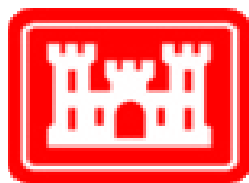


**2015 WATER QUALITY MONITORING
F.E. WALTER RESERVOIR
WHITE HAVEN, PENNSYLVANIA**



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

January 2016

2015 Water Quality Monitoring
F.E. Walter Reservoir
White Haven, Pennsylvania

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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 was raised an additional 70 feet in March/April of 2015. The additional storage was 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 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 2015.

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 smell near the tail water of the dam. The 2015 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 2015 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 were compared to applicable 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. 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 2015 (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. MJ Reider Associates in Reading, Pennsylvania conducted the laboratory water analysis for 2015.

Water samples collected from surface, middle, and bottom depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen (TKN), total phosphorus, diss./ortho-phosphate, 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.

Table 2-1. F.E. Walter Reservoir water quality schedule for 2015 monitoring							
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
03 June	X	X	X	X	NS	NS	NS
30 June	X	X	X	X	NS	NS	NS
22 July	X	X	X	X	NS	NS	NS
12 August	X	X	X	X	NS	NS	NS
01 September	X	X	X	X	NS	NS	NS
<p>(1) Drinking water samples are sampled quarterly by personnel at each reservoir. (2) Lehigh River temperature probes continuously monitor river temperatures throughout the sampling period. They are periodically downloaded. (3) Physical stratification monitoring is conducted at all stations during routine monthly sampling. (4) Sediment Sampling was not conducted in 2015 based on historic sampling results showing low probability of sediment contamination. NS- Not Sampled</p>							

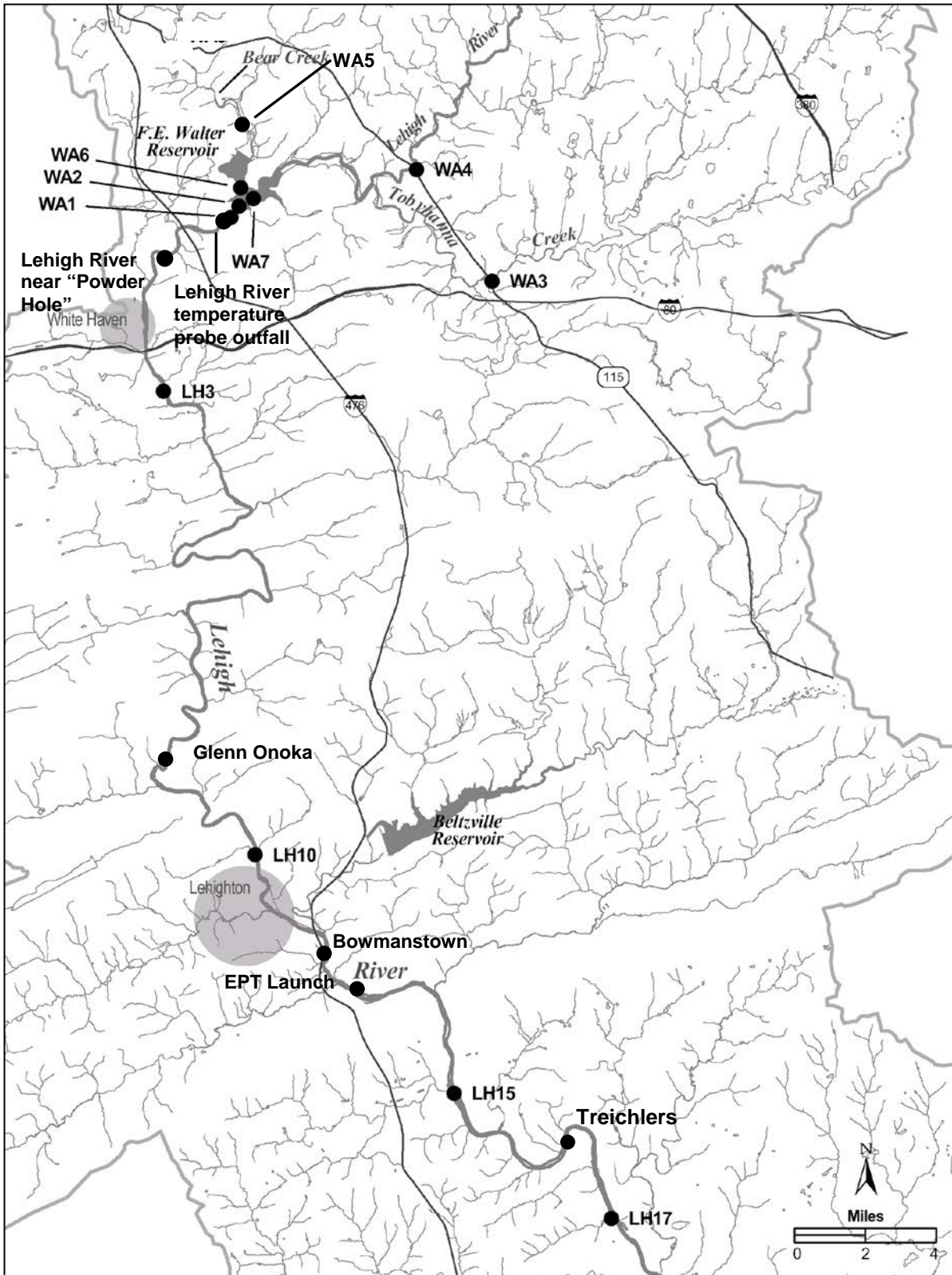


Figure 2-1. Location map for F.E. Walter Reservoir and Lehigh River temperature probe monitoring stations.

