1	4.3	0.075
		9:14:27	40	22.83	64.8	5.58	6.45	25.7	235.5	0.0	4.4	0.074
		9:13:55	45	22.74	64.4	5.55	6.38	29.3	236.1	0.4	3.6	0.070
		9:13:21	50	22.64	64.7	5.59	6.35	31.3	236.4	0.5	3.3	0.065
		9:12:48	55	22.55	65.0	5.62	6.37	30.1	236.1	0.2	3.4	0.064
		9:12:04	60	22.38	65.3	5.66	6.41	27.7	235.0	0.5	3.7	0.068
		9:11:17	65	22.29	65.9	5.73	6.44	26.2	234.8	0.4	4.4	0.069
		9:10:47	70	22.14	66.1	5.76	6.45	25.2	234.6	1.7	4.3	0.069
9:09:56	75	22.11	65.4	5.70	6.42	27.3	237.0	1.9	4.0	0.069		
9:09:05	80	21.98	64.0	5.60	6.44	26.0	237.5	4.3	4.0	0.069		
9:08:33	85	21.95	64.4	5.63	6.48	23.5	236.9	4.0	4.6	0.070		
WA-6 Bear Creek Lake Arm	8/21/2019	7:58:17	0.5	26.31	96.7	7.8	7.03	-8.9	189	-0.3	4.2	0.078
		7:57:46	5	25.45	94.2	7.72	6.96	-5	190.5	0	4.6	0.077
		7:57:05	10	24.83	89.6	7.43	6.83	3.3	194.7	-0.3	4.3	0.075
		7:55:50	15	23.95	76.2	6.42	6.58	17.5	199.2	-0.1	3.2	0.07
		7:53:38	20	23.50	65.6	5.57	6.42	27.5	202.7	-0.4	3.7	0.07
		7:52:59	25	23.28	60.3	5.14	6.37	30.1	203.5	-0.7	2.8	0.069
		7:51:30	30	23.11	59.5	5.09	6.34	31.8	203.6	-0.6	3.6	0.069
		7:50:41	35	22.96	58.0	4.98	6.33	32.3	203.1	-0.1	3.1	0.069
		7:49:50	40	22.91	58.2	5.00	6.33	32.7	202.9	-0.4	3.1	0.068
		7:48:45	45	22.79	59.4	5.12	6.29	34.9	204.3	-0.2	2.9	0.068
		7:48:02	50	22.72	59.6	5.14	6.28	35.5	204.9	0.2	3.2	0.068
		7:47:16	55	22.67	60.1	5.18	6.25	37.2	206.4	0.5	3	0.068
		7:46:09	60	22.58	57.4	4.96	6.16	42.5	211.9	0.0	3	0.071
		7:45:08	65	22.52	61.1	5.29	6.10	46.0	216.7	0.6	3.3	0.071
		7:44:34	70	22.39	63.0	5.47	6.08	47.0	218.4	1.0	3.1	0.077
7:43:29	75	22.22	59.5	5.18	6.27	35.9	204.0	5.4	2.4	0.07		
7:42:43	80	22.12	59.4	5.18	6.42	27.2	195.9	6.5	3.3	0.072		
WA-6 Bear Creek Lake Arm	9/11/2019	7:52:34	0.5	21.56	77.1	6.80	6.69	11.1	205.2	-0.1	3.7	0.071
		7:52:00	5	21.56	76.8	6.77	6.74	8.4	201.9	-0.4	3.4	0.071
		7:51:07	10	21.56	76.3	6.73	6.74	7.9	200.3	0.4	3.4	0.071
		7:49:48	15	21.55	75.7	6.67	6.7	10.6	200.2	0.0	2.6	0.071
		7:48:55	20	21.54	75.1	6.63	6.71	9.9	197.5	0.0	3.3	0.071
		7:47:39	25	21.46	72.2	6.38	6.67	12.4	196.2	0.1	2.6	0.071
		7:46:52	30	21.39	72.5	6.41	6.68	11.7	193.4	0.0	3	0.07
		7:45:36	35	21.31	72.0	6.38	6.68	11.7	189.7	0.2	2.7	0.07
		7:44:29	40	21.22	71.0	6.31	6.69	11.0	184.9	0.4	2.8	0.073
		7:43:35	45	21.02	70.8	6.31	6.69	11.3	181.0	0.4	3.2	0.073
		7:42:06	50	20.89	70.5	6.30	6.65	13.7	172.9	1.0	2.4	0.072
		7:41:06	55	20.52	70.4	6.33	6.61	15.8	161.5	2.9	3.3	0.072
		7:39:28	60	20.39	67.3	6.07	6.59	17.1	177.0	21.8	3.1	0.07

## 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
WA-7 Lehigh Lake Arm	6/26/2019	8:52:22	0.5	22.25	99.1	8.62	6.92	-2.1	192.6	0.2	5.4	0.068
		8:51:36	5	21.89	96.9	8.49	6.87	0.7	194.0	0.4	5.8	0.068
		8:50:47	10	20.87	90.2	8.06	6.71	9.8	197.9	0.2	5.4	0.065
		8:50:10	15	20.00	86.5	7.86	6.66	12.9	199.7	0.4	4.7	0.063
		8:49:32	20	19.61	85.7	7.85	6.67	12.3	199.4	0.5	4.7	0.065
		8:48:51	25	19.06	84.5	7.82	6.66	13.0	199.7	1.2	5.0	0.064
		8:47:58	30	18.85	83.0	7.72	6.64	13.9	199.5	0.9	5.2	0.064
		8:47:21	35	18.71	81.7	7.62	6.62	15.0	199.6	1.1	4.5	0.065
		8:45:59	40	18.54	81.7	7.65	6.63	14.7	198.6	0.8	4.4	0.065
		8:45:04	45	18.46	81.6	7.65	6.62	14.8	197.6	1.1	4.3	0.064
		8:44:21	50	18.38	81.7	7.67	6.62	15.1	196.9	0.9	4.2	0.064
		8:43:43	55	18.34	81.5	7.66	6.63	14.6	196.2	0.8	4.9	0.064
		8:42:55	60	18.27	82.1	7.73	6.64	13.7	195.0	1.2	4.4	0.064
		8:42:13	65	18.23	82.3	7.75	6.64	13.6	194.5	1.5	4.9	0.064
		8:41:09	70	18.12	82.5	7.79	6.65	13.4	193.3	1.4	3.8	0.063
8:40:19	75	18.05	82.7	7.82	6.66	12.5	191.5	1.9	5.3	0.064		
8:39:30	80	17.95	80.2	7.6	6.62	14.8	188.9	2.6	5.1	0.064		
8:38:41	85	17.91	81.0	7.69	6.65	13.5	191.4	7.3	4.5	0.065		
WA-7 Lehigh Lake Arm	7/17/2019	8:44:21	0.5	26.50	95.3	7.66	7.08	-11.6	199.8	-0.4	3.8	0.079
		8:43:23	5	26.14	93.9	7.60	7.03	-9.0	200.8	-0.5	3.7	0.079
		8:41:12	10	25.15	82.6	6.80	6.73	8.8	203.5	-1.2	4.0	0.074
		8:40:39	15	23.51	73.6	6.25	6.63	14.8	206.8	-0.6	3.5	0.074
		8:39:56	20	22.69	72.0	6.21	6.64	14.2	206.9	-0.5	3.4	0.077
		8:38:55	25	22.17	71.4	6.23	6.63	14.8	206.2	-0.6	3.7	0.077
		8:38:01	30	21.90	72.1	6.32	6.64	14.1	204.8	0	3.7	0.078
		8:37:08	35	21.70	70.4	6.19	6.59	16.9	203.8	-0.7	3.7	0.073
		8:36:33	40	21.55	70.1	6.18	6.6	16.7	203.1	0.3	3.7	0.074
		8:35:10	45	21.39	70.2	6.21	6.61	15.9	199.9	-0.6	3.5	0.076
		8:32:50	50	21.18	69.4	6.16	6.55	19.3	198.0	0.2	4.3	0.077
		8:32:16	55	21.02	68.5	6.10	6.51	21.7	198.2	-0.2	3.9	0.075
		8:31:32	60	20.88	66.5	5.94	6.46	24.5	197.9	0.6	3.6	0.077
		8:31:10	65	20.78	65.6	5.87	6.43	26.1	197.9	0.7	4.0	0.078
		8:29:26	70	20.62	63.4	5.70	6.23	37.8	197.2	1.5	3.7	0.078
8:28:39	75	20.44	60.1	5.42	6.17	41.5	192.4	2.5	3.6	0.078		
8:27:41	80	20.10	53.9	4.89	6.21	39.2	177.9	26.6	4.6	0.077		
8:26:38	85	20.08	54.5	4.94	6.43	26.2	163.7	39.5	13.7	0.077		
WA-7 Lehigh Lake Arm	7/31/2019	8:58:45	0.5	25.99	92.3	7.49	6.99	-6.5	209.1	0.10	3.5	0.080
		8:58:12	5	25.71	90.1	7.35	6.92	-2.4	210.3	-0.10	3.3	0.079
		8:57:27	10	25.25	86.0	7.08	6.81	4.2	212.1	-0.30	3.1	0.077
		8:56:27	15	24.34	67.6	5.66	6.57	18.3	217.1	-0.90	3.7	0.076
		8:56:07	20	23.77	68.2	5.77	6.58	18.0	217.4	-0.40	3.5	0.077
		8:55:49	25	23.40	69.9	5.95	6.62	15.5	215.3	0.00	3.7	0.077
		8:54:47	30	23.06	69.0	5.92	6.58	17.8	215.2	0.40	4.7	0.077
		8:54:34	35	22.95	68.8	5.91	6.58	17.5	214.5	0.10	4.2	0.077
		8:54:14	40	22.80	68.5	5.9	6.60	16.6	213.2	0.30	4.3	0.076
		8:53:37	45	22.68	68.0	5.87	6.61	16.1	211.4	0.20	4.4	0.076
		8:53:10	50	22.57	66.8	5.78	6.60	16.3	210.2	0.00	3.9	0.076
		8:52:44	55	22.51	65.8	5.7	6.61	15.8	208.5	-0.10	5.2	0.075
		8:51:26	60	22.38	68.5	5.95	6.63	14.5	205.0	1.00	4.8	0.075
		8:50:25	65	22.37	70.9	6.15	6.68	12.1	199.3	0.30	4.8	0.076
		8:50:00	70	22.34	72.2	6.27	6.67	12.7	198.2	0.10	4.4	0.076
8:49:20	75	22.25	70.8	6.16	6.69	11.1	192.5	0.7	4.5	0.076		
8:48:06	80	22.14	68.7	5.99	6.66	13.0	183.0	2.1	4.2	0.076		
8:46:21	85	21.99	67.7	5.92	6.74	8.3	184.2	12.1	4.5	0.077		

## 2019 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
WA-7 Lehigh Lake Arm	8/21/2019	8:22:28	0.5	25.61	96	7.85	7.05	-10.4	197.7	-0.5	4.3	0.078
		8:21:18	5	25.58	94.2	7.7	6.98	-5.8	197.1	-0.3	4.3	0.078
		8:20:13	10	24.53	82.4	6.87	6.77	6.7	201.7	-0.7	4.3	0.075
		8:18:45	15	23.84	62.9	5.31	6.49	23.4	206.5	-0.5	4.0	0.073
		8:17:59	20	23.53	54.9	4.66	6.44	26.3	207.1	-0.2	3.7	0.074
		8:17:11	25	23.28	52.9	4.51	6.42	27.3	207.5	-0.3	4.1	0.074
		8:16:38	30	23.13	54.1	4.63	6.45	25.2	206.2	-0.3	4.2	0.076
		8:15:21	35	22.95	53.5	4.59	6.44	25.8	205.8	0.2	3.4	0.077
		8:14:15	40	22.90	54.5	4.68	6.45	25.6	205.1	0.0	3.5	0.077
		8:13:26	45	22.80	55.6	4.79	6.47	24.2	203.4	2.5	3.8	0.078
		8:12:35	50	22.73	57	4.92	6.48	23.6	201.9	2.0	4.1	0.078
		8:11:51	55	22.66	58.2	5.02	6.50	22.6	200.7	10.2	3.9	0.079
		8:10:40	60	22.64	61.8	5.33	6.60	16.6	198.1	4.2	3.9	0.079
WA-7 Lehigh Lake Arm	9/11/2019	8:22:34	0.5	21.8	80	7.02	6.76	6.8	208.9	-0.1	3.7	0.072
		8:21:20	5	21.76	77.6	6.81	6.73	9	209.3	-0.8	3.1	0.072
		8:20:39	10	21.6	73.4	6.47	6.68	11.6	209.9	0.1	3.4	0.072
		8:19:37	15	21.55	72.2	6.37	6.69	11.4	208.0	0.5	3	0.072
		8:18:44	20	21.48	71.2	6.29	6.67	12.5	207.3	0	2.4	0.072
		8:17:26	25	21.45	70.7	6.24	6.65	13.2	205.7	0.3	3.2	0.072
		8:16:49	30	21.42	70.8	6.26	6.67	12.1	203.7	-0.3	2.9	0.072
		8:14:33	35	21.34	70.4	6.23	6.66	13.0	199.9	0.7	2.7	0.072
		8:13:51	40	21.19	70.9	6.29	6.69	11.3	196.8	0.3	3.2	0.073
		8:12:41	45	20.95	72.5	6.47	6.75	7.9	190.6	1	2.5	0.074
		8:11:10	50	20.70	76.7	6.88	6.73	8.8	186.1	1.7	3	0.076
		8:10:01	55	20.47	76.9	6.92	6.73	9.0	177.6	1.7	2.8	0.076
		8:09:08	60	20.16	76.7	6.95	6.71	9.9	170.5	4.3	2.8	0.078

# **APPENDIX B**

## **LABORATORY CUSTODY SHEETS**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

**USACE-Philadelphia District**

**Philadelphia District, Reservoir Sampling**

**CONTRACT#W912BU18D0003/TO#W912BU19F0065**

**SGS Job Number: JC90656**

**Sampling Date: 06/26/19**



### Report to:

**Army Corps of Engineers**

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**Total number of pages in report: 28**



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# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary</b> .....	<b>4</b>
<b>Section 3: Summary of Hits</b> .....	<b>8</b>
<b>Section 4: Sample Results</b> .....	<b>11</b>
<b>4.1:</b> JC90656-1: WA-1S .....	12
<b>4.2:</b> JC90656-2: WA-2S .....	13
<b>4.3:</b> JC90656-3: WA-2M .....	14
<b>4.4:</b> JC90656-4: WA-2D .....	15
<b>4.5:</b> JC90656-5: WA-3S .....	16
<b>4.6:</b> JC90656-6: WA-4S .....	17
<b>4.7:</b> JC90656-7: WA-5S .....	18
<b>4.8:</b> JC90656-8: WA-6S .....	19
<b>4.9:</b> JC90656-9: WA-6M .....	20
<b>4.10:</b> JC90656-10: WA-6D .....	21
<b>4.11:</b> JC90656-11: WA-7S .....	22
<b>4.12:</b> JC90656-12: WA-7M .....	23
<b>4.13:</b> JC90656-13: WA-7D .....	24
<b>Section 5: Misc. Forms</b> .....	<b>25</b>
<b>5.1:</b> Chain of Custody .....	26

1

2

3

4

5



## Sample Summary

USACE-Philadelphia District

**Job No:** JC90656

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC90656-1	06/26/19	06:40 GW	06/26/19	AQ	Surface Water	WA-1S
JC90656-2	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2S
JC90656-3	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2M
JC90656-4	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2D
JC90656-5	06/26/19	10:10 GW	06/26/19	AQ	Surface Water	WA-3S
JC90656-6	06/26/19	10:00 GW	06/26/19	AQ	Surface Water	WA-4S
JC90656-7	06/26/19	09:40 GW	06/26/19	AQ	Surface Water	WA-5S
JC90656-8	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6S
JC90656-9	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6M
JC90656-10	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6D
JC90656-11	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7S
JC90656-12	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7M
JC90656-13	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7D



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC90656

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 7/15/2019 9:47:34 AM

On 06/26/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC90656 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

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP22278
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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) JC90656-1DUP, JC90656-1MS 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

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP22264
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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) JC90660-2DUP, JC90660-2MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP22283
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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) JC90656-5DUP, JC90656-5MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R179611

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179612

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179613

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179614

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179625

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179626

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179627

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179628

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179629

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179630

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179631

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179632

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179643

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90656-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN97317

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90656-1DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC90656-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90656-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90656-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90656-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90656-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90656-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90656-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN97063

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90656-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN97031

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90701-1DUP were used as the QC samples for Solids, Total Suspended.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP22315

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90655-5DUP, JC90655-5MS, JC90655-5MSD were used as the QC samples for Nitrogen, Ammonia.

## General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ

**Batch ID:** GN96916

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90655-4DUP, JC90655-4MS were used as the QC samples for Nitrogen, Nitrite.

### General Chemistry By Method SM5210 B-11

**Matrix:** AQ                      **Batch ID:** GP22043

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90656-1DUP were used as the QC samples for BOD, 5 Day.

### General Chemistry By Method SM5310 B-11

**Matrix:** AQ                      **Batch ID:** GP22235

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91138-3MS, JC91138-3MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ                      **Batch ID:** GP22239

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90656-1MS, JC90656-1MSD 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

## Summary of Hits

**Job Number:** JC90656  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 06/26/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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### JC90656-1 WA-1S

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	13.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.14	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.14	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.36	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	36.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	4.1	4.0			mg/l	SM2540 D-11
Total Organic Carbon	5.5	1.0			mg/l	SM5310 B-11

### JC90656-2 WA-2S

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	20.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.11	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.11	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.29	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.2	1.0			mg/l	SM5310 B-11

### JC90656-3 WA-2M

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	35.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.29	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	38.0	10			mg/l	SM2540 C-11
Total Organic Carbon	4.6	1.0			mg/l	SM5310 B-11

### JC90656-4 WA-2D

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.27	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.27	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.55	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	31.3	4.0			mg/l	SM2540 D-11
Total Organic Carbon	6.1	1.0			mg/l	SM5310 B-11

### JC90656-5 WA-3S

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	21.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.16	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.16	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.38	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	4.6	4.0			mg/l	SM2540 D-11
Total Organic Carbon	6.2	1.0			mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC90656  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 06/26/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC90656-6**

**WA-4S**

Nitrogen, Nitrate <sup>b</sup>	0.11	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.11	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.36	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10			mg/l	SM2540 C-11
Total Organic Carbon	4.7	1.0			mg/l	SM5310 B-11

**JC90656-7**

**WA-5S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	33.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.38	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	28.0	10			mg/l	SM2540 C-11
Total Organic Carbon	4.0	1.0			mg/l	SM5310 B-11

**JC90656-8**

**WA-6S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	25.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.33	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	40.0	10			mg/l	SM2540 C-11
Total Organic Carbon	4.6	1.0			mg/l	SM5310 B-11

**JC90656-9**

**WA-6M**

Nitrogen, Total Kjeldahl	0.34	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.4	1.0			mg/l	SM5310 B-11

**JC90656-10**

**WA-6D**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.32	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	5.2	4.0			mg/l	SM2540 D-11
Total Organic Carbon	5.4	1.0			mg/l	SM5310 B-11

**JC90656-11**

**WA-7S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.22	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	41.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.3	1.0			mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC90656  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 06/26/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC90656-12      WA-7M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.48	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	46.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.4	1.0			mg/l	SM5310 B-11

**JC90656-13      WA-7D**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.30	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	15.6	4.0			mg/l	SM2540 D-11
Total Organic Carbon	6.1	1.0			mg/l	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
- (c) Sample was titrated to a final pH of 4.5.

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> WA-1S	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-1	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	13.0	10	mg/l	1	07/09/19 15:00	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:15	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 16:07	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.14	0.11	mg/l	1	07/09/19 16:24	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.14	0.10	mg/l	1	07/09/19 16:24	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.36	0.20	mg/l	1	07/12/19 13:42	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	36.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	4.1	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	5.5	1.0	mg/l	1	07/09/19 02:41	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-2S		<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-2		<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	20.0	10	mg/l	1	07/09/19 15:00	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:21	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 16:09	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.11	0.11	mg/l	1	07/09/19 16:25	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.11	0.10	mg/l	1	07/09/19 16:25	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	07/12/19 13:43	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	5.2	1.0	mg/l	1	07/09/19 03:37	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

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-2M		<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-3		<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	35.0	10	mg/l	1	07/09/19 15:00	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:48	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/11/19 16:10	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/09/19 16:27	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/09/19 16:27	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	07/12/19 13:44	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	38.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	4.6	1.0	mg/l	1	07/09/19 03:48	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

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-2D	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-4	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	10	mg/l	1	07/09/19 15:00	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:51	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:22	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.27	0.11	mg/l	1	07/09/19 16:28	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.27	0.10	mg/l	1	07/09/19 16:28	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.55	0.20	mg/l	1	07/12/19 13:45	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	31.3	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	6.1	1.0	mg/l	1	07/09/19 04:00	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

4.4  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-3S	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-5	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	21.0	10	mg/l	1	07/09/19 15:00	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:53	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:23	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.16	0.11	mg/l	1	07/10/19 09:07	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.16	0.10	mg/l	1	07/10/19 09:07	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.38	0.20	mg/l	1	07/12/19 13:45	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	4.6	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	6.2	1.0	mg/l	1	07/09/19 04:12	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

## Report of Analysis

<b>Client Sample ID:</b> WA-4S	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-6	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	07/09/19 15:00	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:55	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:25	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.11	0.11	mg/l	1	07/10/19 09:08	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.11	0.10	mg/l	1	07/10/19 09:08	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.36	0.20	mg/l	1	07/12/19 13:46	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	4.7	1.0	mg/l	1	07/09/19 04:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-5S		<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-7		<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	33.0	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:57	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:26	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:10	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:10	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.38	0.20	mg/l	1	07/12/19 13:49	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	28.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	4.0	1.0	mg/l	1	07/09/19 04:36	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

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6S		<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-8		<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	25.0	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 12:59	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:31	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:11	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:11	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	1	07/12/19 13:50	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	40.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	4.6	1.0	mg/l	1	07/09/19 04:47	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

4.8  
4



## Report of Analysis

<b>Client Sample ID:</b> WA-6M		<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-9		<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 13:27	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:32	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:12	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:12	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.34	0.20	mg/l	1	07/12/19 13:51	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	5.4	1.0	mg/l	1	07/09/19 05:00	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-6D	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-10	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 13:30	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:34	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:15	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:15	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.32	0.20	mg/l	1	07/12/19 13:51	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	5.2	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	5.4	1.0	mg/l	1	07/09/19 05:34	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7S	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-11	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 13:32	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:35	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:16	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:16	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.22	0.20	mg/l	1	07/12/19 13:52	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	41.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	5.3	1.0	mg/l	1	07/08/19 13:59	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7M	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-12	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 13:34	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:36	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:17	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:17	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.48	0.20	mg/l	1	07/12/19 13:53	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	46.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	5.4	1.0	mg/l	1	07/08/19 14:10	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7D	<b>Date Sampled:</b> 06/26/19
<b>Lab Sample ID:</b> JC90656-13	<b>Date Received:</b> 06/26/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	07/09/19 15:17	MS	SM2320 B-11
BOD, 5 Day	< 10	10	mg/l	1	06/27/19 13:36	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 16:38	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/10/19 09:19	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/10/19 09:19	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/27/19 15:00	JO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.30	0.20	mg/l	1	07/12/19 13:54	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/01/19 15:00	RC	SM2540 C-11
Solids, Total Suspended	15.6	4.0	mg/l	1	06/30/19 12:20	RC	SM2540 D-11
Total Organic Carbon	6.1	1.0	mg/l	1	07/08/19 14:48	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsus

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq. East</b> City: <b>Phila.</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b> Sampler(s) Name(s): <b>Grag Wacik 610-597-9780</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: <b>White Haven Av</b> City: <b>White Haven Av</b> State: <b>PA</b> Zip: <b>19107</b> Billing Information (if different from Report to): Company Name: <b>White Haven Av</b> Project #: <b>TM-061819-32</b> Project Manager: <b>Tammy McCloskey</b>		FED-Ex Tracking #: <b>TM-061819-32</b> SGS Order #: <b>JC90656</b> Requested Analysis: <b>TP04 (sub to Mrs Reider)</b> <b>Alkalinity, Ammonia</b> <b>PO4 TDS, TKN</b> <b>TC, TSS, X40.30</b>		Matrix Codes: DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AFR - Air SOL - Other Solids WIP - Waste FB - Field Blank EB - Equipment Blank RB - Fibre Blank TB - Trip Blank	
Turn Around Time (Business Days): <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other		Approved By (SGS Pct): / Date: _____ Approval needed for 1-3 Business Day TAT		Deliverable: <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ OKQP		Comments / Special Instructions: <b>TCF/FCF samples to Eurofins lab</b> <b>TP04 samples to Mrs Reider lab</b> <a href="http://www.sgs.com/en/terms-and-conditions">http://www.sgs.com/en/terms-and-conditions</a>	
Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>	
Retain/Quashed by: <b>[Signature]</b> Date / Time: _____		Retain/Quashed by: <b>[Signature]</b> Date / Time: _____		Retain/Quashed by: <b>[Signature]</b> Date / Time: _____		Retain/Quashed by: <b>[Signature]</b> Date / Time: _____	
Retain/Quashed by: <b>[Signature]</b> Date / Time: _____		Retain/Quashed by: <b>[Signature]</b> Date / Time: _____		Retain/Quashed by: <b>[Signature]</b> Date / Time: _____		Retain/Quashed by: <b>[Signature]</b> Date / Time: _____	

5.1 5

INITIAL ASSESSMENT 3B0  
LABEL VERIFICATION

3.6 C-P  
3.4 3.7 C-P  
C-P 3.5 C-P





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job # JC90656

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, and a table with columns for Sample #, Field ID, Date, Time, Matrix, # of bottles, and various chemical analysis results.