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 2015				
Parameter	(2) Method	Reporting Limit	PADEP Surface Water Quality Criteria	Allowable Hold Times (Days)
Total Alkalinity	SM20 2320B	1.0 mg/L	Min. 20 mg/L CaCO ₃	14
Biochemical Oxygen Demand (BOD)	SM20 5210B	2.0 mg/L	None	2
Total Phosphorus	SM20 4500P-E	0.01 mg/L	None	28
Diss./Ortho-Phosphate	SM20 4500P-E	0.01 mg/L	None	28
Soluble Phosphorus	SM-20 4500-PE	0.05 mg/L	None	28
Total Organic Carbon (TOC)	SM-20 5310C	1.0 mg/L	None	28
Total Inorganic Carbon (TIC)	SM-20 5310B	1.0 mg/L	None	28
Total Carbon (TOC + TIC)	SM-20 5310B	1.0 mg/L	None	28
(1) Chlorophyll <i>a</i>			None	
Total Kjeldahl Nitrogen	MCAWW 351.2	0.25 mg/L	None	28
Ammonia	D6919-03	0.05 mg/L	Temp. and pH dependent	28
Nitrate	MCAWW 353.2	0.05 mg/L	Maximum 10 mg/L (nitrate + nitrite)	28
Nitrite	MCAWW 353.2	0.05 mg/L		28
Total Dissolved Solids	SM20 2540C	5.0 mg/L	Maximum 750 mg/L	7
Total Suspended Solids	SM20 2540D	3.0 mg/L	None	7

(1) Chlorophyll *a* samples were recorded using a YSI 6600 V2-4 with a chlorophyll sensor.
(2) Laboratory Methods Reference:
MCAWW- "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SM-20- "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012.
SW846- "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", 3rd. Edition, November 1986 and updates.

2.3 TROPHIC STATE DETERMINATION

The trophic state of F.E. Walter Reservoir was determined by methods outlined by Carlson (1977). In general, this method calculates 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 made using criteria defined by Carlson (1977) and EPA (1983) and calculated only for Station WA-2 within the reservoir.

2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted five times between June and September 2015 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 and e-coli bacteria 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 2015. The bacteria analytical method was based on a membrane filtration technique. All of the samples were analyzed within their maximum allowable hold times. MJ Reider Associates Laboratory in Reading, Pennsylvania conducted the bacteria analysis for 2015.

Monthly coliform bacteria counts were compared to the PADEP single sample and swimming beach water quality standard for bacteria. The multiple beach sample standards is defined as a maximum geometric mean of 200 colonies/100-ml based on five samples collected on different days within a 30-day period. 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 used in evaluating the bacteria results.

Table 2-3. Water quality test methods, detection limits, PADEP water quality standards, and sample holding times for bacteria parameters monitored at F.E. Walter Reservoir in 2015		
Parameter	Total coliform	Fecal coliform
Test method	SM 9223B	SM9222D
Detection limit	1 clns/100-mls	2 clns/100-ml
PADEP standard	-	Geometric mean less than 200 clns/100-ml (application of this standard is conservative because swimming is not permitted in the reservoir)
Maximum 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 2015. 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 for WA-2, during five monthly sampling days, vary between approximately 105 to 121 feet due to 2015 reservoir operations at the time of sampling. All of the stratification data collected during the 2015 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 pattern throughout the monitoring period. Monthly sampling showed temperatures peaked during late July and fluctuated within a 2-3 degree temperature range through September (Fig. 3-1). Downstream release (Station WA-1S) surface water temperatures in August and September were warmer than tributary inflow temperatures. A maximum inflow temperature of 19.88 °C (WA-5S) was measured in July and maximum outflow temperature of 20.55 °C (WA-1S) was seen early September. Temperatures in surface waters of the reservoir-body (Station WA-2S, -6S, and -7S) were generally warmer than in tributaries and downstream of the dam as a result of warming from the sun. In-lake reservoir surface temperatures peaked in late July at approximately 25.00 °C (Station WA-7S). In 2015, 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 2015 sampling season (Fig. 3-2). Due to operations in 2015, 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 on various occasions during the season. The reservoir operations 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. As a result, lower and typically cooler bottom waters are withdrawn first, likely causing a disruption in stratification and accelerated depletion of cooler bottom waters. Overall, 2015 in lake reservoir temperatures showed a more pronounced stratification than seen in 2014. Cooler deep water temperatures were available longer into the recreational season. In most years, recreational releases lower pool elevations and deplete cool bottom waters. Precipitation in the project

watershed allowed for a relatively stable pool elevation throughout the 2015 recreational season.

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 2015, DO in the tributary surface waters (stations WA-3S, -4S, and -5S) of F.E. Walter Reservoir remained relatively constant from June through September sampling with recorded values ranging from 8.56 mg/L to 9.91 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 8.58 mg/L to 10.06 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 July through September (Fig. 3-4). In August, the reservoir began to show the presence of a metalimnetic dissolved oxygen minimum. 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 exist in the Corps Philadelphia District's Beltzville Reservoir. This water column profile formation may be a natural occurrence and/or man induced. 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 criteria (5 mg/l).