Turn Around Time (Business Days), Deliverable, and Comments / Special Instructions sections.

Signature and date fields for chain of custody tracking, including 'Relinquished by' and 'Received by' with dates and times.

JC90656: Chain of Custody

Page 2 of 3

5.1
5





## SGS Sample Receipt Summary

**Job Number:** JC90656

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 6/26/2019 5:16:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.4); Cooler 2: (3.6); Cooler 3: (3.7); Cooler 4: (3.5);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.0); Cooler 2: (3.2); Cooler 3: (3.3); Cooler 4: (3.1);

**Cooler Security**

- |  |   |
|--|---|
| <b>Y or N</b>  | <b>Y or N</b>   |
| 1. Custody Seals Present: <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>        |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> <input type="checkbox"/>  | 4. Smpl Dates/Time OK: <input checked="" type="checkbox"/> <input type="checkbox"/> |

**Cooler Temperature**

- |   |           |
|---|-----------|
| <b>Y or N</b>   |           |
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> <input type="checkbox"/> |           |
| 2. Cooler temp verification: _____  | IR Gun    |
| 3. Cooler media: _____  | Ice (Bag) |
| 4. No. Coolers: _____   | 4         |

**Quality Control Preservation**

- |                                 |   |            |
|---------------------------------|---|------------|
|                                 | <b>Y or N</b>   | <b>N/A</b> |
| 1. Trip Blank present / cooler: | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |            |
| 4. VOCs headspace free:         | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |            |

**Sample Integrity - Documentation**

- |  |  |
|--|--|
|  | <b>Y or N</b>  |
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> <input type="checkbox"/> |

**Sample Integrity - Condition**

- |                                  |  |
|----------------------------------|--|
|                                  | <b>Y or N</b>  |
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3. Condition of sample:          | Intact _____   |

**Sample Integrity - Instructions**

- |  |  |                                     |
|--|--|-------------------------------------|
|  | <b>Y or N</b>  | <b>N/A</b>                          |
| 1. Analysis requested is clear:            | <input checked="" type="checkbox"/> <input type="checkbox"/> |                                     |
| 2. Bottles received for unspecified tests: | <input type="checkbox"/> <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:   | <input checked="" type="checkbox"/> <input type="checkbox"/> |                                     |
| 4. Compositing instructions clear:         | <input type="checkbox"/> <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:           | <input type="checkbox"/> <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: _____	229517	pH 12+:	208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

**JC90656: Chain of Custody**

Page 3 of 3

5.1  
5

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90656X

Sampling Date: 06/26/19

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**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>4</b>
<b>Section 3: Misc. Forms</b> .....	<b>13</b>
<b>3.1: Chain of Custody</b> .....	<b>14</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC90656X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC90656-1X	06/26/19	06:40 GW	06/26/19	AQ	Surface Water	WA-1S
JC90656-2X	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2S
JC90656-5X	06/26/19	10:10 GW	06/26/19	AQ	Surface Water	WA-3S
JC90656-6X	06/26/19	10:00 GW	06/26/19	AQ	Surface Water	WA-4S
JC90656-7X	06/26/19	09:40 GW	06/26/19	AQ	Surface Water	WA-5S
JC90656-8X	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6S
JC90656-11X	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7S

Subcontract Lab Data

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Report of Analysis

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KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:

SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**

**W09769 USACE**

**LABORATORY REPORT NUMBER:**

**L7146700**



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Regarding:  
 KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE,

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7146700-1	WA-1S	07/17/19 05:40pm	3.4 C	Y	07/17/19 09:40am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-1S</b>							
Total Coliform, MF	11300 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	3 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7146700-2	WA-2S	07/17/19 05:40pm	3.4 C	Y	07/17/19 07:10am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-2S</b>							
Total Coliform, MF	15300 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	2 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

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**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE,

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b> L7146700-3	<b>Sample Description</b> WA-3S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 10:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-3S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	23 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-4	<b>Sample Description</b> WA-4S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 10:15am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-4S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	70 E, Q		cfu/100ml	SM 9222D	10	10	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-5	<b>Sample Description</b> WA-5S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 10:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-5S**

Total Coliform, MF	8300 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	10 E, Q		cfu/100ml	SM 9222D	10	10	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 08:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

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**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE,

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b> L7146700-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 08:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-6S**

Total Coliform, MF	7700 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-7	<b>Sample Description</b> WA-7S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 08:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-7S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-8	<b>Sample Description</b> PR-1S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 12:10pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-1S**

Total Coliform, MF	16500 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	60 E, Q		cfu/100ml	SM 9222D	10	10	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-9	<b>Sample Description</b> PR-2S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 01:20pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE,

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b> L7146700-9	<b>Sample Description</b> PR-2S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 01:20pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-2S**

Total Coliform, MF	4300 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-10	<b>Sample Description</b> PR-3S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 12:50pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-3S**

Total Coliform, MF	1964 E, Q		cfu/100ml	SM 9222B	10	10	07/17/19 09:00PM KC2
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-11	<b>Sample Description</b> PR-4S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 11:45am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-4S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	9 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

**Sample Comments | Result Qualifiers:**

L7146700-1 :

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.

PIN: 28748

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**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE,

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

L7146700-2 :

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.

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.

L7146700-3 :

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.

L7146700-4 :

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.

L7146700-5 :

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.

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.

L7146700-6 :

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.

L7146700-7 :

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.

L7146700-8 :

PIN: 28748

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**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE,

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

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.

L7146700-9 :

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.

L7146700-10 :

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.

L7146700-11 :

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.



**DEFINITIONS**

*The following terms or abbreviations are used in this report:*

<	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
DF	Dilution Factor (For Microbiology, DF = volume of 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
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not 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
T	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 Jordan Thorngren (Water Microbiology).

**EQC Accreditations**

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

## Misc. Forms

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### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsus

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq. East</b> City: <b>Phila.</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b> Sampler(s) Name(s): <b>Grag Wacik 610 597-9780</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: <b>White Haven Av</b> City: <b>White Haven Av</b> State: <b>PA</b> Zip: <b>19107</b> Billing Information (if different from Report to): Company Name: <b>White Haven Av</b> Project #: Street Address: City: State: Zip:		FED-Ex Tracking # SGS Order # <b>TM-061819-32</b> SGS Quote # <b>JC90656</b>		<b>Requested Analysis</b> <b>TP04 (sub to Mrs Reider)</b> <b>Alkalinity, Ammonia,</b> <b>PO4 TDS, TKN</b> <b>TOC, TSS, XAVO.30</b>		<b>Matrix Codes</b> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AFR - Air SOL - Other Solids WIP - Waste FB - Field Blank EB - Equipment Blank RB - Fibre Blank TB - Trip Blank	
<b>Turn Around Time (Business Days)</b> <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other _____ <small>All dates available at Lablink</small>		Approved By (SGS Pst): / Date: _____		<b>Deliverable</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ OKQP		<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDG Format <input type="checkbox"/> DOD-QS45		<b>Comments / Special Instructions</b> <b>TCF/FCF Samples to Eurofins lab</b> <b>TP04 samples to Mrs Reider lab</b> <a href="http://www.sgs.com/en/terms-and-conditions">http://www.sgs.com/en/terms-and-conditions</a>	
Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>			
Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>			
All data available at Lablink		Approval needed for 1-3 Business Day TAT		Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data		Sample Custody must be documented below each time samples change possession, including courier delivery.			
CSD # _____		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact		<input type="checkbox"/> Preserved where applicable <input type="checkbox"/> Absent		On Ice <input checked="" type="checkbox"/> Cooler Temp. °C <b>3.6 C-P</b> <b>3.4 3.7 C-P</b> <b>6-P 3.5 C-P</b>			

31  
3





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Batch Order Control #
SGS Quote # JC90656

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and final delivery information.

31
3

JC90656X: Chain of Custody

Page 2 of 3





## SGS Sample Receipt Summary

**Job Number:** JC90656

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 6/26/2019 5:16:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.4); Cooler 2: (3.6); Cooler 3: (3.7); Cooler 4: (3.5);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.0); Cooler 2: (3.2); Cooler 3: (3.3); Cooler 4: (3.1);

<b>Cooler Security</b>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Cooler Temperature</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	4		

<b>Quality Control Preservation</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>Sample Integrity - Documentation</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Sample Integrity - Condition</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<b>Sample Integrity - Instructions</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

**JC90656X: Chain of Custody**

Page 3 of 3

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90656XA

Sampling Date: 06/26/19

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: 22



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>5</b>
<b>Section 3: Misc. Forms</b> .....	<b>19</b>
<b>3.1: Chain of Custody</b> .....	<b>20</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC90656XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC90656-1F	06/26/19	06:40 GW	06/26/19	AQ	Surface H2O Filtered	WA-1S
JC90656-1XA	06/26/19	06:40 GW	06/26/19	AQ	Surface Water	WA-1S
JC90656-2F	06/26/19	07:30 GW	06/26/19	AQ	Surface H2O Filtered	WA-2S
JC90656-2XA	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2S
JC90656-3F	06/26/19	07:30 GW	06/26/19	AQ	Surface H2O Filtered	WA-2M
JC90656-3XA	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2M
JC90656-4F	06/26/19	07:30 GW	06/26/19	AQ	Surface H2O Filtered	WA-2D
JC90656-4XA	06/26/19	07:30 GW	06/26/19	AQ	Surface Water	WA-2D
JC90656-5F	06/26/19	10:10 GW	06/26/19	AQ	Surface H2O Filtered	WA-3S
JC90656-5XA	06/26/19	10:10 GW	06/26/19	AQ	Surface Water	WA-3S
JC90656-6F	06/26/19	10:00 GW	06/26/19	AQ	Surface H2O Filtered	WA-4S
JC90656-6XA	06/26/19	10:00 GW	06/26/19	AQ	Surface Water	WA-4S
JC90656-7F	06/26/19	09:40 GW	06/26/19	AQ	Surface H2O Filtered	WA-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC90656XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC90656-7XA	06/26/19	09:40 GW	06/26/19	AQ	Surface Water	WA-5S
JC90656-8F	06/26/19	08:05 GW	06/26/19	AQ	Surface H2O Filtered	WA-6S
JC90656-8XA	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6S
JC90656-9F	06/26/19	08:05 GW	06/26/19	AQ	Surface H2O Filtered	WA-6M
JC90656-9XA	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6M
JC90656-10F	06/26/19	08:05 GW	06/26/19	AQ	Surface H2O Filtered	WA-6D
JC90656-10XA	06/26/19	08:05 GW	06/26/19	AQ	Surface Water	WA-6D
JC90656-11F	06/26/19	08:40 GW	06/26/19	AQ	Surface H2O Filtered	WA-7S
JC90656-11XA	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7S
JC90656-12F	06/26/19	08:40 GW	06/26/19	AQ	Surface H2O Filtered	WA-7M
JC90656-12XA	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7M
JC90656-13F	06/26/19	08:40 GW	06/26/19	AQ	Surface H2O Filtered	WA-7D
JC90656-13XA	06/26/19	08:40 GW	06/26/19	AQ	Surface Water	WA-7D

Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**

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

# Certificate of Analysis

2

**Laboratory No.:** 9022356  
**Report:** 07/03/19  
**Lab Contact:** Richard A Wheeler

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

**Project:** Army Corp Reservoirs  
JC906656XA

**Lab ID:** 9022356-01    **Collected By:** Client    **Sampled:** 06/26/19 06:40    **Received:** 06/28/19 09:20  
**Sample Desc:** WA-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19	U	JCL

**Lab ID:** 9022356-02    **Collected By:** Client    **Sampled:** 06/26/19 07:30    **Received:** 06/28/19 09:20  
**Sample Desc:** WA-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-03    **Collected By:** Client    **Sampled:** 06/26/19 07:30    **Received:** 06/28/19 09:20  
**Sample Desc:** WA-2M    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9022356-04     **Collected By:** Client     **Sampled:** 06/26/19 07:30     **Received:** 06/28/19 09:20  
**Sample Desc:** WA-2D     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-05     **Collected By:** Client     **Sampled:** 06/26/19 10:10     **Received:** 06/28/19 09:20  
**Sample Desc:** WA-3S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-06     **Collected By:** Client     **Sampled:** 06/26/19 10:00     **Received:** 06/28/19 09:20  
**Sample Desc:** WA-4S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.05	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-07     **Collected By:** Client     **Sampled:** 06/26/19 09:40     **Received:** 06/28/19 09:20  
**Sample Desc:** WA-5S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9022356-08      **Collected By:** Client      **Sampled:** 06/26/19 08:05      **Received:** 06/28/19 09:20  
**Sample Desc:** WA-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19	U	JCL

**Lab ID:** 9022356-09      **Collected By:** Client      **Sampled:** 06/26/19 08:05      **Received:** 06/28/19 09:20  
**Sample Desc:** WA-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-10      **Collected By:** Client      **Sampled:** 06/26/19 08:05      **Received:** 06/28/19 09:20  
**Sample Desc:** WA-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-11      **Collected By:** Client      **Sampled:** 06/26/19 08:40      **Received:** 06/28/19 09:20  
**Sample Desc:** WA-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL



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**M.J. Reider Associates, Inc.**

**2**

**Lab ID:** 9022356-12      **Collected By:** Client      **Sampled:** 06/26/19 08:40      **Received:** 06/28/19 09:20  
**Sample Desc:** WA-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL

**Lab ID:** 9022356-13      **Collected By:** Client      **Sampled:** 06/26/19 08:40      **Received:** 06/28/19 09:20  
**Sample Desc:** WA-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	07/01/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P E	07/01/19		JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G0032</b>								
<b>MB (B9G0032-BLK1)</b>								Prepared & Analyzed: 07/01/2019
Phosphorus as P, Total	<0.01	0.01	mg/l					U
<b>MB (B9G0032-BLK2)</b>								Prepared & Analyzed: 07/01/2019
Phosphorus as P, Total	<0.01	0.01	mg/l					U
<b>LFB (B9G0032-BS1)</b>								Prepared & Analyzed: 07/01/2019
Phosphorus as P, Total	1.02	0.01	mg/l	102	80-120			

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G0037</b>								
<b>MB (B9G0037-BLK1)</b>								Prepared & Analyzed: 07/01/2019
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9G0037-BS1)</b>								Prepared & Analyzed: 07/01/2019
Phosphorus as P, Dissolved	1.01	0.05	mg/l		80-120			G-11
<b>LFM (B9G0037-MS1)</b>								Source: 9022356-01 Prepared & Analyzed: 07/01/2019
Phosphorus as P, Dissolved	1.00	0.05	mg/l	100	80-120			
<b>LFMD (B9G0037-MSD1)</b>								Source: 9022356-01 Prepared & Analyzed: 07/01/2019
Phosphorus as P, Dissolved	1.00	0.05	mg/l	100	80-120	0.299	20	



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9022356-01</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-02</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-03</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-04</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-05</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-06</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-07</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-08</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-09</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-10</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-11</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-12</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL
<b>9022356-13</b>			
SM 4500-P E	SM 4500-P B	07/01/2019	JCL



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

M.J. Reider Associates, Inc.

**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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9022356

Date / Time: 6/27/2019 1:25:35 PM  
 CSR: TAMMY  
 Job #: JC90656XA  
 Client Project: Philadelphia District, Reservoir Sampling  
 Deliverable: REDT2  
 TAT: Due 7/10/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories  
 Address: 107 Angelica Street  
 City: Reading  
 State: PA  
 Zip: 19611  
 Contact: Sample Receiving / Rich Wheeler  
 Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC90656-1XA	WA-1S	TPO4..		GW	6/26/2019	6:40:00 AM	
JC90656-1F	WA-1S	FILTERGN.TPO4..		GW	6/26/2019	6:40:00 AM	
JC90656-2XA	WA-2S	TPO4..		GW	6/26/2019	7:30:00 AM	
JC90656-2F	WA-2S	FILTERGN.TPO4..		GW	6/26/2019	7:30:00 AM	
JC90656-3XA	WA-2M	TPO4..		GW	6/26/2019	7:30:00 AM	
JC90656-3F	WA-2M	FILTERGN.TPO4..		GW	6/26/2019	7:30:00 AM	
JC90656-4XA	WA-2D	TPO4..		GW	6/26/2019	7:30:00 AM	
JC90656-4F	WA-2D	FILTERGN.TPO4..		GW	6/26/2019	7:30:00 AM	
JC90656-5XA	WA-3S	TPO4..		GW	6/26/2019	10:10:00 AM	
JC90656-5F	WA-3S	FILTERGN.TPO4..		GW	6/26/2019	10:10:00 AM	
JC90656-6XA	WA-4S	TPO4..		GW	6/26/2019	10:00:00 AM	
JC90656-6F	WA-4S	FILTERGN.TPO4..		GW	6/26/2019	10:00:00 AM	
JC90656-7XA	WA-5S	TPO4..		GW	6/26/2019	9:40:00 AM	
JC90656-7F	WA-5S	FILTERGN.TPO4..		GW	6/26/2019	9:40:00 AM	
JC90656-8XA	WA-6S	TPO4..		GW	6/26/2019	8:05:00 AM	
JC90656-8F	WA-6S	FILTERGN.TPO4..		GW	6/26/2019	8:05:00 AM	
JC90656-9XA	WA-6M	TPO4..		GW	6/26/2019	8:05:00 AM	

✓

JC90656-9E	WA-6M	FILTERGN_TPO4_	GW	6/26/2019	8:05:00 AM
JC90656-10XA	WA-6D	TPO4_	GW	6/26/2019	8:05:00 AM
JC90656-10E	WA-6D	FILTERGN_TPO4_	GW	6/26/2019	8:05:00 AM
JC90656-11XA	WA-7S	TPO4_	GW	6/26/2019	8:40:00 AM
JC90656-11E	WA-7S	FILTERGN_TPO4_	GW	6/26/2019	8:40:00 AM
JC90656-12XA	WA-7M	TPO4_	GW	6/26/2019	8:40:00 AM
JC90656-12E	WA-7M	FILTERGN_TPO4_	GW	6/26/2019	8:40:00 AM
JC90656-13XA	WA-7D	TPO4_	GW	6/26/2019	8:40:00 AM
JC90656-13E	WA-7D	FILTERGN_TPO4_	GW	6/26/2019	8:40:00 AM

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).

9022356

Sample Management Receipt: \_\_\_\_\_ Date: \_\_\_\_\_

**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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## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsus

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq. East</b> City: <b>Phila.</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b> Sampler(s) Name(s): <b>Grag Wacik 610-597-9780</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: <b>White Haven Av</b> City: <b>White Haven Av</b> State: <b>PA</b> Zip: <b>19107</b> Billing Information (if different from Report to): Company Name: <b>White Haven Av</b> Project #: <b>TM-061819-32</b> Project Manager: <b>Tammy McCloskey</b>		FED-Ex Tracking #: <b>TM-061819-32</b> SGS Order #: <b>JC90656</b> Requested Analysis: <b>TP04 (sub to Mrs Reider)</b> <b>Alkalinity, Ammonia,</b> <b>PO4 TDS, TKN</b> <b>TOC, TSS, X400.30</b>		<b>Matrix Codes</b> DW - Drinking Water GW - Ground Water WW - Wastewater SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AFR - Air SOL - Other Solids WIP - Waste FB - Field Blank EB - Equipment Blank RB - Fibre Blank TB - Trip Blank	
<b>Turn Around Time (Business Days)</b> <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other _____ All data available at Lablink		<b>Deliverable</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ OKQP		<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> ED9 Format		<b>Comments / Special Instructions</b> <b>TCF/FCF Samples to Eurofins lab</b> <b>TP04 samples to Mrs Reider lab</b> <a href="http://www.sgs.com/en/terms-and-conditions">http://www.sgs.com/en/terms-and-conditions</a>	
Approved By (SGS Pst): / Date: _____		Approval needed for 1-3 Business Day TAT		Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data		<b>LAB USE ONLY</b> 653 1273 1961 <b>INITIAL ASSESSMENT 3B0</b> <b>LABEL VERIFICATION</b>	
Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Rating/Issued by: <b>[Signature]</b> Date / Time: <b>6/20/17</b>		Received By: <b>[Signature]</b> Date / Time: <b>6/20/17</b>	
Rating/Issued by: _____ Date / Time: _____		Received By: _____ Date / Time: _____		Rating/Issued by: _____ Date / Time: _____		Received By: _____ Date / Time: _____	
All data available at Lablink		Intact <input type="checkbox"/> Not intact <input type="checkbox"/>		Preserved where applicable <input type="checkbox"/> Therm. ID: _____		On Ice <input checked="" type="checkbox"/> Cooler Temp. °C: <b>3.6 C-P</b> <b>3.4 3.7 C-P</b> <b>CP 3.5 C-P</b>	

31  
3

JC90656XA: Chain of Custody

Page 1 of 3





CHAIN OF CUSTODY

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2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
SGS Order #
SGS Job # JC90656

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, and a table with columns for Field ID, Date, Time, Matrix, # of bottles, and various chemical analysis results.

Turn Around Time (Business Days), Deliverable, and Comments / Special Instructions sections.

Signature and date fields for chain of custody tracking, including 'Relinquished by' and 'Received by' with dates and times.

31
3

JC90656XA: Chain of Custody

Page 2 of 3



## SGS Sample Receipt Summary

**Job Number:** JC90656

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 6/26/2019 5:16:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.4); Cooler 2: (3.6); Cooler 3: (3.7); Cooler 4: (3.5);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.0); Cooler 2: (3.2); Cooler 3: (3.3); Cooler 4: (3.1);

<b>Cooler Security</b>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Cooler Temperature</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	4		

<b>Quality Control Preservation</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>Sample Integrity - Documentation</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Sample Integrity - Condition</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<b>Sample Integrity - Instructions</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
--------------------	-----------------	----------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC90656XA: Chain of Custody**

Page 3 of 3

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91796

Sampling Date: 07/17/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **28**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.



# Table of Contents

-1-

<b>Section 1: Sample Summary .....</b>	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>4</b>
<b>Section 3: Summary of Hits .....</b>	<b>8</b>
<b>Section 4: Sample Results .....</b>	<b>11</b>
<b>4.1:</b> JC91796-1: WA-1S .....	12
<b>4.2:</b> JC91796-2: WA-2S .....	13
<b>4.3:</b> JC91796-3: WA-2M .....	14
<b>4.4:</b> JC91796-4: WA-2D .....	15
<b>4.5:</b> JC91796-5: WA-3S .....	16
<b>4.6:</b> JC91796-6: WA-4S .....	17
<b>4.7:</b> JC91796-7: WA-5S .....	18
<b>4.8:</b> JC91796-8: WA-6S .....	19
<b>4.9:</b> JC91796-9: WA-6M .....	20
<b>4.10:</b> JC91796-10: WA-6D .....	21
<b>4.11:</b> JC91796-11: WA-7S .....	22
<b>4.12:</b> JC91796-12: WA-7M .....	23
<b>4.13:</b> JC91796-13: WA-7D .....	24
<b>Section 5: Misc. Forms .....</b>	<b>25</b>
<b>5.1:</b> Chain of Custody .....	26

1

2

3

4

5



## Sample Summary

USACE-Philadelphia District

**Job No:** JC91796

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC91796-1	07/17/19	09:40 GW	07/17/19	AQ	Surface Water	WA-1S
JC91796-2	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2S
JC91796-3	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2M
JC91796-4	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2D
JC91796-5	07/17/19	10:30 GW	07/17/19	AQ	Surface Water	WA-3S
JC91796-6	07/17/19	10:15 GW	07/17/19	AQ	Surface Water	WA-4S
JC91796-7	07/17/19	10:00 GW	07/17/19	AQ	Surface Water	WA-5S
JC91796-8	07/17/19	08:00 GW	07/17/19	AQ	Surface Water	WA-6S
JC91796-9	07/17/19	08:00 GW	07/17/19	AQ	Surface Water	WA-6M
JC91796-10	07/17/19	08:00 GW	07/17/19	AQ	Surface Water	WA-6D
JC91796-11	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7S
JC91796-12	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7M
JC91796-13	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC91796

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 7/26/2019 10:45:38 A

On 07/17/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.1 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC91796 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:** GP22570

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91795-8DUP, JC91795-8MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

**Matrix:** AQ **Batch ID:** GP22548

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91921-1DUP, JC91921-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

**Matrix:** AQ **Batch ID:** GP22549

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-2DUP, JC91796-2MS, JC91796-7MS 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:** R179924

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179925

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179926

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179938

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179947

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179948

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179949

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179950

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179951

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179952

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179953

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179954

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179955

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91796-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**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 CaCO<sub>3</sub>.
- JC91796-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91796-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91796-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

**Matrix:** AQ

**Batch ID:** GN97810

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-5DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC91796-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC91796-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN97791

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN97828

- 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 Suspended.

**Matrix:** AQ

**Batch ID:** GN97847

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-11DUP were used as the QC samples for Solids, Total Suspended.
- JC91796-11 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP22601

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92091-1DUP, JC92091-1MS, JC92091-1MSD were used as the QC samples for Nitrogen, Ammonia.
- Matrix Spike Recovery(s) for Nitrogen, Ammonia 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:** GP22602

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-8DUP, JC91796-8MS, JC91796-8MSD were used as the QC samples for Nitrogen, Ammonia.

## General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ

**Batch ID:** GN97714

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-1DUP, JC91796-1MS were used as the QC samples for Nitrogen, Nitrite.

## General Chemistry By Method SM5210 B-11

**Matrix:** AQ

**Batch ID:** GP22476

- All samples were prepared 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 BOD, 5 Day.

## General Chemistry By Method SM5310 B-11

**Matrix:** AQ

**Batch ID:** GP22479

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-1MS, JC91796-1MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ

**Batch ID:** GP22480

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91796-11MS, JC91796-11MSD 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

## Summary of Hits

**Job Number:** JC91796  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/17/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC91796-1</b>		<b>WA-1S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		20.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.11	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.11	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.40	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		49.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.9	1.0		mg/l	SM5310 B-11
<b>JC91796-2</b>		<b>WA-2S</b>				
Nitrogen, Total Kjeldahl		0.37	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		43.0	10		mg/l	SM2540 C-11
Total Organic Carbon		5.1	1.0		mg/l	SM5310 B-11
<b>JC91796-3</b>		<b>WA-2M</b>				
BOD, 5 Day		4.3	3.4		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.24	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.24	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.32	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		43.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.8	1.0		mg/l	SM5310 B-11
<b>JC91796-4</b>		<b>WA-2D</b>				
Nitrogen, Nitrate <sup>b</sup>		0.16	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.16	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.42	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		50.0	10		mg/l	SM2540 C-11
Total Organic Carbon		5.3	1.0		mg/l	SM5310 B-11
<b>JC91796-5</b>		<b>WA-3S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		11.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.23	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.23	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.28	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		55.0	10		mg/l	SM2540 C-11
Total Organic Carbon		5.0	1.0		mg/l	SM5310 B-11
<b>JC91796-6</b>		<b>WA-4S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		10.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.13	0.11		mg/l	EPA353.2/SM4500NO2B

## Summary of Hits

**Job Number:** JC91796  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/17/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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Nitrogen, Nitrate + Nitrite		0.13	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.27	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		50.0	10		mg/l	SM2540 C-11
Total Organic Carbon		3.6	1.0		mg/l	SM5310 B-11

### JC91796-7 WA-5S

Nitrogen, Nitrate <sup>b</sup>		0.24	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.24	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.31	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		49.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.5	1.0		mg/l	SM5310 B-11

### JC91796-8 WA-6S

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		5.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.15	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.15	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.33	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		50.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.9	1.0		mg/l	SM5310 B-11

### JC91796-9 WA-6M

Nitrogen, Nitrate <sup>b</sup>		0.30	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.30	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.36	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		38.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.4	1.0		mg/l	SM5310 B-11

### JC91796-10 WA-6D

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		5.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.17	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.17	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.87	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		39.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		14.1	4.0		mg/l	SM2540 D-11
Total Organic Carbon		5.0	1.0		mg/l	SM5310 B-11

### JC91796-11 WA-7S

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		7.0	5.0		mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl		0.32	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		45.0	10		mg/l	SM2540 C-11



## Summary of Hits

**Job Number:** JC91796  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/17/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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Total Organic Carbon		5.1	1.0		mg/l	SM5310 B-11
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**JC91796-12      WA-7M**

Alkalinity, Total as CaCO3 <sup>a</sup>		6.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.13	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.13	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.33	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		50.0	10		mg/l	SM2540 C-11
Total Organic Carbon		5.0	1.0		mg/l	SM5310 B-11

**JC91796-13      WA-7D**

Alkalinity, Total as CaCO3 <sup>a</sup>		7.0	5.0		mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl		0.42	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		50.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		5.5	4.0		mg/l	SM2540 D-11
Total Organic Carbon		5.5	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)

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> WA-1S	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-1	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	20.0	5.0	mg/l	1	07/22/19 16:45	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 20:53	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:00	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.11	0.11	mg/l	1	07/23/19 11:54	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.11	0.10	mg/l	1	07/23/19 11:54	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	1	07/25/19 11:23	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	4.9	1.0	mg/l	1	07/19/19 18:00	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

## Report of Analysis

<b>Client Sample ID:</b> WA-2S		<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-2		<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	07/22/19 16:45	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 20:55	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:02	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/23/19 12:09	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/23/19 12:09	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.37	0.20	mg/l	1	07/25/19 11:24	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	5.1	1.0	mg/l	1	07/19/19 18:33	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-2M	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-3	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	07/22/19 16:45	CM	SM2320 B-11
BOD, 5 Day	4.3	3.4	mg/l	1	07/18/19 20:57	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:06	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.24	0.11	mg/l	1	07/23/19 12:10	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.24	0.10	mg/l	1	07/23/19 12:10	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.32	0.20	mg/l	1	07/25/19 11:25	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	4.8	1.0	mg/l	1	07/19/19 18:44	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-2D	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-4	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	07/22/19 16:45	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:07	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.16	0.11	mg/l	1	07/23/19 12:11	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.16	0.10	mg/l	1	07/23/19 12:11	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.42	0.20	mg/l	1	07/25/19 11:26	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	5.3	1.0	mg/l	1	07/19/19 18:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-3S <b>Lab Sample ID:</b> JC91796-5 <b>Matrix:</b> AQ - Surface Water <b>Project:</b> Philadelphia District, Reservoir Sampling	<b>Date Sampled:</b> 07/17/19 <b>Date Received:</b> 07/17/19 <b>Percent Solids:</b> n/a
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### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.5	5.0	mg/l	1	07/25/19 17:03	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:09	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.23	0.11	mg/l	1	07/23/19 12:12	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.23	0.10	mg/l	1	07/23/19 12:12	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	1	07/25/19 11:27	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	55.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	5.0	1.0	mg/l	1	07/19/19 19:06	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

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-4S	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-6	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	07/25/19 17:03	CM	SM2320 B-11
BOD, 5 Day	< 4.4	4.4	mg/l	1	07/18/19 21:08	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:10	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.13	0.11	mg/l	1	07/23/19 12:13	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.13	0.10	mg/l	1	07/23/19 12:13	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:25	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.27	0.20	mg/l	1	07/25/19 11:29	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	3.6	1.0	mg/l	1	07/19/19 19:18	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



## Report of Analysis

<b>Client Sample ID:</b> WA-5S		<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-7		<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	07/25/19 17:03	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:11	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:12	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.24	0.11	mg/l	1	07/23/19 12:17	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.24	0.10	mg/l	1	07/23/19 12:17	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	07/25/19 11:30	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	4.5	1.0	mg/l	1	07/19/19 19:29	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

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6S	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-8	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	5.0	5.0	mg/l	1	07/25/19 17:03	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:15	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:23	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.15	0.11	mg/l	1	07/23/19 12:18	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.15	0.10	mg/l	1	07/23/19 12:18	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	1	07/25/19 11:31	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	4.9	1.0	mg/l	1	07/19/19 19:40	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

## Report of Analysis

<b>Client Sample ID:</b> WA-6M	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-9	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	07/25/19 17:03	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:18	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:25	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.30	0.11	mg/l	1	07/23/19 12:19	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.30	0.10	mg/l	1	07/23/19 12:19	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.36	0.20	mg/l	1	07/25/19 11:32	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	38.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	4.4	1.0	mg/l	1	07/23/19 10:16	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

## Report of Analysis

<b>Client Sample ID:</b> WA-6D	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-10	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	5.5	5.0	mg/l	1	07/25/19 17:03	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:21	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:26	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.17	0.11	mg/l	1	07/23/19 12:20	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.17	0.10	mg/l	1	07/23/19 12:20	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.87	0.20	mg/l	1	07/25/19 11:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	14.1	4.0	mg/l	1	07/23/19 10:23	RC	SM2540 D-11
Total Organic Carbon	5.0	1.0	mg/l	1	07/23/19 10:27	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

## Report of Analysis

<b>Client Sample ID:</b> WA-7S	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-11	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	7.0	5.0	mg/l	1	07/25/19 17:10	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:24	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/23/19 12:21	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/23/19 12:21	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.32	0.20	mg/l	1	07/25/19 11:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended <sup>c</sup>	< 4.0	4.0	mg/l	1	07/23/19 11:47	RC	SM2540 D-11
Total Organic Carbon	5.1	1.0	mg/l	1	07/23/19 12:43	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 due to limited volume.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7M	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-12	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	6.5	5.0	mg/l	1	07/25/19 17:10	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:28	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:29	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.13	0.11	mg/l	1	07/23/19 12:22	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.13	0.10	mg/l	1	07/23/19 12:22	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	1	07/25/19 11:34	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/23/19 11:47	RC	SM2540 D-11
Total Organic Carbon	5.0	1.0	mg/l	1	07/23/19 13:17	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

## Report of Analysis

<b>Client Sample ID:</b> WA-7D	<b>Date Sampled:</b> 07/17/19
<b>Lab Sample ID:</b> JC91796-13	<b>Date Received:</b> 07/17/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	7.0	5.0	mg/l	1	07/25/19 17:10	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/18/19 21:30	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/25/19 15:30	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	07/23/19 12:24	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/23/19 12:24	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/19/19 02:39	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.42	0.20	mg/l	1	07/25/19 11:35	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/22/19 15:30	RC	SM2540 C-11
Solids, Total Suspended	5.5	4.0	mg/l	1	07/23/19 11:47	RC	SM2540 D-11
Total Organic Carbon	5.5	1.0	mg/l	1	07/23/19 13:28	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

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Includes the following where applicable:

- Chain of Custody





SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/usa

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq East</b> City: <b>Phila</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b> Samplers (Name(s)): <b>Greg Wacik 597-9780</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: <b>White Haven Av</b> City: <b>White Haven PA</b> Billing Information (if different from Report to) Company Name: Street Address: City: State: Zip:		FED-EX Tracking # SGS Order # Batch Order Control # SGS Job # <b>JC91796</b>	
Project # Client Purchase Order # Project Manager: <b>Tommy McCloskey</b> Attention:		Requested Analysis <b>TPO4 (Sub to MS Reider)</b> <b>Alkalinity, Ammonia,</b> <b>BOD TDS, TKN</b> <b>TOC, TSS, XAN30</b>		Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LOJ - Other Liquid AIR - Air SOL - Other Solids WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
Turn Around Time (Business Days) <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days <input type="checkbox"/> 2 Business Days <input type="checkbox"/> 1 Business Day <input type="checkbox"/> Other _____ All data available via LabLink		Approved By (SGS P#): / Date: _____		Deliverable <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ DKQP <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> DOD-QSIS	
Comments / Special Instructions <b>"TCF/FCF Samples to Eurofin's lab"</b> <b>TPO4 samples to MS Reider lab</b>		Initial Assessment: <b>3B</b> Label Verification:		Sample Custody must be documented below each time samples change possession including courier delivery. <a href="https://www.sgs.com/en/terms-and-conditions">https://www.sgs.com/en/terms-and-conditions</a>	
Requisitioned by: <b>[Signature]</b> Date / Time: <b>7/17/19 0940</b>	Requisitioned by: <b>[Signature]</b> Date / Time: <b>7/17/19 1540</b>	Requisitioned by: <b>[Signature]</b> Date / Time: <b>7/17/19 1438</b>	Requisitioned by: <b>[Signature]</b> Date / Time:	Requisitioned by: <b>[Signature]</b> Date / Time:	Requisitioned by: <b>[Signature]</b> Date / Time:
Custody Seal # _____ <input type="checkbox"/> Intact <input type="checkbox"/> Not intact		Preserved where applicable <input type="checkbox"/> Absent <input type="checkbox"/> Present		Therm. ID: _____ On Ice <input type="checkbox"/>	

5.1  
5

27 Oct  
28 Oct  
23 Oct  
29 Oct





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Subs Order Control #
SGS Quote #
SGS Job # JC91796

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and Custody Seal section.

5.1
5

JC91796: Chain of Custody

Page 2 of 3



## SGS Sample Receipt Summary

**Job Number:** JC91796

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/17/2019 7:38:00 PM

**Delivery Method:**

**Airbill #s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.1); Cooler 2: (2.7); Cooler 3: (2.9); Cooler 4: (2.7); Cooler 5: (2.8); Cooler 6: (2.3); Cooler 7: (2.9);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.1); Cooler 2: (2.7); Cooler 3: (2.9); Cooler 4: (2.7); Cooler 5: (2.8); Cooler 6: (2.3); Cooler 7: (2.9);

<u>Cooler Security</u>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	7		

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify)
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Comments

SM089-03  
Rev. Date 12/7/17

**JC91796: Chain of Custody**

**Page 3 of 3**

5.1  
5

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91796X

Sampling Date: 07/17/19

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**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>4</b>
<b>Section 3: Misc. Forms</b> .....	<b>14</b>
<b>3.1: Chain of Custody</b> .....	<b>15</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC91796X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC91796-1X	07/17/19	09:40 GW	07/17/19	AQ	Surface Water	WA-1S
JC91796-2X	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2S
JC91796-5X	07/17/19	10:30 GW	07/17/19	AQ	Surface Water	WA-3S
JC91796-6X	07/17/19	10:15 GW	07/17/19	AQ	Surface Water	WA-4S
JC91796-7X	07/17/19	10:00 GW	07/17/19	AQ	Surface Water	WA-5S
JC91796-8X	07/17/19	08:00 GW	07/17/19	AQ	Surface Water	WA-6S
JC91796-11X	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7S

Subcontract Lab Data

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Report of Analysis

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Serialized: 07/19/2019 11:00am QC36

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

Regarding:

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

**PROJECT ID:**

**W08688**

**LABORATORY REPORT NUMBER:**

**L7146700**



Authorized by: Douglas J. Gump  
Client Services Manager



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 ARMY CORPS OF ENGINEERS      **P.O. No:**      **Inv. No:** 1983986 PI  
**Project No:** W08688, US ARMY CORPS OF ENGINEERS      **PWSID No:**

**Sample ID**    **Sample Description**      **Samp. Date/Time/Temp**    **Sampled by**  
 L7146700-1    WA-1S      07/17/19 09:40am NA C    Customer  
                  **Received Date/Time/Temp** 07/17/19 05:40pm 3.4 C    **Iced (Y/N):** Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-1S</b>							
Total Coliform, MF	11300 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	3 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

**Sample ID**    **Sample Description**      **Samp. Date/Time/Temp**    **Sampled by**  
 L7146700-2    WA-2S      07/17/19 07:10am NA C    Customer  
                  **Received Date/Time/Temp** 07/17/19 05:40pm 3.4 C    **Iced (Y/N):** Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-2S</b>							
Total Coliform, MF	15300 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	2 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

PIN: 17757

Serial Number: 6528893

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

**P.O. No:**

**Inv. No:** 1983986 PI  
**PWSID No:**

<b>Sample ID</b> L7146700-3	<b>Sample Description</b> WA-3S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 10:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-3S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	23 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-4	<b>Sample Description</b> WA-4S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 10:15am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-4S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	70 E, Q		cfu/100ml	SM 9222D	10	10	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-5	<b>Sample Description</b> WA-5S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 10:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-5S**

Total Coliform, MF	8300 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	10 E, Q		cfu/100ml	SM 9222D	10	10	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 08:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 17757

Serial Number: 6528893

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

**P.O. No:**

**Inv. No:** 1983986 PI  
**PWSID No:**

<b>Sample ID</b> L7146700-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 08:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-6S**

Total Coliform, MF	7700 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-7	<b>Sample Description</b> WA-7S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 08:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-7S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-8	<b>Sample Description</b> PR-1S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 12:10pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-1S**

Total Coliform, MF	16500 E, Q		cfu/100ml	SM 9222B	1	100	07/17/19 07:38PM KC2
Fecal Coliform, MF	60 E, Q		cfu/100ml	SM 9222D	10	10	07/17/19 07:44PM JG2

<b>Sample ID</b> L7146700-9	<b>Sample Description</b> PR-2S	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/17/19 01:20pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 17757

Serial Number: 6528893

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

**P.O. No:**

**Inv. No:** 1983986 PI  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7146700-9	PR-2S	07/17/19 01:20pm NA C	Customer
	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-2S**

Total Coliform, MF	4300 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7146700-10	PR-3S	07/17/19 12:50pm NA C	Customer
	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-3S**

Total Coliform, MF	1964 E, Q		cfu/100ml	SM 9222B	10	10	07/17/19 09:00PM KC2
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7146700-11	PR-4S	07/17/19 11:45am NA C	Customer
	<b>Received Date/Time/Temp</b> 07/17/19 05:40pm 3.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-4S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/17/19 09:00PM KC2
Fecal Coliform, MF	9 Q		cfu/100ml	SM 9222D	100	1	07/17/19 07:44PM JG2

**Sample Comments | Result Qualifiers:**

L7146700-1 :

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.

PIN: 17757

Serial Number: 6528893

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

**P.O. No:**

**Inv. No:** 1983986 PI  
**PWSID No:**

L7146700-2 :

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.

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.

L7146700-3 :

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.

L7146700-4 :

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.

L7146700-5 :

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.

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.

L7146700-6 :

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.

L7146700-7 :

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.

L7146700-8 :

PIN: 17757

Serial Number: 6528893

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

**P.O. No:**

**Inv. No:** 1983986 PI  
**PWSID No:**

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.

L7146700-9 :

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.

L7146700-10 :

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.

L7146700-11 :

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: 17757

Serial Number: 6528893

**DEFINITIONS**

*The following terms or abbreviations are used in this report:*

<	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
DF	Dilution Factor (For Microbiology, DF = volume of 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
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not 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
T	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 Jordan Thorngren (Water Microbiology).