The health of aquatic ecosystems can be impaired by low DO concentrations in the water column. The lowest DO concentration (3.60 mg/L) was recorded at the bottom of the reservoir during the 22 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 not experience hypoxic conditions during the 2015 sampling season. Low oxygen reservoir waters are re-aerated as they pass through the conduit system of the reservoir during release. 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. Dissolved oxygen concentrations downstream ranged from 8.58 mg/L to 10.06 mg/L throughout the sampling season.

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 2015 and remained relatively constant or within a narrow range of values (6.46-7.09) throughout the sampling season. The lowest pH level of 6.46 recorded during the sampling season occurred at station WA-5S during the late June sampling and the highest pH reading of 7.09 was recorded at Station WA-5S in July. 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 7.01 in July to a low of 6.58 in September (Fig. 3-5).

In 2015, measures of pH within the lake stayed within a tight range of values (6.16-7.88) from the surface to the bottom (Fig. 3-6). Slightly higher pH values were measured near the surface and bottom waters of the lake. Many factors can influence the pH of the reservoir water such as surrounding rock, 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 2015. The following sections describe the temporal, spatial, and depth related patterns for these water quality measures.

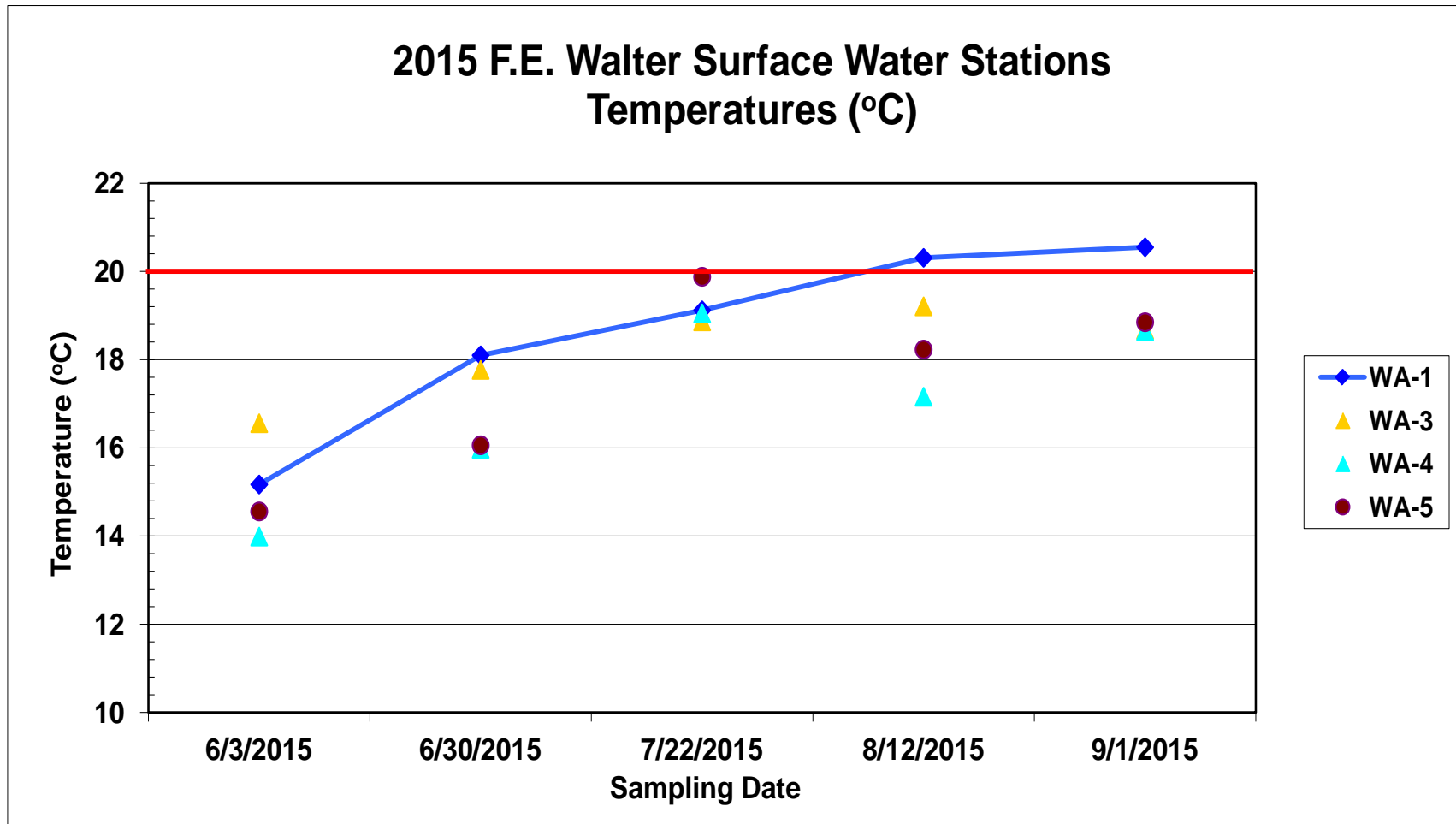


Figure 3-1. Temperature measured in tributary and release (WA-1) surface waters of F.E. Walter Reservoir during 2015. See Appendix A for a summary of the plotted values.

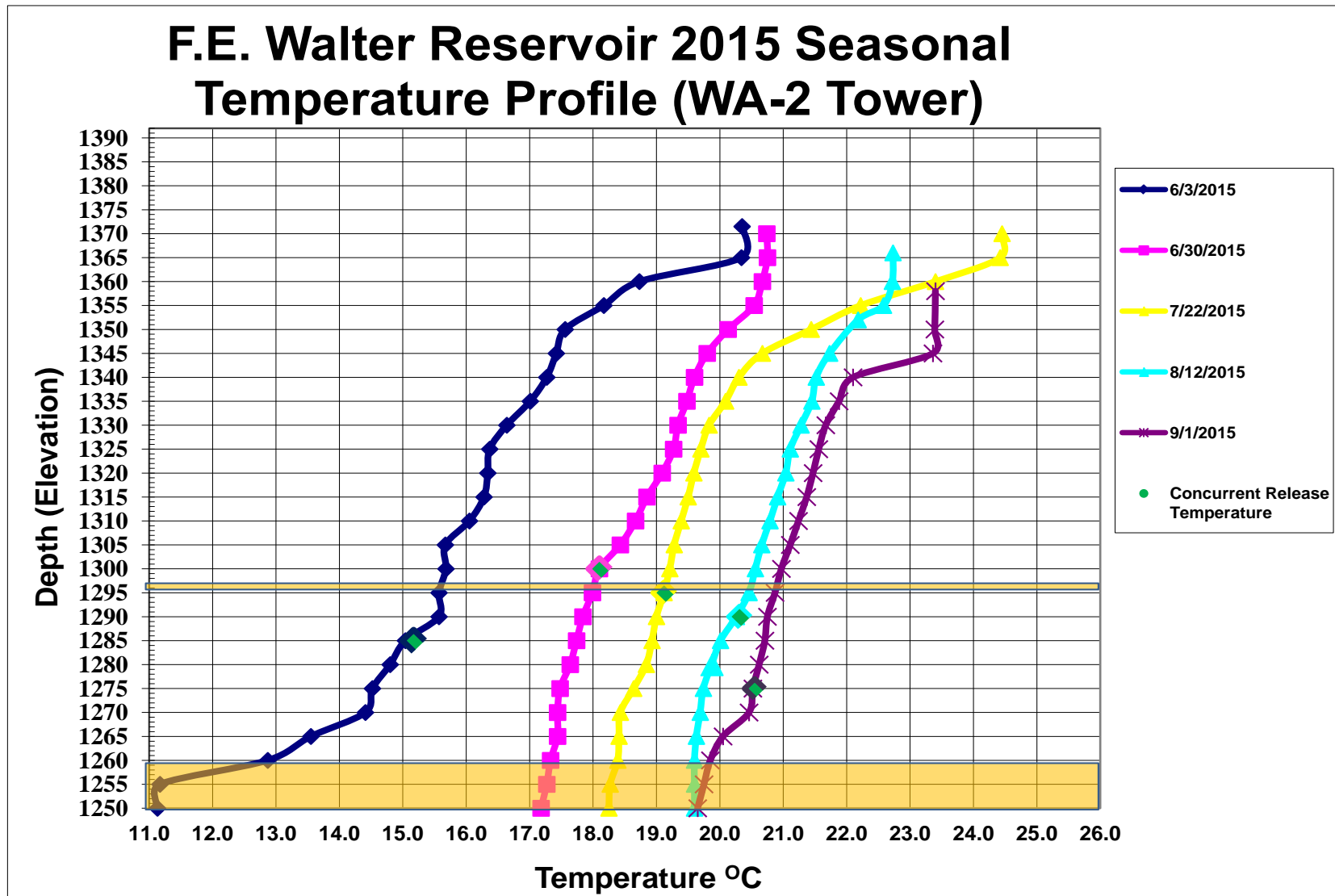


Figure 3-2. Stratification of temperature measured in the water column of F. E. Walter Reservoir at station WA-2 during 2015. See Appendix A for a summary of the plotted values.