**EQC Accreditations**

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



CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/lehussa

Form containing client information, project details, sample analysis table, and delivery instructions. Includes handwritten notes like 'Rec'd in unverified containers - AR007-1719' and 'Samples to Eurofins Lab'.





## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



SW

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/usa

E

Form containing Client/Reporting Information, Project Information, Matrix Codes, Collection table with columns for Date, Time, Matrix, and various parameters. Includes handwritten notes like 'TPO4 (sub to MRS Reider)' and 'Alkalinity, Ammonia'.

31
3

JC91796X: Chain of Custody

Page 1 of 3





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Subs Order Control #
SGS Quote #
SGS Job # JC91796

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Lab Use Only. Includes fields for Company Name, Project Name, Street Address, City, State, Zip, Project #, Client Purchase Order #, Attention, and a table for sample collection details.

Turn Around Time (Business Days), Deliverable, Comments / Special Instructions. Includes checkboxes for business days and lists of deliverable options like Commercial 'A', 'B', 'C' and NYASP categories.

Chain of custody table with columns for Requested by, Date / Time, Received By, Date / Time, Retained by, Date / Time, and Custody Seal #.

TP04 (subs to MTS Reider)
Alkalinity, Ammonia
BOD, TDS, TKN
TTC, TSS, XN030

- Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL - Sludge, SED - Sediment, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe, FB - Field Blank, EB - Equipment Blank, RB - Rinse Blank, TB - Trip Blank

JC91796X: Chain of Custody

Page 2 of 3



31
3

2.7000
2.8000
2.3000
2.9000

## SGS Sample Receipt Summary

**Job Number:** JC91796

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/17/2019 7:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #'s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.1); Cooler 2: (2.7); Cooler 3: (2.9); Cooler 4: (2.7); Cooler 5: (2.8); Cooler 6: (2.3); Cooler 7: (2.9);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.1); Cooler 2: (2.7); Cooler 3: (2.9); Cooler 4: (2.7); Cooler 5: (2.8); Cooler 6: (2.3); Cooler 7: (2.9);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	7	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y or N</u>		<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC91796X: Chain of Custody**

Page 3 of 3

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91796XA

Sampling Date: 07/17/19

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: 22



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>5</b>
<b>Section 3: Misc. Forms</b> .....	<b>19</b>
<b>3.1: Chain of Custody</b> .....	<b>20</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC91796XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC91796-1F	07/17/19	09:40 GW	07/17/19	AQ	Surface H2O Filtered	WA-1S
JC91796-1XA	07/17/19	09:40 GW	07/17/19	AQ	Surface Water	WA-1S
JC91796-2F	07/17/19	07:10 GW	07/17/19	AQ	Surface H2O Filtered	WA-2S
JC91796-2XA	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2S
JC91796-3F	07/17/19	07:10 GW	07/17/19	AQ	Surface H2O Filtered	WA-2M
JC91796-3XA	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2M
JC91796-4F	07/17/19	07:10 GW	07/17/19	AQ	Surface H2O Filtered	WA-2D
JC91796-4XA	07/17/19	07:10 GW	07/17/19	AQ	Surface Water	WA-2D
JC91796-5F	07/17/19	10:30 GW	07/17/19	AQ	Surface H2O Filtered	WA-3S
JC91796-5XA	07/17/19	10:30 GW	07/17/19	AQ	Surface Water	WA-3S
JC91796-6F	07/17/19	10:15 GW	07/17/19	AQ	Surface H2O Filtered	WA-4S
JC91796-6XA	07/17/19	10:15 GW	07/17/19	AQ	Surface Water	WA-4S
JC91796-7F	07/17/19	10:00 GW	07/17/19	AQ	Surface H2O Filtered	WA-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC91796XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC91796-7XA	07/17/19	10:00 GW	07/17/19	AQ	Surface Water	WA-5S
JC91796-8F	07/17/19	08:00 GW	07/17/19	AQ	Surface H2O Filtered	WA-6S
JC91796-8XA	07/17/19	08:00 GW	07/17/19	AQ	Surface Water	WA-6S
JC91796-9F	07/17/19	08:00 GW	07/17/19	AQ	Surface H2O Filtered	WA-6M
JC91796-9XA	07/17/19	08:00 GW	07/17/19	AQ	Surface Water	WA-6M
JC91796-10F	07/17/19	08:30 GW	07/17/19	AQ	Surface H2O Filtered	WA-6D
JC91796-10XA	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-6D
JC91796-11F	07/17/19	08:30 GW	07/17/19	AQ	Surface H2O Filtered	WA-7S
JC91796-11XA	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7S
JC91796-12F	07/17/19	08:30 GW	07/17/19	AQ	Surface H2O Filtered	WA-7M
JC91796-12XA	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7M
JC91796-13F	07/17/19	08:30 GW	07/17/19	AQ	Surface H2O Filtered	WA-7D
JC91796-13XA	07/17/19	08:30 GW	07/17/19	AQ	Surface Water	WA-7D



Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**  
 ENVIRONMENTAL TESTING LABORATORY  
 U.S. EPA/PA DEP #06-00003

# Certificate of Analysis

2

**Laboratory No.:** 9025200  
**Report:** 08/01/19  
**Lab Contact:** Richard A Wheeler

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

**Project:** Army Corp Reservoirs

**Lab ID:** 9025200-01    **Collected By:** Client    **Sampled:** 07/17/19 09:40    **Received:** 07/19/19 09:54  
**Sample Desc:** WA-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-02    **Collected By:** Client    **Sampled:** 07/17/19 07:10    **Received:** 07/19/19 09:54  
**Sample Desc:** WA-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-03    **Collected By:** Client    **Sampled:** 07/17/19 07:10    **Received:** 07/19/19 09:54  
**Sample Desc:** WA-2M    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL



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**M.J. Reider Associates, Inc.**

**2**

**Lab ID:** 9025200-04     **Collected By:** Client     **Sampled:** 07/17/19 07:10     **Received:** 07/19/19 09:54  
**Sample Desc:** WA-2D     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-05     **Collected By:** Client     **Sampled:** 07/17/19 10:30     **Received:** 07/19/19 09:54  
**Sample Desc:** WA-3S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-06     **Collected By:** Client     **Sampled:** 07/17/19 10:15     **Received:** 07/19/19 09:54  
**Sample Desc:** WA-4S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-07     **Collected By:** Client     **Sampled:** 07/17/19 10:00     **Received:** 07/19/19 09:54  
**Sample Desc:** WA-5S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL



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2

**Lab ID:** 9025200-08      **Collected By:** Client      **Sampled:** 07/17/19 08:00      **Received:** 07/19/19 09:54  
**Sample Desc:** WA-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-09      **Collected By:** Client      **Sampled:** 07/17/19 08:00      **Received:** 07/19/19 09:54  
**Sample Desc:** WA-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-10      **Collected By:** Client      **Sampled:** 07/17/19 08:30      **Received:** 07/19/19 09:54  
**Sample Desc:** WA-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-11      **Collected By:** Client      **Sampled:** 07/17/19 08:30      **Received:** 07/19/19 09:54  
**Sample Desc:** WA-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9025200-12      **Collected By:** Client      **Sampled:** 07/17/19 08:30      **Received:** 07/19/19 09:54  
**Sample Desc:** WA-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL

**Lab ID:** 9025200-13      **Collected By:** Client      **Sampled:** 07/17/19 08:30      **Received:** 07/19/19 09:54  
**Sample Desc:** WA-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	07/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/19/19		JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G1189</b>								
<b>MB (B9G1189-BLK1)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 07/19/2019								
<b>MB (B9G1189-BLK2)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 07/19/2019								
<b>MB (B9G1189-BLK3)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 07/19/2019								
<b>LFB (B9G1189-BS1)</b>								
Phosphorus as P, Total	1.00	0.05	mg/l	100	80-120			
Prepared & Analyzed: 07/19/2019								

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G1190</b>								
<b>MB (B9G1190-BLK1)</b>								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
Prepared & Analyzed: 07/19/2019								
<b>LFB (B9G1190-BS1)</b>								
Phosphorus as P, Dissolved	1.02	0.05	mg/l	102	80-120			G-11
Prepared & Analyzed: 07/19/2019								
<b>LFM (B9G1190-MS1)</b>								
Phosphorus as P, Dissolved	1.02	0.05	mg/l	99.2	80-120			
Source: 9025200-13 Prepared & Analyzed: 07/19/2019								
<b>LFMD (B9G1190-MSD1)</b>								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	98.8	80-120	0.394	20	
Source: 9025200-13 Prepared & Analyzed: 07/19/2019								



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9025200-01</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-02</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-03</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-04</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-05</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-06</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-07</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-08</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-09</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-10</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-11</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-12</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL
<b>9025200-13</b>			
SM 4500-P E	SM 4500-P B	07/19/2019	JCL



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**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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9025200 H/S

Date / Time: 7/18/2019 1:30:42 PM

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories  
Address: 107 Angelica Street

CSR: BETHW

Job #: JC91796XA

City: Reading

Client Project: Philadelphia District, Reservoir Sampling

State: PA

Deliverable: REDT2

Contact: Sample Receiving / Rich Wheeler

TAT: Due 7/31/2019

Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC91796-1XA	WA-1S	TPO4..		GW	7/17/2019	9:40:00 AM	
JC91796-1F	WA-1S	FILTERGN_TPO4..		GW	7/17/2019	9:40:00 AM	
JC91796-2XA	WA-2S	TPO4..		GW	7/17/2019	7:10:00 AM	
JC91796-2F	WA-2S	FILTERGN_TPO4..		GW	7/17/2019	7:10:00 AM	
JC91796-3XA	WA-2M	TPO4..		GW	7/17/2019	7:10:00 AM	
JC91796-3F	WA-2M	FILTERGN_TPO4..		GW	7/17/2019	7:10:00 AM	
JC91796-4XA	WA-2D	TPO4..		GW	7/17/2019	7:10:00 AM	
JC91796-4F	WA-2D	FILTERGN_TPO4..		GW	7/17/2019	7:10:00 AM	
JC91796-5XA	WA-3S	TPO4..		GW	7/17/2019	10:30:00 AM	
JC91796-5F	WA-3S	FILTERGN_TPO4..		GW	7/17/2019	10:30:00 AM	
JC91796-6XA	WA-4S	TPO4..		GW	7/17/2019	10:15:00 AM	
JC91796-6F	WA-4S	FILTERGN_TPO4..		GW	7/17/2019	10:15:00 AM	
JC91796-7XA	WA-5S	TPO4..		GW	7/17/2019	10:00:00 AM	
JC91796-7F	WA-5S	FILTERGN_TPO4..		GW	7/17/2019	10:00:00 AM	
JC91796-8XA	WA-6S	TPO4..		GW	7/17/2019	8:00:00 AM	
JC91796-8F	WA-6S	FILTERGN_TPO4..		GW	7/17/2019	8:00:00 AM	
JC91796-9XA	WA-6M	TPO4..		GW	7/17/2019	8:00:00 AM	

5/5

<u>JC91796-9F</u>	<u>WA-6M</u>	<u>FILTERGN ,TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:00:00 AM</u>
<u>JC91796-10XA</u>	<u>WA-6D</u>	<u>TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-10F</u>	<u>WA-6D</u>	<u>FILTERGN ,TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-11XA</u>	<u>WA-7S</u>	<u>TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-11F</u>	<u>WA-7S</u>	<u>FILTERGN ,TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-12XA</u>	<u>WA-7M</u>	<u>TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-12F</u>	<u>WA-7M</u>	<u>FILTERGN ,TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-13XA</u>	<u>WA-7D</u>	<u>TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>
<u>JC91796-13F</u>	<u>WA-7D</u>	<u>FILTERGN ,TPO4 ,</u>	<u>GW</u>	<u>7/17/2019</u>	<u>8:30:00 AM</u>

9025200

Comments:

Date:

Sample Management Receipt:

**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](http://www.mjreider.com) ◯ (610) 374-5129 ◯ fax (610) 374-7234

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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

## Misc. Forms

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### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



SW

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/usa

E

Form containing Client/Reporting Information, Project Information, Matrix Codes, Collection table, Turn Around Time, Deliverable, and Chain of Custody sections.

31
3

JC91796XA: Chain of Custody

Page 1 of 3







CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusua

FED-EX Tracking #
Subs Order Control #
SGS Quote #
SGS Job # JC91796

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table with columns for Sample #, Field ID, Date, Time, and various analysis parameters.

31
3

JC91796XA: Chain of Custody

Page 2 of 3



## SGS Sample Receipt Summary

**Job Number:** JC91796

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/17/2019 7:38:00 PM

**Delivery Method:**

**Airbill #'s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.1); Cooler 2: (2.7); Cooler 3: (2.9); Cooler 4: (2.7); Cooler 5: (2.8); Cooler 6: (2.3); Cooler 7: (2.9);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.1); Cooler 2: (2.7); Cooler 3: (2.9); Cooler 4: (2.7); Cooler 5: (2.8); Cooler 6: (2.3); Cooler 7: (2.9);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 7                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify)

Comments

SM089-03  
Rev. Date 12/7/17

**JC91796XA: Chain of Custody**

**Page 3 of 3**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

F.E. Water

SGS Job Number: JC92496

Sampling Date: 07/31/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **28**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary .....</b>	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>4</b>
<b>Section 3: Summary of Hits .....</b>	<b>8</b>
<b>Section 4: Sample Results .....</b>	<b>11</b>
<b>4.1:</b> JC92496-1: WA-1S .....	12
<b>4.2:</b> JC92496-2: WA-2S .....	13
<b>4.3:</b> JC92496-3: WA-2M .....	14
<b>4.4:</b> JC92496-4: WA-2D .....	15
<b>4.5:</b> JC92496-5: WA-3S .....	16
<b>4.6:</b> JC92496-6: WA-4S .....	17
<b>4.7:</b> JC92496-7: WA-5S .....	18
<b>4.8:</b> JC92496-8: WA-6S .....	19
<b>4.9:</b> JC92496-9: WA-6M .....	20
<b>4.10:</b> JC92496-10: WA-6D .....	21
<b>4.11:</b> JC92496-11: WA-7S .....	22
<b>4.12:</b> JC92496-12: WA-7M .....	23
<b>4.13:</b> JC92496-13: WA-7D .....	24
<b>Section 5: Misc. Forms .....</b>	<b>25</b>
<b>5.1:</b> Chain of Custody .....	26

1

2

3

4

5



## Sample Summary

USACE-Philadelphia District

Job No: JC92496

Philadelphia District, Reservoir Sampling  
Project No: F.E. Water

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC92496-1	07/31/19	07:00 GW	07/31/19	AQ	Surface Water	WA-1S
JC92496-2	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2S
JC92496-3	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2M
JC92496-4	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2D
JC92496-5	07/31/19	10:35 GW	07/31/19	AQ	Surface Water	WA-3S
JC92496-6	07/31/19	10:15 GW	07/31/19	AQ	Surface Water	WA-4S
JC92496-7	07/31/19	10:00 GW	07/31/19	AQ	Surface Water	WA-5S
JC92496-8	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6S
JC92496-9	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6M
JC92496-10	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6D
JC92496-11	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7S
JC92496-12	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7M
JC92496-13	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC92496

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 8/12/2019 4:19:15 PM

On 07/31/2019, 13 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 JC92496 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:** GP22907

- 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:** GP22893

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92496-1MS, JC92730-1DUP were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R180234

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180235

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180236

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180237

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180238

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180239

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180243

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180244

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180245

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180246

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180247

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180248

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180249

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92496-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN98359

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92496-1DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC92496-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92496-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92496-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92496-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92496-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92496-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92496-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**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) JC92496-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN98322

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92496-1DUP were used as the QC samples for Solids, Total Suspended.
- JC92496-4 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 600 mL of sample. Volume was reduced from 1 liter due to nature of sample matrix.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP22858

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92496-1DUP, JC92496-1MS, JC92496-1MSD were used as the QC samples for Nitrogen, Ammonia.

## General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ

**Batch ID:** GN98162

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92496-1DUP, JC92496-1MS were used as the QC samples for Nitrogen, Nitrite.

Monday, August 12, 2019

Page 3 of 4





## Summary of Hits

**Job Number:** JC92496  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/31/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC92496-1</b>		<b>WA-1S</b>				
Alkalinity, Total as CaCO3 <sup>a</sup>		35.0	10		mg/l	SM2320 B-11
Solids, Total Dissolved		45.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		5.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon		6.7	1.0		mg/l	SM5310 B-11
<b>JC92496-2</b>		<b>WA-2S</b>				
Nitrogen, Total Kjeldahl		0.36	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		39.0	10		mg/l	SM2540 C-11
Total Organic Carbon		5.3	1.0		mg/l	SM5310 B-11
<b>JC92496-3</b>		<b>WA-2M</b>				
Nitrogen, Total Kjeldahl		0.27	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		45.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		4.5	4.0		mg/l	SM2540 D-11
Total Organic Carbon		6.1	1.0		mg/l	SM5310 B-11
<b>JC92496-4</b>		<b>WA-2D</b>				
Alkalinity, Total as CaCO3 <sup>a</sup>		25.0	10		mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl		0.55	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		42.0	10		mg/l	SM2540 C-11
Solids, Total Suspended <sup>b</sup>		10.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon		6.7	1.0		mg/l	SM5310 B-11
<b>JC92496-5</b>		<b>WA-3S</b>				
Alkalinity, Total as CaCO3 <sup>a</sup>		35.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>c</sup>		0.18	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.18	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.42	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		58.0	10		mg/l	SM2540 C-11
Total Organic Carbon		6.5	1.0		mg/l	SM5310 B-11
<b>JC92496-6</b>		<b>WA-4S</b>				
Alkalinity, Total as CaCO3 <sup>a</sup>		30.0	10		mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl		0.49	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		36.0	10		mg/l	SM2540 C-11
Total Organic Carbon		5.7	1.0		mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC92496  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/31/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC92496-7 WA-5S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	40.0	10			mg/l	SM2320 B-11
Nitrogen, Total Kjeldahl	0.32	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	36.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.1	1.0			mg/l	SM5310 B-11

**JC92496-8 WA-6S**

Nitrogen, Total Kjeldahl	0.37	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.2	1.0			mg/l	SM5310 B-11

**JC92496-9 WA-6M**

Nitrogen, Total Kjeldahl	0.34	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.9	1.0			mg/l	SM5310 B-11

**JC92496-10 WA-6D**

Nitrogen, Total Kjeldahl	0.34	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10			mg/l	SM2540 C-11
Total Organic Carbon	6.5	1.0			mg/l	SM5310 B-11

**JC92496-11 WA-7S**

Nitrogen, Total Kjeldahl	0.40	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10			mg/l	SM2540 C-11
Total Organic Carbon	5.7	1.0			mg/l	SM5310 B-11

**JC92496-12 WA-7M**

BOD, 5 Day	4.5	3.4			mg/l	SM5210 B-11
Nitrogen, Total Kjeldahl	0.38	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	40.0	10			mg/l	SM2540 C-11
Total Organic Carbon	6.8	1.0			mg/l	SM5310 B-11

**JC92496-13 WA-7D**

BOD, 5 Day	19.0	3.4			mg/l	SM5210 B-11
Nitrogen, Total Kjeldahl	0.46	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	55.0	10			mg/l	SM2540 C-11
Total Organic Carbon	7.0	1.0			mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC92496  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/31/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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- (a) Sample was titrated to a final pH of 4.5.
- (b) Reported sample aliquot obtained from filtration of 600 mL of sample. Volume was reduced from 1 liter due to nature of sample matrix.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> WA-1S	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-1	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	35.0	10	mg/l	1	08/06/19 15:52	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 19:59	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:11	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:02	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:02	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:05	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/12/19 11:18	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	5.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	6.7	1.0	mg/l	1	08/08/19 22:58	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

## Report of Analysis

<b>Client Sample ID:</b> WA-2S	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-2	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 15:52	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 20:50	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:20	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:03	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:03	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:05	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.36	0.20	mg/l	1	08/12/19 11:19	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	5.3	1.0	mg/l	1	08/09/19 00:04	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-2M	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-3	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 15:52	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 20:52	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:24	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:06	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:06	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:05	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.27	0.20	mg/l	1	08/12/19 11:21	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	4.5	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	6.1	1.0	mg/l	1	08/09/19 00:15	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> WA-2D	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-4	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	25.0	10	mg/l	1	08/06/19 15:52	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:05	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:25	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:07	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:07	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:05	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.55	0.20	mg/l	1	08/12/19 11:22	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended <sup>c</sup>	10.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	6.7	1.0	mg/l	1	08/09/19 00:26	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 600 mL of sample. Volume was reduced from 1 liter due to nature of sample matrix.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-3S	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-5	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	35.0	10	mg/l	1	08/06/19 15:52	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:10	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:27	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.18	0.11	mg/l	1	08/08/19 16:08	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.18	0.10	mg/l	1	08/08/19 16:08	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:05	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.42	0.20	mg/l	1	08/12/19 11:23	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	58.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	6.5	1.0	mg/l	1	08/09/19 00:38	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

## Report of Analysis

<b>Client Sample ID:</b> WA-4S		<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-6		<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	30.0	10	mg/l	1	08/06/19 15:52	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:13	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:09	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:09	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:05	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.49	0.20	mg/l	1	08/12/19 11:24	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	36.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	5.7	1.0	mg/l	1	08/09/19 00:49	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

4.6  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-5S	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-7	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	40.0	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:15	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:30	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:11	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:11	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.32	0.20	mg/l	1	08/12/19 11:25	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	36.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	5.1	1.0	mg/l	1	08/09/19 01:00	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

## Report of Analysis

<b>Client Sample ID:</b> WA-6S		<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-8		<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:19	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:31	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:12	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:12	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.37	0.20	mg/l	1	08/12/19 11:26	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	5.2	1.0	mg/l	1	08/09/19 01:11	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

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RL = Reporting Limit

4.8  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6M	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-9	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:21	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:32	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:13	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:13	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.34	0.20	mg/l	1	08/12/19 11:27	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	5.9	1.0	mg/l	1	08/09/19 01:22	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-6D	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-10	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:24	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:34	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:14	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:14	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.34	0.20	mg/l	1	08/12/19 11:27	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	6.5	1.0	mg/l	1	08/09/19 01:34	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7S	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-11	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	08/01/19 21:27	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:35	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:15	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:15	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	1	08/12/19 11:28	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	5.7	1.0	mg/l	1	08/09/19 18:39	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> WA-7M		<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-12		<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.12  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	4.5	3.4	mg/l	1	08/01/19 21:30	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:37	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:16	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:16	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.38	0.20	mg/l	1	08/12/19 11:29	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	40.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	6.8	1.0	mg/l	1	08/09/19 19:35	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7D	<b>Date Sampled:</b> 07/31/19
<b>Lab Sample ID:</b> JC92496-13	<b>Date Received:</b> 07/31/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/06/19 16:24	MS	SM2320 B-11
BOD, 5 Day	19.0	3.4	mg/l	1	08/01/19 21:33	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/07/19 15:41	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/08/19 16:20	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/08/19 16:20	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/31/19 23:20	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.46	0.20	mg/l	1	08/12/19 11:32	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	55.0	10	mg/l	1	08/05/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/06/19 09:44	RC	SM2540 D-11
Total Organic Carbon	7.0	1.0	mg/l	1	08/09/19 19:46	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





## SGS Sample Receipt Summary

**Job Number:** JC92496

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/31/2019 6:45:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.8); Cooler 3: (3.8); Cooler 4: (3.8); Cooler 5: (3.7); Cooler 6: (3.9); Cooler 7: (3.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.7); Cooler 3: (3.7); Cooler 4: (3.7); Cooler 5: (3.6); Cooler 6: (3.8); Cooler 7: (3.7);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 7                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC92496: Chain of Custody**

**Page 3 of 3**

5.1  
5

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

F.E. Water

SGS Job Number: JC92496X

Sampling Date: 07/31/19

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**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>4</b>
<b>Section 3: Misc. Forms</b> .....	<b>14</b>
<b>3.1: Chain of Custody</b> .....	<b>15</b>





## Sample Summary

USACE-Philadelphia District

**Job No:** JC92496X

Philadelphia District, Reservoir Sampling  
 Project No: F.E. Water

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC92496-1X	07/31/19	07:00 GW	07/31/19	AQ	Surface Water	WA-1S
JC92496-2X	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2S
JC92496-5X	07/31/19	10:35 GW	07/31/19	AQ	Surface Water	WA-3S
JC92496-6X	07/31/19	10:15 GW	07/31/19	AQ	Surface Water	WA-4S
JC92496-7X	07/31/19	10:00 GW	07/31/19	AQ	Surface Water	WA-5S
JC92496-8X	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6S
JC92496-11X	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7S

Subcontract Lab Data

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Report of Analysis

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Serialized: 08/21/2019 08:50am QC35

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:

SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**

**W09769 USACE**

**LABORATORY REPORT NUMBER:**

**L7147730**



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

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:** PI  
**PWSID No:**

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7147730-1	WA-1S	07/31/19 05:00pm	1.0 C	Y	07/31/19 07:00am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-1S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	9 Q		cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7147730-2	WA-2S	07/31/19 05:00pm	1.0 C	Y	07/31/19 07:45am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-2S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

PIN: 28748

Serial Number: 6538344

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b> L7147730-3	<b>Sample Description</b> WA-3S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 10:35am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-3S**

Total Coliform, MF	>2000 Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM	LK
Fecal Coliform, MF	28 Q	cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM	LK

<b>Sample ID</b> L7147730-4	<b>Sample Description</b> WA-4S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 10:15am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-4S**

Total Coliform, MF	>2000 Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM	LK
Fecal Coliform, MF	68 E, Q	cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM	LK

<b>Sample ID</b> L7147730-5	<b>Sample Description</b> WA-5S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 10:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-5S**

Total Coliform, MF	>2000 Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM	LK
Fecal Coliform, MF	16 Q	cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM	LK

<b>Sample ID</b> L7147730-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 09:05am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

Serial Number: 6538344

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b> L7147730-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 09:05am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-6S**

Total Coliform, MF	>2000 Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	<1 Q	cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

<b>Sample ID</b> L7147730-7	<b>Sample Description</b> WA-7S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 09:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-7S**

Total Coliform, MF	>2000 Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	<1 Q	cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

<b>Sample ID</b> L7147730-8	<b>Sample Description</b> PR-1S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 12:05pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-1S**

Total Coliform, MF	>2000 Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
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<b>Sample ID</b> L7147730-9	<b>Sample Description</b> PR-2S	<b>Received Date/Time/Temp</b> 07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/31/19 01:00pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-2S**

Total Coliform, MF	880 E, Q	cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	<1 Q	cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

PIN: 28748

Serial Number: 6538344

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

Sample ID	Sample Description		Samp. Date/Time/Temp	Sampled by
L7147730-10	PR-3S		07/31/19 12:45pm NA C	Customer
	<b>Received Date/Time/Temp</b>	07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b>	Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-3S**

Total Coliform, MF	780		cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	<1		cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

Sample ID	Sample Description		Samp. Date/Time/Temp	Sampled by
L7147730-11	PR-4S		07/31/19 11:45am NA C	Customer
	<b>Received Date/Time/Temp</b>	07/31/19 05:00pm 1.0 C	<b>Iced (Y/N):</b>	Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-4S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	07/31/19 08:15PM LK
Fecal Coliform, MF	12 Q		cfu/100ml	SM 9222D	100	1	07/31/19 07:25PM LK

**Sample Comments | Result Qualifiers:**

L7147730-1 :

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.

L7147730-2 :

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.

L7147730-3 :

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.

L7147730-4 :

PIN: 28748

Serial Number: 6538344

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 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.

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.

L7147730-5 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: Fecal coliform, SM 9222D, result was compromised due to water from the water bath used for incubation leaking into the plastic bag containing the sample plate. 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.

L7147730-6 :

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.

L7147730-7 :

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.

L7147730-8 :

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.

L7147730-9 :

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: Fecal coliform, SM 9222D, result was compromised due to water from the water bath used for incubation leaking into the plastic bag containing the sample plate. 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.

L7147730-10 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available,

PIN: 28748

Serial Number: 6538344



**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

the reported result may not be acceptable for regulatory purposes.

L7147730-11 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: Fecal coliform, SM 9222D, result was compromised due to water from the water bath used for incubation leaking into the plastic bag containing the sample plate. 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: 6538344

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	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
DF	Dilution Factor (For Microbiology, DF = volume of 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
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not 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
T	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	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





## SGS Sample Receipt Summary

**Job Number:** JC92496

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/31/2019 6:45:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.8); Cooler 3: (3.8); Cooler 4: (3.8); Cooler 5: (3.7); Cooler 6: (3.9); Cooler 7: (3.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.7); Cooler 3: (3.7); Cooler 4: (3.7); Cooler 5: (3.6); Cooler 6: (3.8); Cooler 7: (3.7);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	7	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

**JC92496X: Chain of Custody**

**Page 3 of 3**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

F.E. Water

SGS Job Number: JC92496XA

Sampling Date: 07/31/19

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: **20**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.



# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>5</b>
<b>Section 3: Misc. Forms</b> .....	<b>17</b>
<b>3.1: Chain of Custody</b> .....	<b>18</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC92496XA

Philadelphia District, Reservoir Sampling  
 Project No: F.E. Water

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC92496-1F	07/31/19	07:00 GW	07/31/19	AQ	Surface H2O Filtered	WA-1S
JC92496-1XA	07/31/19	07:00 GW	07/31/19	AQ	Surface Water	WA-1S
JC92496-2F	07/31/19	07:45 GW	07/31/19	AQ	Surface H2O Filtered	WA-2S
JC92496-2XA	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2S
JC92496-3F	07/31/19	07:45 GW	07/31/19	AQ	Surface H2O Filtered	WA-2M
JC92496-3XA	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2M
JC92496-4F	07/31/19	07:45 GW	07/31/19	AQ	Surface H2O Filtered	WA-2D
JC92496-4XA	07/31/19	07:45 GW	07/31/19	AQ	Surface Water	WA-2D
JC92496-5F	07/31/19	10:35 GW	07/31/19	AQ	Surface H2O Filtered	WA-3S
JC92496-5XA	07/31/19	10:35 GW	07/31/19	AQ	Surface Water	WA-3S
JC92496-6F	07/31/19	10:15 GW	07/31/19	AQ	Surface H2O Filtered	WA-4S
JC92496-6XA	07/31/19	10:15 GW	07/31/19	AQ	Surface Water	WA-4S
JC92496-7F	07/31/19	10:00 GW	07/31/19	AQ	Surface H2O Filtered	WA-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC92496XA

Philadelphia District, Reservoir Sampling  
Project No: F.E. Water

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC92496-7XA	07/31/19	10:00 GW	07/31/19	AQ	Surface Water	WA-5S
JC92496-8F	07/31/19	09:05 GW	07/31/19	AQ	Surface H2O Filtered	WA-6S
JC92496-8XA	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6S
JC92496-9F	07/31/19	09:05 GW	07/31/19	AQ	Surface H2O Filtered	WA-6M
JC92496-9XA	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6M
JC92496-10F	07/31/19	09:05 GW	07/31/19	AQ	Surface H2O Filtered	WA-6D
JC92496-10XA	07/31/19	09:05 GW	07/31/19	AQ	Surface Water	WA-6D
JC92496-11F	07/31/19	09:00 GW	07/31/19	AQ	Surface H2O Filtered	WA-7S
JC92496-11XA	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7S
JC92496-12F	07/31/19	09:00 GW	07/31/19	AQ	Surface H2O Filtered	WA-7M
JC92496-12XA	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7M
JC92496-13F	07/31/19	09:00 GW	07/31/19	AQ	Surface H2O Filtered	WA-7D
JC92496-13XA	07/31/19	09:00 GW	07/31/19	AQ	Surface Water	WA-7D

Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**

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

# Certificate of Analysis

2

**Laboratory No.:** 9027530  
**Report:** 08/09/19  
**Lab Contact:** Amy L. Morriss

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

**Project:** Army Corp Reservoirs

**Lab ID:** 9027530-01    **Collected By:** Client    **Sampled:** 07/31/19 07:00    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027530-02    **Collected By:** Client    **Sampled:** 07/31/19 07:45    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027530-03    **Collected By:** Client    **Sampled:** 07/31/19 07:45    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-2M    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL



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2

**Lab ID:** 9027530-04    **Collected By:** Client    **Sampled:** 07/31/19 07:45    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-2D    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL

**Lab ID:** 9027530-05    **Collected By:** Client    **Sampled:** 07/31/19 10:35    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-3S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL

**Lab ID:** 9027530-06    **Collected By:** Client    **Sampled:** 07/31/19 10:15    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-4S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	0.02	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL

**Lab ID:** 9027530-07    **Collected By:** Client    **Sampled:** 07/31/19 10:00    **Received:** 08/07/19 09:50  
**Sample Desc:** WA-5S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL



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2

**Lab ID:** 9027530-08      **Collected By:** Client      **Sampled:** 07/31/19 09:05      **Received:** 08/07/19 09:50  
**Sample Desc:** WA-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027530-09      **Collected By:** Client      **Sampled:** 07/31/19 09:05      **Received:** 08/07/19 09:50  
**Sample Desc:** WA-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027530-10      **Collected By:** Client      **Sampled:** 07/31/19 09:05      **Received:** 08/07/19 09:50  
**Sample Desc:** WA-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027530-11      **Collected By:** Client      **Sampled:** 07/31/19 09:00      **Received:** 08/07/19 09:50  
**Sample Desc:** WA-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9027530-12      **Collected By:** Client      **Sampled:** 07/31/19 09:00      **Received:** 08/07/19 09:50  
**Sample Desc:** WA-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL

**Lab ID:** 9027530-13      **Collected By:** Client      **Sampled:** 07/31/19 09:00      **Received:** 08/07/19 09:50  
**Sample Desc:** WA-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	0.02	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
<b>Batch B9H0439</b>								
<b>MB (B9H0439-BLK1)</b> Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9H0439-BLK2)</b> Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9H0439-BS1)</b> Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			
<b>LFM (B9H0439-MS1)</b> Source: 9027530-03 Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Total	1.00	0.05	mg/l	100	80-120			
<b>LFMD (B9H0439-MSD1)</b> Source: 9027530-03 Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120	1.48	20	

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H0442</b>								
<b>MB (B9H0442-BLK1)</b> Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9H0442-BS1)</b> Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Dissolved	1.03	0.05	mg/l	103	80-120			G-11
<b>LFM (B9H0442-MS1)</b> Source: 9027530-08 Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	98.6	80-120			
<b>LFMD (B9H0442-MSD1)</b> Source: 9027530-08 Prepared & Analyzed: 08/08/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.1	80-120	0.500	20	



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9027530-01</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-02</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-03</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-04</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-05</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-06</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-07</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-08</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-09</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-10</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-11</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-12</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027530-13</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL



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M.J. Reider Associates, Inc.

**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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2

### 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:



Amy L Morriss  
Project Manager



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## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody







CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FEDEX Tracking #
Subs Order Control #
SGS Order #
SGS Job # JC92496

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and Signature/Date fields.

31
3

CIP 3.738 3.8 38 38 3.7 39

JC92496XA: Chain of Custody

Page 2 of 3



## SGS Sample Receipt Summary

**Job Number:** JC92496

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/31/2019 6:45:00 PM

**Delivery Method:**

**Airbill #s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.8); Cooler 3: (3.8); Cooler 4: (3.8); Cooler 5: (3.7); Cooler 6: (3.9); Cooler 7: (3.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.7); Cooler 3: (3.7); Cooler 4: (3.7); Cooler 5: (3.6); Cooler 6: (3.8); Cooler 7: (3.7);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	7	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify)

Comments

SM089-03  
Rev. Date 12/7/17

**JC92496XA: Chain of Custody**

**Page 3 of 3**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93662

Sampling Date: 08/21/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **30**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary</b> .....	<b>4</b>
<b>Section 3: Summary of Hits</b> .....	<b>8</b>
<b>Section 4: Sample Results</b> .....	<b>11</b>
<b>4.1:</b> JC93662-1: WA-1S .....	12
<b>4.2:</b> JC93662-2: WA-2S .....	13
<b>4.3:</b> JC93662-3: WA-2M .....	14
<b>4.4:</b> JC93662-4: WA-2D .....	15
<b>4.5:</b> JC93662-5: WA-3S .....	16
<b>4.6:</b> JC93662-6: WA-4S .....	17
<b>4.7:</b> JC93662-7: WA-5S .....	18
<b>4.8:</b> JC93662-8: WA-6S .....	19
<b>4.9:</b> JC93662-9: WA-6M .....	20
<b>4.10:</b> JC93662-10: WA-6D .....	21
<b>4.11:</b> JC93662-11: WA-7S .....	22
<b>4.12:</b> JC93662-12: WA-7M .....	23
<b>4.13:</b> JC93662-13: WA-7D .....	24
<b>Section 5: Misc. Forms</b> .....	<b>25</b>
<b>5.1:</b> Chain of Custody .....	26

1

2

3

4

5



## Sample Summary

USACE-Philadelphia District

**Job No:** JC93662

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93662-1	08/21/19	09:10 GW	08/21/19	AQ	Surface Water	WA-1S
JC93662-2	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2S
JC93662-3	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2M
JC93662-4	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2D
JC93662-5	08/21/19	09:25 GW	08/21/19	AQ	Surface Water	WA-3S
JC93662-6	08/21/19	09:50 GW	08/21/19	AQ	Surface Water	WA-4S
JC93662-7	08/21/19	10:15 GW	08/21/19	AQ	Surface Water	WA-5S
JC93662-8	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6S
JC93662-9	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6M
JC93662-10	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6D
JC93662-11	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7S
JC93662-12	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7M
JC93662-13	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

2

**Client:** USACE-Philadelphia District

**Job No** JC93662

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 9/4/2019 9:17:23 AM

On 08/21/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC93662 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:** GP23297

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93662-1DUP, JC93662-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP23383

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93941-1DUP, JC93662-1MS 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:** R180675

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180676

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180677

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180678

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180679

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180680

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180681

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180682

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180683

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180684

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180685

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180686

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180687

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93662-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)



## General Chemistry By Method SM2320 B-11

**Matrix:** AQ**Batch ID:** GN99326

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93689-4DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC93662-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93662-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ**Batch ID:** GN99132

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93662-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ**Batch ID:** GN99131

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93662-1DUP, JC93662-2DUP were used as the QC samples for Solids, Total Suspended.
- JC93662-2 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.
- JC93662-1 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ**Batch ID:** GP23373

- 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, JC93689-4MSD were used as the QC samples for Nitrogen, Ammonia.

## General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ

**Batch ID:** GN98981

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93662-1DUP, JC93662-1MS were used as the QC samples for Nitrogen, Nitrite.

## General Chemistry By Method SM5210 B-11

**Matrix:** AQ

**Batch ID:** GP23197

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93662-1DUP were used as the QC samples for BOD, 5 Day.
- JC93662-3 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-4 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-1 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-8 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-2 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-11 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-5 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-13 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-12 for BOD, 5 Day: DO depletion was less than 2.
- JC93662-7 for BOD, 5 Day: DO depletion was less than 2.

## General Chemistry By Method SM5310 B-11

**Matrix:** AQ

**Batch ID:** GP23346

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93662-1MS, JC93662-1MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ

**Batch ID:** GP23405

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-11MS, JC93663-11MSD 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

## Summary of Hits

**Job Number:** JC93662  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/21/19



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
<b>JC93662-1</b>		<b>WA-1S</b>				
		BOD, 5 Day <sup>a</sup>	1.7	1.0	mg/l	SM5210 B-11
		Nitrogen, Nitrate <sup>b</sup>	0.12	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.12	0.10	mg/l	EPA 353.2/LACHAT
		Nitrogen, Total Kjeldahl	0.37	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	49.0	10	mg/l	SM2540 C-11
		Solids, Total Suspended <sup>c</sup>	4.2	4.0	mg/l	SM2540 D-11
		Total Organic Carbon	5.6	1.0	mg/l	SM5310 B-11
<b>JC93662-2</b>		<b>WA-2S</b>				
		BOD, 5 Day <sup>a</sup>	1.3	1.0	mg/l	SM5210 B-11
		Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	43.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	5.2	1.0	mg/l	SM5310 B-11
<b>JC93662-3</b>		<b>WA-2M</b>				
		BOD, 5 Day <sup>a</sup>	1.3	1.0	mg/l	SM5210 B-11
		Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	43.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	5.0	1.0	mg/l	SM5310 B-11
<b>JC93662-4</b>		<b>WA-2D</b>				
		BOD, 5 Day <sup>a</sup>	1.1	1.0	mg/l	SM5210 B-11
		Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	60.0	10	mg/l	SM2540 C-11
		Solids, Total Suspended	20.5	4.0	mg/l	SM2540 D-11
		Total Organic Carbon	5.3	1.0	mg/l	SM5310 B-11
<b>JC93662-5</b>		<b>WA-3S</b>				
		BOD, 5 Day <sup>a</sup>	1.5	1.0	mg/l	SM5210 B-11
		Nitrogen, Nitrate <sup>b</sup>	0.15	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.15	0.10	mg/l	EPA 353.2/LACHAT
		Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	62.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	5.3	1.0	mg/l	SM5310 B-11
<b>JC93662-6</b>		<b>WA-4S</b>				
		BOD, 5 Day	3.0	1.0	mg/l	SM5210 B-11
		Nitrogen, Nitrate <sup>b</sup>	0.35	0.11	mg/l	EPA353.2/SM4500NO2B

## Summary of Hits

**Job Number:** JC93662  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/21/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
		Nitrogen, Nitrate + Nitrite	0.35	0.10		mg/l EPA 353.2/LACHAT
		Nitrogen, Total Kjeldahl	0.29	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	43.0	10		mg/l SM2540 C-11
		Total Organic Carbon	4.7	1.0		mg/l SM5310 B-11
<b>JC93662-7 WA-5S</b>						
		BOD, 5 Day <sup>a</sup>	1.0	1.0		mg/l SM5210 B-11
		Nitrogen, Total Kjeldahl	0.31	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	43.0	10		mg/l SM2540 C-11
		Total Organic Carbon	5.7	1.0		mg/l SM5310 B-11
<b>JC93662-8 WA-6S</b>						
		BOD, 5 Day <sup>a</sup>	1.5	1.0		mg/l SM5210 B-11
		Nitrogen, Total Kjeldahl	0.29	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	37.0	10		mg/l SM2540 C-11
		Total Organic Carbon	5.0	1.0		mg/l SM5310 B-11
<b>JC93662-9 WA-6M</b>						
		Nitrogen, Total Kjeldahl	0.27	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	39.0	10		mg/l SM2540 C-11
		Total Organic Carbon	5.2	1.0		mg/l SM5310 B-11
<b>JC93662-10 WA-6D</b>						
		Nitrogen, Total Kjeldahl	0.28	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	41.0	10		mg/l SM2540 C-11
		Solids, Total Suspended	12.0	4.0		mg/l SM2540 D-11
		Total Organic Carbon	5.1	1.0		mg/l SM5310 B-11
<b>JC93662-11 WA-7S</b>						
		BOD, 5 Day <sup>a</sup>	1.2	1.0		mg/l SM5210 B-11
		Nitrogen, Total Kjeldahl	0.27	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	32.0	10		mg/l SM2540 C-11
		Total Organic Carbon	4.5	1.0		mg/l SM5310 B-11
<b>JC93662-12 WA-7M</b>						
		BOD, 5 Day <sup>a</sup>	1.8	1.0		mg/l SM5210 B-11
		Nitrogen, Total Kjeldahl	0.26	0.20		mg/l EPA 351.2/LACHAT
		Solids, Total Dissolved	45.0	10		mg/l SM2540 C-11
		Total Organic Carbon	4.8	1.0		mg/l SM5310 B-11

## Summary of Hits

**Job Number:** JC93662  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/21/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC93662-13      WA-7D**

BOD, 5 Day <sup>a</sup>	1.1	1.0		mg/l	SM5210 B-11
Nitrogen, Total Kjeldahl	0.25	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	61.0	10		mg/l	SM2540 C-11
Solids, Total Suspended	30.6	4.0		mg/l	SM2540 D-11
Total Organic Carbon	5.1	1.0		mg/l	SM5310 B-11

(a) DO depletion was less than 2.

(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 due to limited volume.

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> WA-1S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-1		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	08/29/19 14:39	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.7	1.0	mg/l	1	08/22/19 19:40	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:13	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.12	0.11	mg/l	1	08/30/19 16:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.12	0.10	mg/l	1	08/30/19 16:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.37	0.20	mg/l	1	08/28/19 11:56	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended <sup>d</sup>	4.2	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.6	1.0	mg/l	1	08/30/19 18:27	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

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

(d) Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-2S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-2		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	08/29/19 14:39	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.3	1.0	mg/l	1	08/22/19 19:44	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:14	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:34	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:34	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	08/28/19 11:57	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended <sup>d</sup>	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.2	1.0	mg/l	1	08/30/19 19:01	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

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

(d) Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.