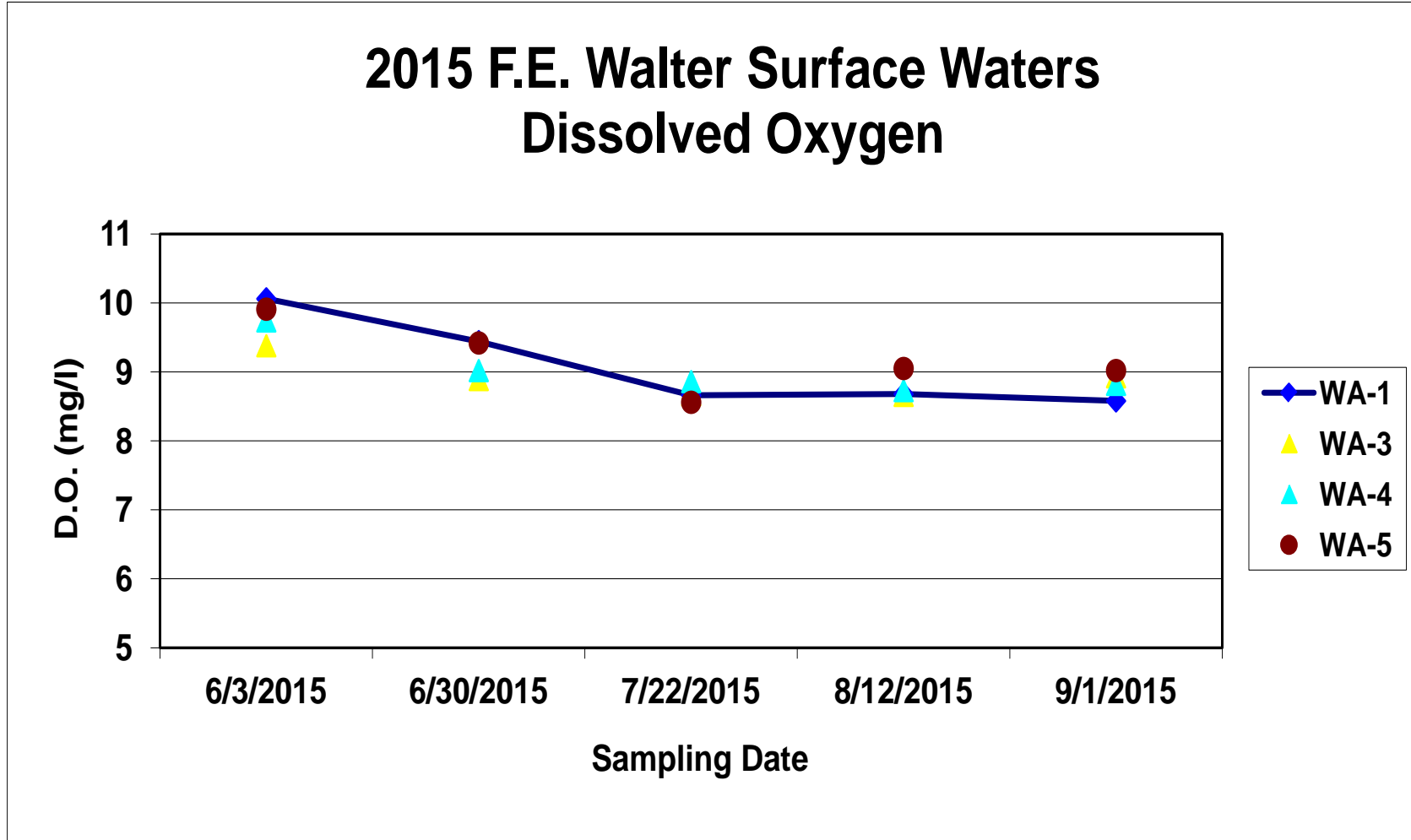


Figure 3-3. Dissolved oxygen measured in tributary and release (WA-1) surface waters of F. E. Walter Reservoir during 2015. See Appendix A for a summary of the plotted value.

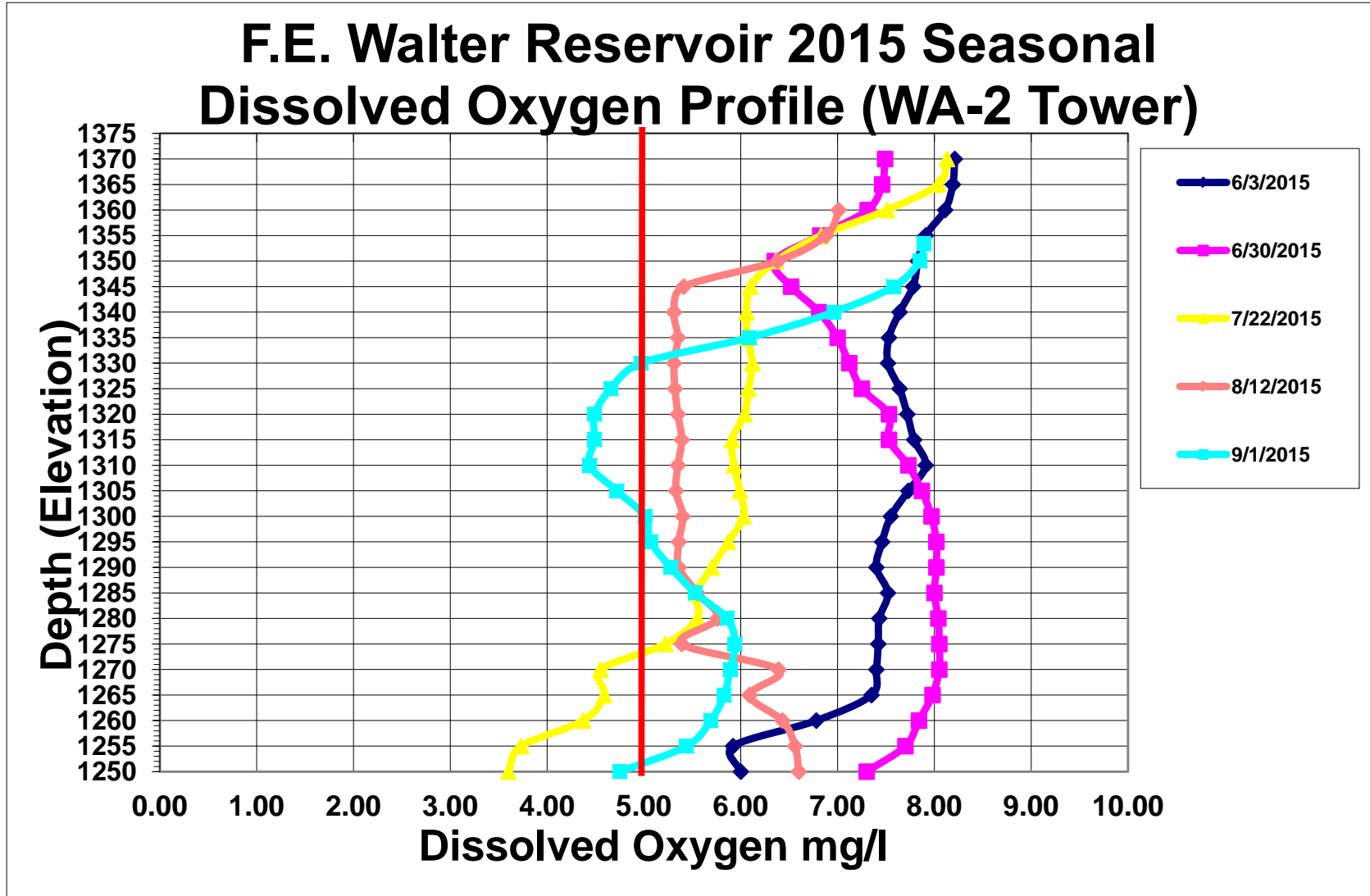


Figure 3-4. Dissolved oxygen measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015. The PADEP WQ standard for DO is a epilimnion minimum concentration of 5 mg/L. See Appendix A for a summary of the plotted values.

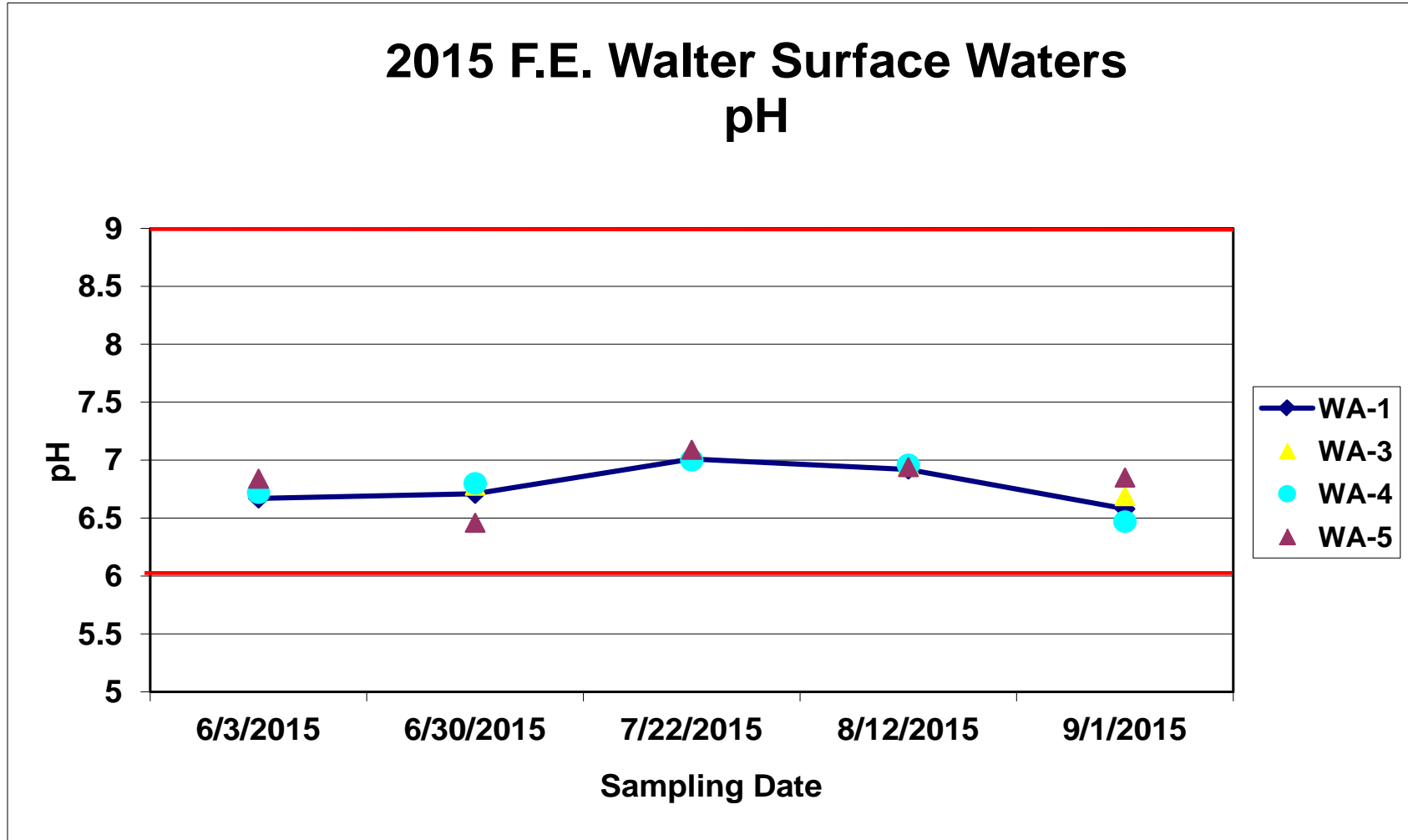


Figure 3-5. Measures of pH in tributary and release (WA-1) surface waters of F.E. Walter Reservoir during 2015. The PADEP WQ standard for pH is an acceptable range from 6 to 9. See Appendix A for a summary of the plotted values