RL = Reporting Limit

4.2  
4



## Report of Analysis

<b>Client Sample ID:</b> WA-2M		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-3		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 14:39	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.3	1.0	mg/l	1	08/22/19 19:46	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:15	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:35	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:35	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	08/28/19 11:58	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.0	1.0	mg/l	1	08/30/19 19:12	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-2D	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-4	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 14:39	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.1	1.0	mg/l	1	08/22/19 19:48	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:17	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	1	08/28/19 12:00	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	60.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	20.5	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.3	1.0	mg/l	1	08/30/19 19:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-3S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-5	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 14:39	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.5	1.0	mg/l	1	08/22/19 19:50	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:18	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.15	0.11	mg/l	1	08/30/19 16:37	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.15	0.10	mg/l	1	08/30/19 16:37	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	1	08/28/19 12:01	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	62.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.3	1.0	mg/l	1	08/30/19 19:34	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-4S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-6	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day	3.0	1.0	mg/l	1	08/22/19 19:52	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:20	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.35	0.11	mg/l	1	08/30/19 16:39	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.35	0.10	mg/l	1	08/30/19 16:39	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	08/28/19 12:02	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	4.7	1.0	mg/l	1	08/30/19 20:08	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-5S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-7		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.0	1.0	mg/l	1	08/22/19 19:54	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:21	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:40	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:40	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	08/28/19 12:03	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.7	1.0	mg/l	1	08/30/19 20:19	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-8		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.5	1.0	mg/l	1	08/22/19 19:56	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:23	KI	SM4500NH3 H-11/LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:41	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:41	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	08/28/19 12:04	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	37.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.0	1.0	mg/l	1	08/30/19 20:30	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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RL = Reporting Limit

4.8  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6M <b>Lab Sample ID:</b> JC93662-9 <b>Matrix:</b> AQ - Surface Water <b>Project:</b> Philadelphia District, Reservoir Sampling	<b>Date Sampled:</b> 08/21/19 <b>Date Received:</b> 08/21/19 <b>Percent Solids:</b> n/a
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### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 19:58	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:24	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:44	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:44	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.27	0.20	mg/l	1	08/28/19 12:05	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.2	1.0	mg/l	1	08/30/19 20:41	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

4.9  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6D		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-10		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.10  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 20:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:26	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:45	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:45	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	1	08/28/19 12:06	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	41.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	12.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.1	1.0	mg/l	1	08/30/19 20:52	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> WA-7S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-11		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.2	1.0	mg/l	1	08/22/19 20:02	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:31	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.27	0.20	mg/l	1	08/28/19 12:06	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	32.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	4.5	1.0	mg/l	1	09/03/19 14:45	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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RL = Reporting Limit

4.11  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-7M		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-12		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.12  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.8	1.0	mg/l	1	08/22/19 20:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:33	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.26	0.20	mg/l	1	08/28/19 12:07	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	4.8	1.0	mg/l	1	09/03/19 14:56	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7D		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93662-13		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/29/19 15:29	SJG	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.1	1.0	mg/l	1	08/22/19 20:04	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/30/19 16:34	KI	SM4500NH3 H-11/LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	08/30/19 16:51	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	08/30/19 16:51	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/22/19 00:02	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.25	0.20	mg/l	1	08/28/19 12:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	61.0	10	mg/l	1	08/26/19 15:24	RC	SM2540 C-11
Solids, Total Suspended	30.6	4.0	mg/l	1	08/26/19 09:42	RC	SM2540 D-11
Total Organic Carbon	5.1	1.0	mg/l	1	09/03/19 15:07	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.13  
4

Misc. Forms

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsusa

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq East</b> City: <b>Phila</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: _____ Billing Information (if different from Report to): Company Name: _____ Project #: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Client Purchase Order #: _____ Project Manager: <b>Tommy McCluskey</b> Attention: _____		FedEx Tracking # _____ SGS Order # _____ SGS Job # <b>JC93662</b>	
<b>Requested Analysis</b> Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment CI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solids WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		TPO4 (sub to MS Resider) Alkalinity - Ammonia BOD TDS, TKN TOC TSS, XMO30		LAB USE ONLY h6 C30T4 19JZ	
<b>Turn Around Time (Business Days)</b> <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other _____ <small>All data available on Lab2</small>		<b>Deliverable</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier 1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ OKQP <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA NCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> DDD-QSAS		<b>Comments / Special Instructions</b> TCF/FCF Samples to Eurofins lab TPO4 samples to MS Resider lab	
Approved By (SGS Pat): / Date: _____ Approval needed for 1-3 Business Day TAT		Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data Sample Custody must be documented below each time samples change possession, including courier delivery.		Date / Time: 8/21/19 3:25 Received By: J. Shah	
Relinquished by: 1 Date / Time: 8/21/19 3:25 Received By: J. Shah		Relinquished by: 2 Date / Time: 8/21/19 Received By: J. Shah		Relinquished by: 3 Date / Time: _____ Received By: _____	
Relinquished by: 4 Date / Time: _____ Received By: _____		Relinquished by: 5 Date / Time: _____ Received By: _____		Relinquished by: _____ Date / Time: _____ Received By: _____	

5.1  
5

3.5C-P  
3.7C-P 3.2C-P 3.6C-P  
3.6C-P 3.5C-P 3.3C-P





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusaa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job # JC93662

Client / Reporting Information, Project Information, Billing Information, Matrix Codes, Collection table with columns for Date, Time, Matrix, # of bottles, and various parameters (HCl, HCO3, HNO3, H2SO4, NH4, DI Water, MEQ/L, ENDORE). Includes Turn Around Time and Deliverable sections.

5.1
5





## SGS Sample Receipt Summary

**Job Number:** JC93662

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/21/2019 6:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.6); Cooler 3: (2.9); Cooler 4: (3.2); Cooler 5: (3.5); Cooler 6: (3.5); Cooler 7: (3.6); Cooler 8: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (2.8); Cooler 4: (3.1); Cooler 5: (3.4); Cooler 6: (3.4); Cooler 7: (3.5); Cooler 8: (3.5);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. SmpI Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 8                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC93662: Chain of Custody**

Page 4 of 5

5.1  
5



**JC93662: Chain of Custody**  
**Page 5 of 5**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93662X

Sampling Date: 08/21/19

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**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>4</b>
<b>Section 3: Misc. Forms</b> .....	<b>12</b>
<b>3.1: Chain of Custody</b> .....	<b>13</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC93662X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93662-1X	08/21/19	09:10 GW	08/21/19	AQ	Surface Water	WA-1S
JC93662-2X	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2S
JC93662-5X	08/21/19	09:25 GW	08/21/19	AQ	Surface Water	WA-3S
JC93662-6X	08/21/19	09:50 GW	08/21/19	AQ	Surface Water	WA-4S
JC93662-7X	08/21/19	10:15 GW	08/21/19	AQ	Surface Water	WA-5S
JC93662-8X	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6S
JC93662-11X	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7S

Subcontract Lab Data

---

Report of Analysis

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Serialized: 09/05/2019 06:07pm QC35

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**  
**W09769 USACE**

**LABORATORY REPORT NUMBER:**  
**L7156477**



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

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:** 1990907 PI  
**PWSID No:**

Sample ID	Sample Description	Samp. Date/Time/Temp	Sampled by
L7156477-1	WA-1S	08/21/19 09:10am NA C	Customer
<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C		<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-1S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	32 Q		cfu/100ml	SM 9222D	100	1	08/21/19 07:17PM KC2

Sample ID	Sample Description	Samp. Date/Time/Temp	Sampled by
L7156477-2	WA-2S	08/21/19 07:10am NA C	Customer
<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C		<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-2S</b>							
Total Coliform, MF	960 E, Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	08/21/19 07:17PM KC2

PIN: 28748

Serial Number: 6542362

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990907 PI  
**PWSID No:**

<b>Sample ID</b> L7156477-3	<b>Sample Description</b> WA-3S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 09:25am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-3S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	38 Q		cfu/100ml	SM 9222D	100	1	08/21/19 07:17PM KC2

<b>Sample ID</b> L7156477-4	<b>Sample Description</b> WA-4S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 09:50am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-4S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	50 Q		cfu/100ml	SM 9222D	100	1	08/21/19 07:17PM KC2

<b>Sample ID</b> L7156477-5	<b>Sample Description</b> WA-5S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 10:15am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-5S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	18 Q		cfu/100ml	SM 9222D	100	1	08/21/19 07:17PM KC2

<b>Sample ID</b> L7156477-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 07:40am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

PIN: 28748

Serial Number: 6542362



**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990907 PI  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7156477-6	WA-6S	08/21/19 07:40am NA C	Customer
	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-6S</b>							
Total Coliform, MF	850 E, Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	08/21/19 07:17PM KC2

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7156477-7	WA-7S	08/21/19 08:15am NA C	Customer
	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-7S</b>							
Total Coliform, MF	1080 E, Q		cfu/100ml	SM 9222B	10	10	08/21/19 06:31PM JG2
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

**Sample Comments | Result Qualifiers:**

L7156477-1 :

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.

L7156477-2 :

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.

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.

L7156477-3 :

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.

PIN: 28748

Serial Number: 6542362

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990907 PI  
**PWSID No:**

L7156477-4 :

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.

L7156477-5 :

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.

L7156477-6 :

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.

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.

L7156477-7 :

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.

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: 6542362

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	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
DF	Dilution Factor (For Microbiology, DF = volume of 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
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not 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
T	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	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		



## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsusa

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq East</b> City: <b>Phila</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: _____ Billing Information (if different from Report to): Company Name: _____ Project #: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Client Purchase Order #: _____ Project Manager: <b>Tommy McCloskey</b> Attention: _____		FedEx Tracking # _____ SGS Order # _____ SGS Job # <b>JC93662</b>	
<b>Requested Analysis</b> Matrix Codes: DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SS - Sludge SED - Sediment CI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solids WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		TPO4 (sub to MTS Reider) Alkalinity - Ammonia BOD TDS, TKN TOC TSS, XMO30		LAB USE ONLY n6 C30T4 19JZ	
<b>Turn Around Time (Business Days)</b> <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other _____ <small>All data available to Lab?</small>		<b>Deliverable</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier 1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ OKQP <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA NCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> DDD-QSAS		<b>Comments / Special Instructions</b> TCF/FCF Samples to Eurofins lab TPO4 samples to MTS Reider lab	
Approved By (SGS Pat): / Date: _____ Approval needed for 1-3 Business Day TAT		Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data Sample Custody must be documented below each time samples change possession, including courier delivery.		Date / Time: 8/21/19 3:25 Received By: J. Shah	
Relinquished by: 1 Date / Time: 8/21/19 3:25 Received By: J. Shah		Relinquished by: 2 Date / Time: 8/21/19 Received By: J. Shah		Relinquished by: 3 Date / Time: _____ Received By: _____	
Relinquished by: 4 Date / Time: _____ Received By: _____		Relinquished by: 5 Date / Time: _____ Received By: _____		Relinquished by: _____ Date / Time: _____ Received By: _____	

3.5C-P 3.5C-P 3.5C-P  
 3.7C-P 3.2C-P 3.6C-P  
 3.6C-P 3.5C-P 3.3C-P

## JC93662X: Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusaa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job #

JC93662

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, Lab Use Only, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and Custody Seal.

31
3

JC93662X: Chain of Custody

Page 2 of 5





CHAIN OF CUSTODY

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www.sgs.com/ehsusa

FED-EX Tracking #
Bottle Order Control #
SGS Quote #
SGS Job # JC93662

Client / Reporting Information
Company Name: USACE - Phila. District
Project Name: USACE Reservoirs - F.E. Walter / P...
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Loeper
Phone #: 215-654-6545
Sample(s) Name(s): Greg Wasik 597-9780
Project Manager: Tammy McCluskey

Table with columns: SRS Sample #, Field ID / Point of Collection, MECH/ID/Vol #, Date, Time, Season, Grab (or Comp) ID, Matrix, # of bottles, and various analysis codes (PCE, NH3, HPO4, etc.). Rows include WA-1S through WA-7S.

Turn Around Time (Business Days)
Approved By (SGS PM): / Date:
Deliverable
Comments / Special Instructions: Samples to Eurofin Lab

Requisitioned by: [Signature] Date / Time: 8/21/19 3:25
Received By: J. Shah Date / Time: 8/21/19 17:02
Requisitioned by: [Signature] Date / Time: 8/21/19
Received By: [Signature] Date / Time: 8/21/19 17:02

5.4\* TAB 1ced ESC



## SGS Sample Receipt Summary

**Job Number:** JC93662

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/21/2019 6:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.6); Cooler 3: (2.9); Cooler 4: (3.2); Cooler 5: (3.5); Cooler 6: (3.5); Cooler 7: (3.6); Cooler 8: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (2.8); Cooler 4: (3.1); Cooler 5: (3.4); Cooler 6: (3.4); Cooler 7: (3.5); Cooler 8: (3.5);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. SmpI Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 8                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: <u>229517</u>	pH 12+: <u>208717</u>	Other: (Specify) _____
--------------------	------------------------	-----------------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC93662X: Chain of Custody**

Page 4 of 5

**JC93662X: Chain of Custody**  
**Page 5 of 5**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93662XA

Sampling Date: 08/21/19

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: **25**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>5</b>
<b>Section 3: Misc. Forms</b> .....	<b>20</b>
<b>3.1: Chain of Custody</b> .....	<b>21</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC93662XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC93662-1F	08/21/19	09:10 GW	08/21/19	AQ	Surface H2O Filtered	WA-1S
JC93662-1XA	08/21/19	09:10 GW	08/21/19	AQ	Surface Water	WA-1S
JC93662-2F	08/21/19	07:10 GW	08/21/19	AQ	Surface H2O Filtered	WA-2S
JC93662-2XA	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2S
JC93662-3F	08/21/19	07:10 GW	08/21/19	AQ	Surface H2O Filtered	WA-2M
JC93662-3XA	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2M
JC93662-4F	08/21/19	07:10 GW	08/21/19	AQ	Surface H2O Filtered	WA-2D
JC93662-4XA	08/21/19	07:10 GW	08/21/19	AQ	Surface Water	WA-2D
JC93662-5F	08/21/19	09:25 GW	08/21/19	AQ	Surface H2O Filtered	WA-3S
JC93662-5XA	08/21/19	09:25 GW	08/21/19	AQ	Surface Water	WA-3S
JC93662-6F	08/21/19	09:50 GW	08/21/19	AQ	Surface H2O Filtered	WA-4S
JC93662-6XA	08/21/19	09:50 GW	08/21/19	AQ	Surface Water	WA-4S
JC93662-7F	08/21/19	10:15 GW	08/21/19	AQ	Surface H2O Filtered	WA-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC93662XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93662-7XA	08/21/19	10:15 GW	08/21/19	AQ	Surface Water	WA-5S
JC93662-8F	08/21/19	07:40 GW	08/21/19	AQ	Surface H2O Filtered	WA-6S
JC93662-8XA	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6S
JC93662-9F	08/21/19	07:40 GW	08/21/19	AQ	Surface H2O Filtered	WA-6M
JC93662-9XA	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6M
JC93662-10F	08/21/19	07:40 GW	08/21/19	AQ	Surface H2O Filtered	WA-6D
JC93662-10XA	08/21/19	07:40 GW	08/21/19	AQ	Surface Water	WA-6D
JC93662-11F	08/21/19	08:15 GW	08/21/19	AQ	Surface H2O Filtered	WA-7S
JC93662-11XA	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7S
JC93662-12F	08/21/19	08:15 GW	08/21/19	AQ	Surface H2O Filtered	WA-7M
JC93662-12XA	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7M
JC93662-13F	08/21/19	08:15 GW	08/21/19	AQ	Surface H2O Filtered	WA-7D
JC93662-13XA	08/21/19	08:15 GW	08/21/19	AQ	Surface Water	WA-7D

Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**

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

# Certificate of Analysis

2

**Laboratory No.:** 9030188  
**Report:** 09/03/19  
**Lab Contact:** Amy L. Morriss

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

**Project:** Army Corp Reservoirs

**Lab ID:** 9030188-01    **Collected By:** Client    **Sampled:** 08/21/19 09:10    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL

**Lab ID:** 9030188-02    **Collected By:** Client    **Sampled:** 08/21/19 07:10    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/29/19	U	JCL

**Lab ID:** 9030188-03    **Collected By:** Client    **Sampled:** 08/21/19 07:10    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-2M    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11,J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL



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NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.  
Additional accreditations by CT (PH-0210), MD (261), NY(12094)





**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9030188-04     **Collected By:** Client     **Sampled:** 08/21/19 07:10     **Received:** 08/27/19 09:39  
**Sample Desc:** WA-2D     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.05	mg/l	0.01	0.05	SM 4500-P E	08/29/19		JCL

**Lab ID:** 9030188-05     **Collected By:** Client     **Sampled:** 08/21/19 09:25     **Received:** 08/27/19 09:39  
**Sample Desc:** WA-3S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.03	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL

**Lab ID:** 9030188-06     **Collected By:** Client     **Sampled:** 08/21/19 09:50     **Received:** 08/27/19 09:39  
**Sample Desc:** WA-4S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL

**Lab ID:** 9030188-07     **Collected By:** Client     **Sampled:** 08/21/19 10:15     **Received:** 08/27/19 09:39  
**Sample Desc:** WA-5S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL



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**M.J. Reider Associates, Inc.**

**2**

**Lab ID:** 9030188-08    **Collected By:** Client    **Sampled:** 08/21/19 07:40    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-6S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL

**Lab ID:** 9030188-09    **Collected By:** Client    **Sampled:** 08/21/19 07:40    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-6M    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/29/19	U	JCL

**Lab ID:** 9030188-10    **Collected By:** Client    **Sampled:** 08/21/19 07:40    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-6D    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/29/19	U	JCL

**Lab ID:** 9030188-11    **Collected By:** Client    **Sampled:** 08/21/19 08:15    **Received:** 08/27/19 09:39  
**Sample Desc:** WA-7S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/29/19	U	JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9030188-12      **Collected By:** Client      **Sampled:** 08/21/19 08:15      **Received:** 08/27/19 09:39  
**Sample Desc:** WA-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/29/19	U	JCL

**Lab ID:** 9030188-13      **Collected By:** Client      **Sampled:** 08/21/19 08:15      **Received:** 08/27/19 09:39  
**Sample Desc:** WA-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/29/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/29/19	J	JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H1705</b>								
<b>MB (B9H1705-BLK1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9H1705-BLK2)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9H1705-BLK3)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9H1705-BS1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			
<b>Batch B9H1743</b>								
<b>MB (B9H1743-BLK1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9H1743-BLK2)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9H1743-BS1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	1.00	0.05	mg/l	100	80-120			
<b>LFM (B9H1743-MS1)</b> Source: 9030188-11 Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	1.00	0.05	mg/l	99.8	80-120			
<b>LFMD (B9H1743-MSD1)</b> Source: 9030188-11 Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Total	0.99	0.05	mg/l	99.1	80-120	0.704	20	

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H1707</b>								
<b>MB (B9H1707-BLK1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9H1707-BS1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120			G-11
<b>LFM (B9H1707-MS1)</b> Source: 9030188-05 Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	99.8	80-120			
<b>LFMD (B9H1707-MSD1)</b> Source: 9030188-05 Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Dissolved	1.02	0.05	mg/l	100	80-120	0.394	20	
<b>Batch B9H1742</b>								
<b>MB (B9H1742-BLK1)</b> Prepared & Analyzed: 08/29/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U



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**Dissolved General Chemistry (Continued)**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H1742 (Continued)</b>								
<b>LFB (B9H1742-BS1)</b>								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120			G-11
				Prepared & Analyzed: 08/29/2019				
<b>LFM (B9H1742-MS1)</b>								
Phosphorus as P, Dissolved	0.99	0.05	mg/l	99.3	80-120			
				Prepared & Analyzed: 08/29/2019				
<b>LFMD (B9H1742-MSD1)</b>								
Phosphorus as P, Dissolved	0.99	0.05	mg/l	98.9	80-120	0.404	20	



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9030188-01</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-02</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-03</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-04</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-05</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-06</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-07</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-08</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-09</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-10</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-11</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-12</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL
<b>9030188-13</b>			
SM 4500-P E	SM 4500-P B	08/29/2019	JCL



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**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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**CHAIN OF CUSTODY**  
 SGS North America Inc. - Dayton  
 2235 Route 130, Dayton, NJ 08810  
 TEL: 732-329-0200 FAX: 732-329-3489/3480  
 www.sgs.com/eusa

9030188

Page 2 of 3

Client / Reporting Information		Project Information		Requested Analysis		Matrix Codes	
Company Name: Philadelphia District, Reservoir: Sampling		Project Name: Philadelphia District, Reservoir: Sampling		Requested Analysis: FILTERGN TP04		Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SOD - Sediment, OI - Oil, LIQ - Other Liquid, SOLID - Other Solid, AFR - Air, FLD - Field Blank, EB - Equipment Blank, RB - Rinsate Blank, TB - Trip Blank	
Street Address: [Blank]		Billing Information (if different from Report ID): [Blank]		Number of preserved bottles: [Blank]		LAB USE ONLY	
City: [Blank]	State: [Blank]	City: [Blank]	State: [Blank]	MECHID1	Matrix	Number of bottles	
Zip: [Blank]	Street Address: [Blank]	City: [Blank]	State: [Blank]	8/21/19	GW	AQ	2
Project Contact: [Blank]	Project #:	Client Purchase Order #:	Attention:	8/21/19	GW	AQ	2
Phone #:	Phone:	Project Manager:	Collection:	8/21/19	GW	AQ	2
Sample(s) Name(s):	Field ID / Point of Collection:	Date:	Time:	8/21/19	GW	AQ	2
7XA	WA-SS	8/21/19	10:15:00 AM	8/21/19	GW	AQ	2
7F	WA-SS	8/21/19	10:15:00 AM	8/21/19	GW	AQ	2
8XA	WA-SS	8/21/19	7:40:00 AM	8/21/19	GW	AQ	2
8F	WA-SS	8/21/19	7:40:00 AM	8/21/19	GW	AQ	2
9XA	WA-6M	8/21/19	7:40:00 AM	8/21/19	GW	AQ	2
9F	WA-6M	8/21/19	7:40:00 AM	8/21/19	GW	AQ	2
10XA	WA-6D	8/21/19	7:40:00 AM	8/21/19	GW	AQ	2
10F	WA-6D	8/21/19	7:40:00 AM	8/21/19	GW	AQ	2
11XA	WA-7S	8/21/19	8:15:00 AM	8/21/19	GW	AQ	2
11F	WA-7S	8/21/19	8:15:00 AM	8/21/19	GW	AQ	2
12XA	WA-7M	8/21/19	8:15:00 AM	8/21/19	GW	AQ	2
12F	WA-7M	8/21/19	8:15:00 AM	8/21/19	GW	AQ	2

VCU@1°C on ice  
 JBR  
 8/27/19



9030188

Date / Time: 8/26/2019 11:42:45 AM  
 CSR: TAMMY  
 Job #: JC93662XA  
 Client Project: Philadelphia District, Reservoir Sampling Project  
 Deliverable: REDT2  
 TAT: Due 9/4/2019

Date / Time: 8/26/2019 11:42:45 AM  
 CSR: TAMMY  
 Job #: JC93662XA  
 Client Project: Philadelphia District, Reservoir Sampling Project  
 Deliverable: REDT2  
 TAT: Due 9/4/2019