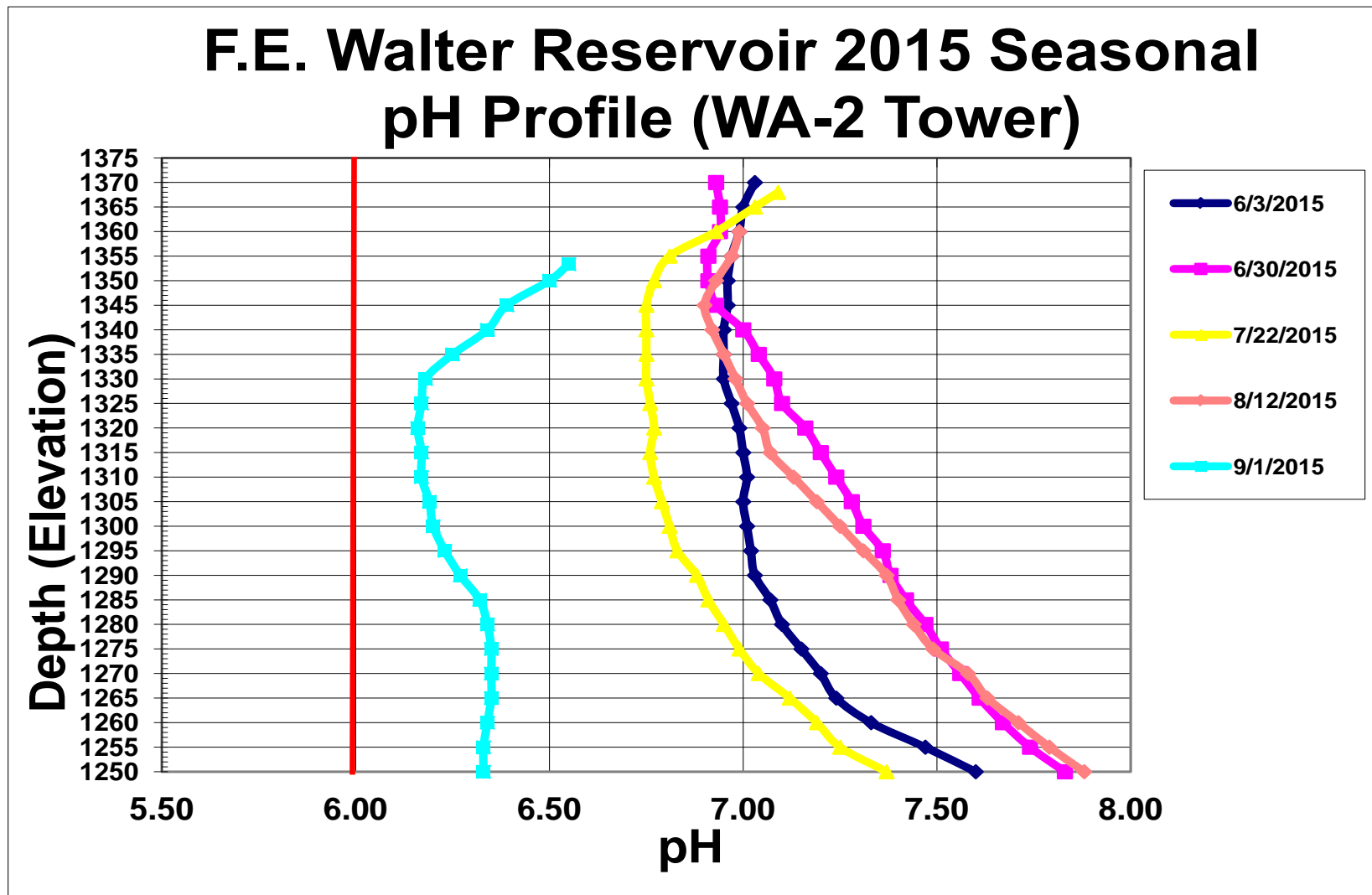


Figure 3-6. Stratification of pH measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015. The PADEP water quality standard pH is an acceptable range from 6 to 9. See Appendix A for a summary of the plotted value.

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-1S	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	48	0.30	4.2	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	<.01	37	0.29	7.2	<.01	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	<.01	64	0.32	7.2	<.01	<3
	8/12/2015	6	<2	<.05	<.05	<.05	0.08	<.01	50	0.35	5.3	<.01	<3
	9/1/2015	7	3	<.05	<.05	<.05	<.05	<.01	68	0.41	5.7	<.01	<3
	Mean	5.80	2.20	0.05	0.05	0.05	0.06	0.01	53.40	0.33	5.92	0.01	3.00
	Stdev	0.84	0.45	0.00	0.00	0.00	0.01	0.00	12.60	0.05	1.29	0.00	0.00
	Max	7.00	3.00	0.05	0.05	0.05	0.08	0.01	68.00	0.41	7.20	0.01	3.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	37.00	0.29	4.20	0.01	3.00
	No. of Detec.	5.00	1.00	0.00	0.00	0.00	1.00	0.00	5.00	5.00	5.00	0.00	0.00
WA-2S	6/3/2015	5	<2	<.05	<.05	<.05	<.05	<.01	46	0.32	3.6	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	0.05	<.01	51	0.32	6.2	<.01	<3
	7/22/2015	5	3	<.05	<.05	<.05	<.05	<.01	57	0.68	7.4	<.01	6
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	46	0.38	5.9	<.01	<3
	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	50	0.37	5.4	<.01	3
	Mean	5.20	2.20	0.05	0.05	0.05	0.05	0.01	50.00	0.41	5.70	0.01	3.60
	Stdev	0.45	0.45	0.00	0.00	0.00	0.00	0.00	4.53	0.15	1.39	0.00	1.34
	Max	6.00	3.00	0.05	0.05	0.05	0.05	0.01	57.00	0.68	7.40	0.01	6.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	46.00	0.32	3.60	0.01	3.00
	No. of Detec.	5.00	1.00	0.00	0.00	0.00	1.00	0.00	5.00	5.00	5.00	0.00	2.00