MJ Reider Associates Inc./ Env. Testing Laboratories  
 Address: 107 Angelica Street  
 City: Reading  
 State: PA  
 Zip: 19611  
 Contact: Sample Receiving / Rich Wheeler  
 Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC93662-1XA	WA-1S	TPO4		GW	8/21/2019	9:10:00 AM	
JC93662-1F	WA-1S	FILTERGN_TPO4		GW	8/21/2019	9:10:00 AM	
JC93662-2XA	WA-2S	TPO4		GW	8/21/2019	7:10:00 AM	
JC93662-2F	WA-2S	FILTERGN_TPO4		GW	8/21/2019	7:10:00 AM	
JC93662-3XA	WA-2M	TPO4		GW	8/21/2019	7:10:00 AM	
JC93662-3F	WA-2M	FILTERGN_TPO4		GW	8/21/2019	7:10:00 AM	
JC93662-4XA	WA-2D	TPO4		GW	8/21/2019	7:10:00 AM	
JC93662-4F	WA-2D	FILTERGN_TPO4		GW	8/21/2019	7:10:00 AM	
JC93662-5XA	WA-3S	TPO4		GW	8/21/2019	9:25:00 AM	
JC93662-5F	WA-3S	FILTERGN_TPO4		GW	8/21/2019	9:25:00 AM	
JC93662-6XA	WA-4S	TPO4		GW	8/21/2019	9:50:00 AM	
JC93662-6F	WA-4S	FILTERGN_TPO4		GW	8/21/2019	9:50:00 AM	
JC93662-7XA	WA-5S	TPO4		GW	8/21/2019	10:15:00 AM	
JC93662-7F	WA-5S	FILTERGN_TPO4		GW	8/21/2019	10:15:00 AM	
JC93662-8XA	WA-6S	TPO4		GW	8/21/2019	7:40:00 AM	
JC93662-8F	WA-6S	FILTERGN_TPO4		GW	8/21/2019	7:40:00 AM	
JC93662-9XA	WA-6M	TPO4		GW	8/21/2019	7:40:00 AM	

9030108

JC93662-9F	WA-6M	FILTERGN_TPO4	WA-6M	8/21/2019	7:40:00 AM
JC93662-10XA	WA-6D	TPO4	WA-6D	8/21/2019	7:40:00 AM
JC93662-10F	WA-6D	FILTERGN_TPO4	WA-6D	8/21/2019	7:40:00 AM
JC93662-11XA	WA-7S	TPO4	WA-7S	8/21/2019	8:15:00 AM
JC93662-11F	WA-7S	FILTERGN_TPO4	WA-7S	8/21/2019	8:15:00 AM
JC93662-12XA	WA-7M	TPO4	WA-7M	8/21/2019	8:15:00 AM
JC93662-12F	WA-7M	FILTERGN_TPO4	WA-7M	8/21/2019	8:15:00 AM
JC93662-13XA	WA-7D	TPO4	WA-7D	8/21/2019	8:15:00 AM
JC93662-13F	WA-7D	FILTERGN_TPO4	WA-7D	8/21/2019	8:15:00 AM

Comments:

Sample Management Receipt:

Date:



**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:



Amy L Morriss  
Project Manager



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## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



SW

# CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsusa

E

<b>Client / Reporting Information</b> Company Name: <b>USACE - Phila. District</b> Street Address: <b>100 Penn Sq East</b> City: <b>Phila</b> State: <b>PA</b> Zip: <b>19107</b> Project Contact: <b>Joe Loeper</b> Phone #: <b>215-656-6545</b>		<b>Project Information</b> Project Name: <b>USACE Reservoirs - F.E. Walter</b> Street: _____ Billing Information (if different from Report to): Company Name: _____ Project #: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Client Purchase Order #: _____ Project Manager: <b>Tommy McCloskey</b> Attention: _____		FedEx Tracking # _____ SGS Order # _____ SGS Job # <b>JC93662</b>	
<b>Requested Analysis</b> Matrix Codes: DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment CI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solids WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		TPO4 (sub to MS Resider) Alkalinity - Ammonia BOD TDS, TKN TOC TSS, XMO30		LAB USE ONLY n6 C30T4 19JZ	
<b>Turn Around Time (Business Days)</b> <input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other _____ <small>All data available to Lab?</small>		<b>Deliverable</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier 1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ OKQP <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA NCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> DDD-QSAS		<b>Comments / Special Instructions</b> TCF/FCF Samples to Eurofins lab TPO4 samples to MS Resider lab	
Approved By (SGS Pat): / Date: _____ Approval needed for 1-3 Business Day TAT		Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data Sample Custody must be documented below each time samples change possession, including courier delivery.		Date / Time: 8/21/19 3:25 Received By: J. Shah	
Relinquished by: 1 Date / Time: 8/21/19 3:25 Received By: J. Shah		Relinquished by: 2 Date / Time: 8/21/19 Received By: J. Shah		Relinquished by: 3 Date / Time: _____ Received By: _____	
Relinquished by: 4 Date / Time: _____ Received By: _____		Relinquished by: 5 Date / Time: _____ Received By: _____		Relinquished by: _____ Date / Time: _____ Received By: _____	

3.7C-P 3.2C-P 3.6C-P  
 3.6C-P 3.5C-P 3.3C-P

JC93662XA: Chain of Custody

Page 1 of 5





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusaa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job # JC93662

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and Custody Seal.

31
3

JC93662XA: Chain of Custody

Page 2 of 5







CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Bottle Order Control #
SGS Quote #
SGS Job # JC93662

Client / Reporting Information
Company Name: USACE - Phila. District
Project Name: USACE Reservoirs - F.E. Walter / Pumphouse
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Lorper
Phone #: 215-654-6545
Sample(s) Name(s): Greg Wasik 597-9780
Project Manager: Tammy McCluskey

Table with columns: SRS Sample #, Field ID / Point of Collection, MECH/ID/Vol #, Date, Time, Season, Grab (or Comp) ID, Matrix, # of bottles, and various analysis codes (PCE, NH3, HPO4, etc.). Rows include WA-1S through WA-7S and PR-1S through PR-4S.

Turn Around Time (Business Days)
Approved By (SGS PM): / Date:
Deliverable
Comments / Special Instructions: Samples to Eurofin Lab

Requisitioned by: [Signature] Date / Time: 8/21/19 3:25
Received By: J. Shah Date / Time: 8/21/19 17:02
Requisitioned by: [Signature] Date / Time: 8/21/19
Received By: [Signature] Date / Time: 8/21/19 17:02

5.4\* TAB 1ced ESC

## SGS Sample Receipt Summary

**Job Number:** JC93662

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/21/2019 6:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.6); Cooler 3: (2.9); Cooler 4: (3.2); Cooler 5: (3.5); Cooler 6: (3.5); Cooler 7: (3.6); Cooler 8: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (2.8); Cooler 4: (3.1); Cooler 5: (3.4); Cooler 6: (3.4); Cooler 7: (3.5); Cooler 8: (3.5);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                      |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:      | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smp Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun _____                        |                          |
| 3. Cooler media:             | Ice (Bag) _____                     |                          |
| 4. No. Coolers:              | 8 _____                             |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact _____                        |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: <u>229517</u>	pH 12+: <u>208717</u>	Other: (Specify) _____
--------------------	------------------------	-----------------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC93662XA: Chain of Custody**

Page 4 of 5

3.1  
3

**JC93662XA: Chain of Custody**  
**Page 5 of 5**

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94821

Sampling Date: 09/11/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **30**



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.

A handwritten signature in black ink, appearing to read "Laura Degenhardt".

Laura Degenhardt  
General Manager

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.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary</b> .....	<b>4</b>
<b>Section 3: Summary of Hits</b> .....	<b>8</b>
<b>Section 4: Sample Results</b> .....	<b>11</b>
<b>4.1:</b> JC94821-1: WA-1S .....	12
<b>4.2:</b> JC94821-2: WA-2S .....	13
<b>4.3:</b> JC94821-3: WA-2M .....	14
<b>4.4:</b> JC94821-4: WA-2D .....	15
<b>4.5:</b> JC94821-5: WA-3S .....	16
<b>4.6:</b> JC94821-6: WA-4S .....	17
<b>4.7:</b> JC94821-7: WA-5S .....	18
<b>4.8:</b> JC94821-8: WA-6S .....	19
<b>4.9:</b> JC94821-9: WA-6M .....	20
<b>4.10:</b> JC94821-10: WA-6D .....	21
<b>4.11:</b> JC94821-11: WA-7S .....	22
<b>4.12:</b> JC94821-12: WA-7M .....	23
<b>4.13:</b> JC94821-13: WA-7D .....	24
<b>Section 5: Misc. Forms</b> .....	<b>25</b>
<b>5.1:</b> Chain of Custody .....	26

1

2

3

4

5



## Sample Summary

USACE-Philadelphia District

**Job No:** JC94821

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94821-1	09/11/19	09:05 GW	09/11/19	AQ	Surface Water	WA-1S
JC94821-2	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2S
JC94821-3	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2M
JC94821-4	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2D
JC94821-5	09/11/19	10:00 GW	09/11/19	AQ	Surface Water	WA-3S
JC94821-6	09/11/19	09:45 GW	09/11/19	AQ	Surface Water	WA-4S
JC94821-7	09/11/19	09:30 GW	09/11/19	AQ	Surface Water	WA-5S
JC94821-8	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6S
JC94821-9	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6M
JC94821-10	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6D
JC94821-11	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7S
JC94821-12	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7M
JC94821-13	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC94821

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 9/30/2019 9:45:27 AM

On 09/11/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC94821 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

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23773
-------------------	--------------------------

- 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, Total Kjeldahl.
- Matrix Spike Recovery(s) for Nitrogen, Total Kjeldahl are outside control limits. Spike recovery indicates possible matrix interference.

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23774
-------------------	--------------------------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-1DUP, JC94821-1MS 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.
- RPD(s) for Duplicate for Nitrogen, Total Kjeldahl are outside control limits for sample GP23774-D1. RPD acceptable due to low duplicate and sample concentrations.

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23862
-------------------	--------------------------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-13DUP, JC94821-13MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23851
-------------------	--------------------------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-1DUP, JC94821-5MS, JC94821-1MS 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:** R181299

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181300

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181301

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181302

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181303

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181304

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181305

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181306

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181307

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181308

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181309

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181310

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181311

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94821-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)



## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN243

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94210-2RDUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC94821-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC94821-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94821-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN113

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-13DUP were used as the QC samples for Solids, Total Dissolved.

**Matrix:** AQ

**Batch ID:** GN89

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN114

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-13DUP were used as the QC samples for Solids, Total Suspended.

**Matrix:** AQ

**Batch ID:** GN88

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-1DUP were used as the QC samples for Solids, Total Suspended.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP23829

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-1DUP, JC94821-1MS, JC94821-1MSD were used as the QC samples for Nitrogen, Ammonia.

## General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ

**Batch ID:** GN99859

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94634-11DUP, JC94634-11MS were used as the QC samples for Nitrogen, Nitrite.

## General Chemistry By Method SM5210 B-11

**Matrix:** AQ

**Batch ID:** GP23625

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94820-1DUP were used as the QC samples for BOD, 5 Day.
- JC94821-9 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 lowest dilution.
- JC94821-7 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 lowest dilution.
- JC94821-4 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 lowest dilution.
- JC94821-10 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 lowest dilution.

## General Chemistry By Method SM5310 B-11

**Matrix:** AQ

**Batch ID:** GP23936

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-1MS, JC94821-1MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ

**Batch ID:** GP23937

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94986-2MS, JC94986-2MSD 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

## Summary of Hits

**Job Number:** JC94821  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 09/11/19



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
<b>JC94821-1</b>		<b>WA-1S</b>				
		Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	17.0	10	mg/l	SM2320 B-11
		Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	53.0	10	mg/l	SM2540 C-11
		Solids, Total Suspended	16.8	4.0	mg/l	SM2540 D-11
		Total Organic Carbon	4.2	1.0	mg/l	SM5310 B-11
<b>JC94821-2</b>		<b>WA-2S</b>				
		Solids, Total Dissolved	54.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	4.7	1.0	mg/l	SM5310 B-11
<b>JC94821-3</b>		<b>WA-2M</b>				
		Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>	14.0	10	mg/l	SM2320 B-11
		Nitrogen, Nitrate <sup>c</sup>	0.22	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.22	0.10	mg/l	EPA 353.2/LACHAT
		Solids, Total Dissolved	48.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	4.5	1.0	mg/l	SM5310 B-11
<b>JC94821-4</b>		<b>WA-2D</b>				
		BOD, 5 Day <sup>d</sup>	1.2	1.0	mg/l	SM5210 B-11
		Solids, Total Dissolved	49.0	10	mg/l	SM2540 C-11
		Solids, Total Suspended	9.8	4.0	mg/l	SM2540 D-11
		Total Organic Carbon	4.2	1.0	mg/l	SM5310 B-11
<b>JC94821-5</b>		<b>WA-3S</b>				
		Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>	14.0	10	mg/l	SM2320 B-11
		Nitrogen, Nitrate <sup>c</sup>	0.23	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.23	0.10	mg/l	EPA 353.2/LACHAT
		Solids, Total Dissolved	57.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	4.1	1.0	mg/l	SM5310 B-11
<b>JC94821-6</b>		<b>WA-4S</b>				
		Nitrogen, Nitrate <sup>c</sup>	0.12	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.12	0.10	mg/l	EPA 353.2/LACHAT
		Solids, Total Dissolved	52.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	2.9	1.0	mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC94821  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 09/11/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC94821-7      WA-5S</b>						
BOD, 5 Day <sup>d</sup>		1.7	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>c</sup>		0.14	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.14	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		42.0	10		mg/l	SM2540 C-11
Total Organic Carbon		3.5	1.0		mg/l	SM5310 B-11
<b>JC94821-8      WA-6S</b>						
Nitrogen, Nitrate <sup>c</sup>		0.19	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.19	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.33	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		48.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.6	1.0		mg/l	SM5310 B-11
<b>JC94821-9      WA-6M</b>						
BOD, 5 Day <sup>d</sup>		1.2	1.0		mg/l	SM5210 B-11
Nitrogen, Total Kjeldahl		0.31	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		44.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.5	1.0		mg/l	SM5310 B-11
<b>JC94821-10      WA-6D</b>						
BOD, 5 Day <sup>d</sup>		1.0	1.0		mg/l	SM5210 B-11
Nitrogen, Total Kjeldahl		0.28	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		57.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.2	1.0		mg/l	SM5310 B-11
<b>JC94821-11      WA-7S</b>						
Nitrogen, Nitrate <sup>c</sup>		0.15	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.15	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		42.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.6	1.0		mg/l	SM5310 B-11
<b>JC94821-12      WA-7M</b>						
Solids, Total Dissolved		47.0	10		mg/l	SM2540 C-11
Total Organic Carbon		4.6	1.0		mg/l	SM5310 B-11
<b>JC94821-13      WA-7D</b>						
Nitrogen, Total Kjeldahl		0.30	0.20		mg/l	EPA 351.2/LACHAT

## Summary of Hits

**Job Number:** JC94821  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 09/11/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
		51.0	10		mg/l	SM2540 C-11
		9.8	4.0		mg/l	SM2540 D-11
		4.3	1.0		mg/l	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.5.
- (b) Sample was titrated to a final pH of 4.2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
- (d) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lowest dilution.

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> WA-1S	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-1	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	17.0	10	mg/l	1	09/20/19 08:42	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 19:58	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 15:40	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:42	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:42	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	1	09/20/19 10:23	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	53.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	16.8	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.2	1.0	mg/l	1	09/27/19 18:31	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

## Report of Analysis

<b>Client Sample ID:</b> WA-2S		<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-2		<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 08:42	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 20:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 15:41	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:24	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	54.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.7	1.0	mg/l	1	09/27/19 19:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

4.2  
4



## Report of Analysis

<b>Client Sample ID:</b> WA-2M	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-3	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	09/20/19 08:42	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 20:45	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 15:43	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.22	0.11	mg/l	1	09/24/19 13:34	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.22	0.10	mg/l	1	09/24/19 13:34	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:24	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.5	1.0	mg/l	1	09/27/19 19:43	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-2D	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-4	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 08:42	MS	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.2	1.0	mg/l	1	09/12/19 20:47	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 15:44	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:35	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:35	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:25	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	9.8	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.2	1.0	mg/l	1	09/27/19 19:54	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(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 lowest dilution.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-3S	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-5	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 20:49	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 15:46	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.23	0.11	mg/l	1	09/24/19 13:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.23	0.10	mg/l	1	09/24/19 13:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:34	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	57.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.1	1.0	mg/l	1	09/27/19 20:05	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-4S	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-6	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 20:50	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:43	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.12	0.11	mg/l	1	09/24/19 13:40	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.12	0.10	mg/l	1	09/24/19 13:40	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:29	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	52.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	2.9	1.0	mg/l	1	09/27/19 20:16	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-5S	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-7	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.7	1.0	mg/l	1	09/12/19 20:52	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:44	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.14	0.11	mg/l	1	09/24/19 13:41	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.14	0.10	mg/l	1	09/24/19 13:41	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:29	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	3.5	1.0	mg/l	1	09/27/19 20:28	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(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 lowest dilution.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-6S		<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-8		<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 20:54	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:46	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.19	0.11	mg/l	1	09/24/19 13:43	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.19	0.10	mg/l	1	09/24/19 13:43	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.33	0.20	mg/l	1	09/20/19 10:30	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.6	1.0	mg/l	1	09/27/19 20:39	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

4.8  
4

## Report of Analysis

<b>Client Sample ID:</b> WA-6M	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-9	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.2	1.0	mg/l	1	09/12/19 20:55	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:47	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:44	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:44	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:51	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	09/23/19 10:29	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.5	1.0	mg/l	1	09/27/19 20:50	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(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 lowest dilution.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-6D	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-10	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.0	1.0	mg/l	1	09/12/19 20:57	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:49	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:45	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:45	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:51	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	1	09/23/19 10:30	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	57.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.2	1.0	mg/l	1	09/27/19 21:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(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 lowest dilution.

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

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> WA-7S	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-11	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 21:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:50	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.15	0.11	mg/l	1	09/24/19 13:46	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.15	0.10	mg/l	1	09/24/19 13:46	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:51	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/20/19 10:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.6	1.0	mg/l	1	09/27/19 22:10	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7M	<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-12	<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 21:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:52	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:48	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:48	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:51	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 10:37	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	47.0	10	mg/l	1	09/17/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/17/19 10:44	RC	SM2540 D-11
Total Organic Carbon	4.6	1.0	mg/l	1	09/27/19 22:21	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

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

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> WA-7D		<b>Date Sampled:</b> 09/11/19
<b>Lab Sample ID:</b> JC94821-13		<b>Date Received:</b> 09/11/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.13  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	09/20/19 09:10	MS	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/12/19 21:05	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/23/19 16:53	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	< 0.11	0.11	mg/l	1	09/24/19 13:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	09/24/19 13:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/11/19 22:51	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.30	0.20	mg/l	1	09/25/19 11:47	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	51.0	10	mg/l	1	09/17/19 18:02	RC	SM2540 C-11
Solids, Total Suspended	9.8	4.0	mg/l	1	09/17/19 16:40	RC	SM2540 D-11
Total Organic Carbon	4.3	1.0	mg/l	1	09/27/19 22:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(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





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08610
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehusa

FED-EX Tracking #
Bottle Order Control #
SGS Quote #
SGS Job # JC94821

Client / Reporting Information
Project Name: USACE Reservoirs - F.E. Walter
Company Name: USACE - Phila. District
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Cooper
Phone #: 215-656-6545
Project Manager: Tammy McClusky
Billing Information (if different from Report to)
Company Name: White Haven PA
Street Address:
City: State: Zip:
Client Purchase Order #
City: State: Zip:
Attention:
Number of preserved Bottles
Matrix Codes
LAB USE ONLY

Table with columns: Turn Around Time (Business Days), Approved By (SGS PM) - Date, Deliverable, Comments / Special Instructions. Includes checkboxes for 10, 5, 3, 2, 1 business days and various deliverable options like Commercial 'A', 'B', 'C', NYASP Category A/B, MA MCP Criteria, CT RCP Criteria, State Forms, EDD Format.

Sample Custody must be documented below each time sample change possession, including courier delivery.
Received By: [Signature] Date / Time: 9/11/19 15:30
Received By: [Signature] Date / Time: 9/11/19 18:45
Received By: [Signature] Date / Time:
Custody Seal #
Intact [ ] Not intact [ ] Preserved where applicable [ ] Absent [ ] Therm. ID: On Ice [ ] Cooler Temp. °C

5.1 5



## SGS Sample Receipt Summary

**Job Number:** JC94821

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 9/11/2019 6:45:00 PM

**Delivery Method:** Accutest Courier

**Airbill #s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (5.1); Cooler 2: (3.4); Cooler 3: (3.9); Cooler 4: (3.7); Cooler 5: (3.1); Cooler 6: (3.4); Cooler 7: (4.2);

**Cooler Temps (Corrected) °C:** Cooler 1: (5.0); Cooler 2: (3.3); Cooler 3: (3.8); Cooler 4: (3.6); Cooler 5: (3.0); Cooler 6: (3.3); Cooler 7: (4.1);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	7	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y or N</u>		<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify)

Comments: -7 TCF/FCF volume was not sent to Eurofins lab and was rec'd with samples to SGS.

**JC94821: Chain of Custody**

Page 3 of 5

5.1  
5

-7 Cancel TCF/FCF as Euofins did not receive volumes.

**JC94821: Chain of Custody**  
**Page 4 of 5**



CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.sgs.com/ehsusa

Client / Reporting Information		Project Information										Requested Analysis	Matrix Codes															
Company Name: <b>USACE - Phila. District</b>		Project Name: <b>USACE Reservoirs - F.E. Walter/Pompe</b>										Fecal and Total Coliform	DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinsate Blank TB - Trip Blank															
Street Address: <b>100 Penn Sq. East</b>		Billing Information (if different from Report to)																										
City, State, Zip: <b>Phila. PA. 19107</b>		Company Name																										
Project Contact: <b>Joe Loeper</b>		Project #																										
Phone #: <b>215-654-6545</b>		Client Purchase Order #																										
Sample(s) Name(s): <b>Greg Wacik 610-597-9780</b>		Project Manager: <b>Timmy McCluskey</b>										Attention: <b>732-329-3480</b>	Matrix Codes: <b>732-329-3480</b>															
SSS Service #	Field ID / Point of Collection	MEDH/CI Viol #	Date	Time	Sampled By	Sub (Lot) (Cont. No.)	Matrix	# of bottles	INCI	INCOH	INCOA	INCOB	INCOE	INCOF	INCOG	INCOH	INCOI	INCOJ	INCOK	INCOL	INCOM	INCON	INCOO	INCOQ	INCOX	INCOY	INCOZ	LAB USE ONLY
1	WA-1S		9/11/19	905	AL	G SW	2																					
2	WA-2S			710		G SW	2																					
3	WA-3S			1000		G SW	2																					
6	WA-4S			945		G SW	2																					
7	WA-5S			930		G SW	2																					
8	WA-6S			750		G SW	2																					
11	WA-7S			830		G SW	2																					
	PR-1S JC94820-1			150		G SW	2																					
	PR-2S - 2			1315		G SW	2																					
	PR-3S - 5			1240		G SW	2																					
	PR-4S - 8			1130		G SW	2																					
Turn Around Time (Business Days)		Approved By (SGS PM) / Date:										Deliverable										Comments / Special Instructions						
<input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ DKQP										<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format										<input type="checkbox"/> DOD-QSIS	Samples to Eurofin Lab					
All data available via Lablink		* Approval needed for 1-3 Business Day TAT										Commercial "A" = Results only; Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data										http://www.sgs.com/en/terms-and-conditions						
Relinquished by: <b>Joe Loeper</b>		Date / Time: <b>9/11/19 1530</b>		Received By: <b>Steve Mark</b>		Date / Time: <b>9/11/19 1750</b>		Relinquished by: <b>Joe Loeper</b>		Date / Time: <b>9/11/19 1750</b>		Received By: <b>Joe C. Nutty</b>		Date / Time: <b>9/11/19 1750</b>		Relinquished by:		Date / Time:		Received By:		Date / Time:		Relinquished by:		Date / Time:		
Relinquished by: <b>Joe Loeper</b>		Date / Time: <b>9/11/19 1530</b>		Received By: <b>Steve Mark</b>		Date / Time: <b>9/11/19 1750</b>		Relinquished by: <b>Joe Loeper</b>		Date / Time: <b>9/11/19 1750</b>		Received By: <b>Joe C. Nutty</b>		Date / Time: <b>9/11/19 1750</b>		Relinquished by:		Date / Time:		Received By:		Date / Time:		Relinquished by:		Date / Time:		
Custody Seal #		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	<input type="checkbox"/> Preserved where applicable <input type="checkbox"/> Absent	<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp. °C	Therm. ID:																							

5.1  
5

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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94821X

Sampling Date: 09/11/19

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: **24**



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.

A handwritten signature in black ink, appearing to read "Laura Degenhardt".

Laura Degenhardt  
General Manager

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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Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>5</b>
<b>Section 3: Misc. Forms</b> .....	<b>19</b>
<b>3.1: Chain of Custody</b> .....	<b>20</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC94821X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94821-1F	09/11/19	09:05 GW	09/11/19	AQ	Surface Water	WA-1S
JC94821-1X	09/11/19	09:05 GW	09/11/19	AQ	Surface Water	WA-1S
JC94821-2F	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2S
JC94821-2X	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2S
JC94821-3F	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2M
JC94821-3X	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2M
JC94821-4F	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2D
JC94821-4X	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2D
JC94821-5F	09/11/19	10:00 GW	09/11/19	AQ	Surface Water	WA-3S
JC94821-5X	09/11/19	10:00 GW	09/11/19	AQ	Surface Water	WA-3S
JC94821-6F	09/11/19	09:45 GW	09/11/19	AQ	Surface Water	WA-4S
JC94821-6X	09/11/19	09:45 GW	09/11/19	AQ	Surface Water	WA-4S
JC94821-7F	09/11/19	09:30 GW	09/11/19	AQ	Surface Water	WA-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC94821X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94821-7X	09/11/19	09:30 GW	09/11/19	AQ	Surface Water	WA-5S
JC94821-8F	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6S
JC94821-8X	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6S
JC94821-9F	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6M
JC94821-9X	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6M
JC94821-10F	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6D
JC94821-10X	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6D
JC94821-11F	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7S
JC94821-11X	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7S
JC94821-12F	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7M
JC94821-12X	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7M
JC94821-13F	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7D
JC94821-13X	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7D

Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**

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

# Certificate of Analysis

2

**Laboratory No.:** 9033114  
**Report:** 09/23/19  
**Lab Contact:** Amy L. Morriss

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

**Project:** Army Corp Reservoirs

**Lab ID:** 9033114-01    **Collected By:** Client    **Sampled:** 09/11/19 09:05    **Received:** 09/18/19 10:15  
**Sample Desc:** WA-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	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:** 9033114-02    **Collected By:** Client    **Sampled:** 09/11/19 07:10    **Received:** 09/18/19 10:15  
**Sample Desc:** WA-2S    **Sample Type:** 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	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033114-03    **Collected By:** Client    **Sampled:** 09/11/19 07:10    **Received:** 09/18/19 10:15  
**Sample Desc:** WA-2M    **Sample Type:** 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	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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

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NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.  
Additional accreditations by CT (PH-0210), MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9033114-04     **Collected By:** Client     **Sampled:** 09/11/19 07:10     **Received:** 09/18/19 10:15  
**Sample Desc:** WA-2D     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033114-05     **Collected By:** Client     **Sampled:** 09/11/19 10:00     **Received:** 09/18/19 10:15  
**Sample Desc:** WA-3S     **Sample Type:** 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	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033114-06     **Collected By:** Client     **Sampled:** 09/11/19 09:45     **Received:** 09/18/19 10:15  
**Sample Desc:** WA-4S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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:** 9033114-07     **Collected By:** Client     **Sampled:** 09/11/19 09:30     **Received:** 09/18/19 10:15  
**Sample Desc:** WA-5S     **Sample Type:** 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	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9033114-08      **Collected By:** Client      **Sampled:** 09/11/19 07:50      **Received:** 09/18/19 10:15  
**Sample Desc:** WA-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033114-09      **Collected By:** Client      **Sampled:** 09/11/19 07:50      **Received:** 09/18/19 10:15  
**Sample Desc:** WA-6M      **Sample Type:** 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	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033114-10      **Collected By:** Client      **Sampled:** 09/11/19 07:50      **Received:** 09/18/19 10:15  
**Sample Desc:** WA-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033114-11      **Collected By:** Client      **Sampled:** 09/11/19 08:30      **Received:** 09/18/19 10:15  
**Sample Desc:** WA-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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**M.J. Reider Associates, Inc.**

2

**Lab ID:** 9033114-12      **Collected By:** Client      **Sampled:** 09/11/19 08:30      **Received:** 09/18/19 10:15  
**Sample Desc:** WA-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	0.02	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL

**Lab ID:** 9033114-13      **Collected By:** Client      **Sampled:** 09/11/19 08:30      **Received:** 09/18/19 10:15  
**Sample Desc:** WA-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
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	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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Quality Control

General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9I1192</b>								
<b>MB (B9I1192-BLK1)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 09/19/2019								
<b>MB (B9I1192-BLK2)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 09/19/2019								
<b>MB (B9I1192-BLK3)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 09/19/2019								
<b>LFB (B9I1192-BS1)</b>								
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			
Prepared & Analyzed: 09/19/2019								
<b>LFM (B9I1192-MS1)</b>								
Phosphorus as P, Total	0.99	0.05	mg/l	97.4	80-120			
Source: 9033114-01 Prepared & Analyzed: 09/19/2019								
<b>LFMD (B9I1192-MSD1)</b>								
Phosphorus as P, Total	0.98	0.05	mg/l	96.8	80-120	0.609	20	
Source: 9033114-01 Prepared & Analyzed: 09/19/2019								

Dissolved General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9I1193</b>								
<b>MB (B9I1193-BLK1)</b>								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
Prepared & Analyzed: 09/19/2019								
<b>LFB (B9I1193-BS1)</b>								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120			G-11
Prepared & Analyzed: 09/19/2019								



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9033114-01</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-02</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-03</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-04</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-05</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-06</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-07</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-08</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-09</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-10</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-11</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-12</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033114-13</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL



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2

**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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9033114

Date / Time: 9/17/2019 10:38:37 AM

CSR: TAMMY

Job #: JC94821X

Client Project: Philadelphia District, Reservoir Sampling

Deliverable: REDT2

TAT: Due 10/2/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories

Address: 107 Angelica Street

City: Reading

State: PA

Zip: 19611

Contact: Sample Receiving / Rich Wheeler

Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC94821-1E	WA-1S 01	FILTERGN_TPO4	SUB	GW	9/11/2019	9:05:00 AM	
JC94821-1X	WA-1S	TPO4		GW	9/11/2019	9:05:00 AM	
JC94821-2E	WA-2S 02	FILTERGN_TPO4	SUB	GW	9/11/2019	7:10:00 AM	
JC94821-2X	WA-2S	TPO4		GW	9/11/2019	7:10:00 AM	
JC94821-3E	WA-2M 03	FILTERGN_TPO4	SUB	GW	9/11/2019	7:10:00 AM	
JC94821-3X	WA-2M	TPO4		GW	9/11/2019	7:10:00 AM	
JC94821-4E	WA-2D 04	FILTERGN_TPO4	SUB	GW	9/11/2019	7:10:00 AM	
JC94821-4X	WA-2D	TPO4		GW	9/11/2019	7:10:00 AM	
JC94821-5E	WA-3S 05	FILTERGN_TPO4	SUB	GW	9/11/2019	10:00:00 AM	
JC94821-5X	WA-3S	TPO4		GW	9/11/2019	10:00:00 AM	
JC94821-6E	WA-4S 06	FILTERGN_TPO4	SUB	GW	9/11/2019	9:45:00 AM	
JC94821-6X	WA-4S	TPO4		GW	9/11/2019	9:45:00 AM	
JC94821-7E	WA-5S 07	FILTERGN_TPO4	SUB	GW	9/11/2019	9:30:00 AM	
JC94821-7X	WA-5S	TPO4		GW	9/11/2019	9:30:00 AM	
JC94821-8E	WA-6S 08	FILTERGN_TPO4	SUB	GW	9/11/2019	7:50:00 AM	
JC94821-8X	WA-6S	TPO4		GW	9/11/2019	7:50:00 AM	
JC94821-9E	WA-6M 09	FILTERGN_TPO4	SUB	GW	9/11/2019	7:50:00 AM	



09033114

JC94821-9X	WA-6M	09	TPO4	GW	9/11/2019	7:50:00 AM
JC94821-10E	WA-6D	10	FILTERGN_TPO4	GW	9/11/2019	7:50:00 AM
JC94821-10X	WA-6D		TPO4	GW	9/11/2019	7:50:00 AM
JC94821-11E	WA-7S	11	FILTERGN_TPO4	GW	9/11/2019	8:30:00 AM
JC94821-11X	WA-7S		TPO4	GW	9/11/2019	8:30:00 AM
JC94821-12E	WA-7M	12	FILTERGN_TPO4	GW	9/11/2019	8:30:00 AM
JC94821-12X	WA-7M		TPO4	GW	9/11/2019	8:30:00 AM
JC94821-13E	WA-7D	13	FILTERGN_TPO4	GW	9/11/2019	8:30:00 AM
JC94821-13X	WA-7D		TPO4	GW	9/11/2019	8:30:00 AM

Comments:

Sample Management Receipt:

Date:



**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:



Amy L Morriss  
Project Manager



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## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08610
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehusa

FED-EX Tracking #
State Order Control #
SGS Quote #
SGS Job # JC94821

Client / Reporting Information
Project Name: USACE Reservoirs - F.E. Walter
Company Name: USACE - Phila. District
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Cooper
Phone #: 215-656-6545
Project Manager: Tammy McClusky
Billing Information (if different from Report to)
Company Name: White Haven PA
Street Address:
City: State: Zip:
Client Purchase Order #
City: State: Zip:
Attention:
Requested Analysis: TP04 (Sub to MS Reider) Alkalinity, Ammonia, BOD, TDS, TKN, TSS, X1030
Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL - Sludge, SED - Sediment, OI - Oil, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe, FB - Field Blank, EB - Equipment Blank, RB - Rinse Blank, TB - Tap Blank
LAB USE ONLY

Table with columns: Field ID / Point of Collection, MECH/ID/Vol#, Date, Time, Sampled by, Grab (G) Comp (C), Matrix, # of bottles, HCl, HNO3, H2O2, H2SO4, H3PO4, HClO4, DI Water, MEQ/L, ENDORE. Rows include WA-7S, WA-7M, WA-7D.

Turn Around Time (Business Days)
Approved By (SGS PM) - Date:
Deliverable: Commercial "A" (Level 1), Commercial "B" (Level 2), NJ Reduced (Level 3), Full Tier I (Level 4), Commercial "C", NJ DKQP, NYASP Category A, NYASP Category B, MA MCP Criteria, CT RCP Criteria, State Forms, EDD Format, DOD-QSMS.
Comments / Special Instructions: TCF/PCF samples to Eurofins lab. TP04 samples to MS Reider lab.
Approval needed for 1-3 Business Day TAT
Sample Custody must be documented below each time sample change possession, including courier delivery.
http://www.sgs.com/en/terms-and-conditions

Chain of Custody Log:
1. Released by: [Signature] Date/Time: 9/11/19 15:30
2. Received by: [Signature] Date/Time: 9/11/19 18:45
3. Released by: [Signature] Date/Time:
4. Received by: [Signature] Date/Time:
5. Released by: [Signature] Date/Time:
6. Received by: [Signature] Date/Time:
Custody Seal #
Intact [ ] Not intact [ ] Preserved where applicable [ ] Absent [ ]
On Ice [ ] Cooler Temp. °C [ ] Therm. ID: [ ]

31
3

## SGS Sample Receipt Summary

**Job Number:** JC94821

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 9/11/2019 6:45:00 PM

**Delivery Method:** Accutest Courier

**Airbill #s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (5.1); Cooler 2: (3.4); Cooler 3: (3.9); Cooler 4: (3.7); Cooler 5: (3.1); Cooler 6: (3.4); Cooler 7: (4.2);

**Cooler Temps (Corrected) °C:** Cooler 1: (5.0); Cooler 2: (3.3); Cooler 3: (3.8); Cooler 4: (3.6); Cooler 5: (3.0); Cooler 6: (3.3); Cooler 7: (4.1);

<u>Cooler Security</u>	<u>Y or N</u>			<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	7	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y or N</u>		<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify)

Comments: -7 TCF/FCF volume was not sent to Eurofins lab and was rec'd with samples to SGS.

SM089-02 Rev. Date 12/1/16

**JC94821X: Chain of Custody**

Page 3 of 5

-7 Cancel TCF/FCF as Euofins did not receive volumes.

**JC94821X: Chain of Custody**  
**Page 4 of 5**





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

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94821XA

Sampling Date: 09/11/19

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: **18**



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.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

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.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Subcontract Lab Data</b> .....	<b>4</b>
<b>Section 3: Misc. Forms</b> .....	<b>13</b>
<b>3.1: Chain of Custody</b> .....	<b>14</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC94821XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94821-1XA	09/11/19	09:05 GW	09/11/19	AQ	Surface Water	WA-1S
JC94821-2XA	09/11/19	07:10 GW	09/11/19	AQ	Surface Water	WA-2S
JC94821-5XA	09/11/19	10:00 GW	09/11/19	AQ	Surface Water	WA-3S
JC94821-6XA	09/11/19	09:45 GW	09/11/19	AQ	Surface Water	WA-4S
JC94821-8XA	09/11/19	07:50 GW	09/11/19	AQ	Surface Water	WA-6S
JC94821-11XA	09/11/19	08:30 GW	09/11/19	AQ	Surface Water	WA-7S

Subcontract Lab Data

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Report of Analysis

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Serialized: 09/16/2019 11:07am QC35

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:

SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**

**W09769 USACE**

**LABORATORY REPORT NUMBER:**

**L7160946**



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

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:** 1991795 PI  
**PWSID No:**

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7160946-1	WA-1S	09/11/19 05:50pm	4.8 C	Y	09/11/19 09:05am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-1S</b>							
Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	09/11/19 07:10PM KC2
Fecal Coliform, MF	>600 Q		cfu/100ml	SM 9222D	10	10	09/11/19 10:21PM KC2

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7160946-2	WA-2S	09/11/19 05:50pm	4.8 C	Y	09/11/19 07:10am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- WA-2S</b>							
Total Coliform, MF	709 Q		cfu/100ml	SM 9222B	10	10	09/11/19 06:53PM KC2
Fecal Coliform, MF	22 Q		cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

PIN: 28748

Serial Number: 6544422

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991795 PI  
**PWSID No:**

<b>Sample ID</b> L7160946-3	<b>Sample Description</b> WA-3S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 10:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-3S**

Total Coliform, MF	7100 Q		cfu/100ml	SM 9222B	1	100	09/11/19 07:10PM KC2
Fecal Coliform, MF	20 Q		cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b> L7160946-4	<b>Sample Description</b> WA-4S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 09:45am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-4S**

Total Coliform, MF	10000 E, Q		cfu/100ml	SM 9222B	1	100	09/11/19 07:10PM KC2
Fecal Coliform, MF	26 Q		cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b> L7160946-5	<b>Sample Description</b> WA-5S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 07:50am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-5S**

Total Coliform, MF	510 Q		cfu/100ml	SM 9222B	10	10	09/11/19 07:10PM KC2
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b> L7160946-6	<b>Sample Description</b> WA-6S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 08:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

Serial Number: 6544422



**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991795 PI  
**PWSID No:**

<b>Sample ID</b> L7160946-7	<b>Sample Description</b> WA-7S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 08:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- WA-7S**

Total Coliform, MF	670 Q	cfu/100ml	SM 9222B	10	10	09/11/19 07:10PM KC2
Fecal Coliform, MF	18 Q	cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b> L7160946-8	<b>Sample Description</b> PR-1S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 11:50am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-1S**

Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	09/11/19 06:53PM KC2
Fecal Coliform, MF	22 Q	cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b> L7160946-9	<b>Sample Description</b> PR-2S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 01:15pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- PR-2S**

Total Coliform, MF	4200	cfu/100ml	SM 9222B	1	100	09/11/19 06:53PM KC2
Fecal Coliform, MF	13 Q	cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b> L7160946-10	<b>Sample Description</b> PR-3S	<b>Received Date/Time/Temp</b> 09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 09/11/19 12:40pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

Serial Number: 6544422

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991795 PI  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>		<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7160946-10	PR-3S		09/11/19 12:40pm NA C	Customer
	<b>Received Date/Time/Temp</b>	09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b>	Y

<b>Parameter</b>	<b>Result</b>	<b>Qual Units</b>	<b>Method</b>	<b>DF</b>	<b>RL</b>	<b>Test Date, Time, Analyst</b>
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**ENVIRONMENTAL MICROBIOLOGY -- PR-3S**

Total Coliform, MF	5700	cfu/100ml	SM 9222B	1	100	09/11/19 06:53PM KC2
Fecal Coliform, MF	<1 Q	cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

<b>Sample ID</b>	<b>Sample Description</b>		<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7160946-11	PR-4S		09/11/19 11:30am NA C	Customer
	<b>Received Date/Time/Temp</b>	09/11/19 05:50pm 4.8 C	<b>Iced (Y/N):</b>	Y

<b>Parameter</b>	<b>Result</b>	<b>Qual Units</b>	<b>Method</b>	<b>DF</b>	<b>RL</b>	<b>Test Date, Time, Analyst</b>
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**ENVIRONMENTAL MICROBIOLOGY -- PR-4S**

Total Coliform, MF	41000	cfu/100ml	SM 9222B	.1	1000	09/11/19 06:53PM KC2
Fecal Coliform, MF	5 Q	cfu/100ml	SM 9222D	100	1	09/11/19 10:21PM KC2

**Sample Comments | Result Qualifiers:**

L7160946-1 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-2 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-3 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-4 :

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.

L7160946-6 :

PIN: 28748

Serial Number: 6544422

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991795 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.

L7160946-7 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-8 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-9 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-10 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7160946-11 :

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: 6544422

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	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
DF	Dilution Factor (For Microbiology, DF = volume of 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
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not 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
T	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	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08610
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehusa

FED-EX Tracking #
State Order Control #
SGS Quote #
SGS Job # JC94821

Client / Reporting Information
Project Name: USACE Reservoirs - F.E. Walter
Company Name: USACE - Phila. District
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Cooper
Phone #: 215-656-6545
Project Manager: Tammy McClusky
Billing Information (if different from Report to)
Company Name: White Haven PA
Street Address:
City: State: Zip:
Client Purchase Order #
City: State: Zip:
Attention:
Requested Analysis: TP04 (Sub to MS Reider) Alkalinity, Ammonia, BOD, TDS, TKN, TSS, X1030
Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL - Sludge, SED - Sediment, OI - Oil, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe, FB - Field Blank, EB - Equipment Blank, RB - Rinse Blank, TB - Tap Blank
LAB USE ONLY

Table with columns: Field ID / Point of Collection, MECH/ID/Vol#, Date, Time, Sampled by, Grab (G) Comp (C), Matrix, # of bottles, HCl, HNO3, H2O2, H2SO4, H3PO4, HClO4, DI Water, MEQ/L, ENDORE. Rows include WA-7S, WA-7M, WA-7D.

Turn Around Time (Business Days)
Approved By (SGS PM) - Date:
Deliverable: Commercial "A" (Level 1), Commercial "B" (Level 2), NJ Reduced (Level 3), Full Tier I (Level 4), Commercial "C", NJ DKQP, NYASP Category A, NYASP Category B, MA MCP Criteria, CT RCP Criteria, State Forms, EDD Format, DOD-QSMS.
Comments / Special Instructions: TCF/PCF samples to Eurofins lab. TP04 samples to MS Reider lab.
Approval needed for 1-3 Business Day TAT
Sample Custody must be documented below each time sample change possession, including courier delivery.

Chain of custody table with columns: Relinquished by, Date / Time, Received By, Date / Time, Relinquished By, Date / Time, Received By. Includes handwritten signatures and dates like 9/11/19 15:30.

Custody Seal #
Intact [ ] Not intact [ ]
Preserved where applicable [ ] Absent [ ]
Therm. ID:
On Ice [ ] Cooler Temp. °C [ ]

JC94821XA: Chain of Custody



31
3



## SGS Sample Receipt Summary

**Job Number:** JC94821

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 9/11/2019 6:45:00 PM

**Delivery Method:** Accutest Courier

**Airbill #s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (5.1); Cooler 2: (3.4); Cooler 3: (3.9); Cooler 4: (3.7); Cooler 5: (3.1); Cooler 6: (3.4); Cooler 7: (4.2);

**Cooler Temps (Corrected) °C:** Cooler 1: (5.0); Cooler 2: (3.3); Cooler 3: (3.8); Cooler 4: (3.6); Cooler 5: (3.0); Cooler 6: (3.3); Cooler 7: (4.1);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	7	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y or N</u>		<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify)

Comments: -7 TCF/FCF volume was not sent to Eurofins lab and was rec'd with samples to SGS.

SM089-02 Rev. Date 12/1/16

**JC94821XA: Chain of Custody**

Page 3 of 5

-7 Cancel TCF/FCF as Euofins did not receive volumes.

**JC94821XA: Chain of Custody**  
**Page 4 of 5**