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015

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-2M	6/3/2015	6	<2	<.05	<.05	<.05	<.05	0.02	61	0.31	4.8	0.02	<3
	6/30/2015	5	<2	<.05	<.05	<.05	0.05	<.01	44	0.35	6.2	0.01	<3
	7/22/2015	4	<2	<.05	<.05	<.05	<.05	<.01	60	0.27	6.7	<.01	<3
	8/12/2015	6	<2	<.05	<.05	<.05	<.05	<.01	52	0.27	6.0	<.01	<3
	9/1/2015	5	<2	<.05	<.05	<.05	<.05	<.01	54	0.34	5.1	<.01	<3
	Mean	5.20	2.00	0.05	0.05	0.05	0.05	0.01	54.20	0.31	5.76	0.01	3.00
	Stdev	0.84	0.00	0.00	0.00	0.00	0.00	0.00	6.87	0.04	0.79	0.00	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.02	61.00	0.35	6.70	0.02	3.00
	Min	4.00	2.00	0.05	0.05	0.05	0.05	0.01	44.00	0.27	4.80	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	1.00	1.00	5.00	5.00	5.00	2.00	0.00	
WA-2B	6/3/2015	5	<2	<.05	<.05	<.05	<.05	<.01	66	0.26	3.5	<.01	3
	6/30/2015	6	<2	<.05	<.05	<.05	0.05	0.02	48	0.37	7.9	0.03	6
	7/22/2015	7	<2	<.05	0.1	<.05	<.05	<.01	82	0.51	7.9	0.04	3
	8/12/2015	7	<2	<.05	<.05	<.05	0.11	<.01	52	0.41	5.1	<.01	22
	9/1/2015	8	<2	<.05	<.05	<.05	<.05	0.02	62	0.51	5.6	0.03	12
	Mean	6.60	2.00	0.05	0.06	0.05	0.06	0.01	62.00	0.41	6.00	0.02	9.20
	Stdev	1.14	0.00	0.00	0.02	0.00	0.03	0.01	13.34	0.10	1.90	0.01	8.04
	Max	8.00	2.00	0.05	0.10	0.05	0.11	0.02	82.00	0.51	7.90	0.04	22.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	48.00	0.26	3.50	0.01	3.00
No. of Detec.	5.00	0.00	0.00	1.00	0.00	2.00	2.00	5.00	5.00	5.00	3.00	5.00	

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015

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-3S	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	83	0.42	8.2	<.01	3
	6/30/2015	7	<2	<.05	<.05	<.05	<.05	<.01	73	0.48	10.1	<.01	<3
	7/22/2015	8	<2	<.05	<.05	<.05	0.13	0.04	99	0.33	8.1	0.04	3
	8/12/2015	8	<2	<.05	<.05	<.05	0.05	<.01	68	0.46	7.7	<.01	6
	9/1/2015	8	<2	<.05	<.05	<.05	0.08	<.01	91	0.37	5.4	<.01	<3
	Mean	7.40	2.00	0.05	0.05	0.05	0.07	0.02	82.80	0.41	7.90	0.02	3.60
	Stdev	0.89	0.00	0.00	0.00	0.00	0.03	0.01	12.70	0.06	1.68	0.01	1.34
	Max	8.00	2.00	0.05	0.05	0.05	0.13	0.04	99.00	0.48	10.10	0.04	6.00
	Min	6.00	2.00	0.05	0.05	0.05	0.05	0.01	68.00	0.33	5.40	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	3.00	1.00	5.00	5.00	5.00	1.00	3.00	
WA-4S	6/3/2015	10	<2	<.05	<.05	<.05	<.05	<.01	68	0.36	7.8	<.01	<3
	6/30/2015	7	<2	<.05	<.05	<.05	0.05	0.07	53	0.62	6.9	0.08	<3
	7/22/2015	8	<2	<.05	<.05	<.05	0.06	<.01	87	0.34	5.9	0.01	15
	8/12/2015	7	<2	<.05	<.05	<.05	<.05	<.01	59	0.44	8	<.01	<3
	9/1/2015	9	<2	<.05	<.05	<.05	0.08	<.01	77	0.32	3.1	<.01	<3
	Mean	8.20	2.00	0.05	0.05	0.05	0.06	0.02	68.80	0.42	6.34	0.02	5.40
	Stdev	1.30	0.00	0.00	0.00	0.00	0.01	0.03	13.65	0.12	1.99	0.03	5.37
	Max	10.00	2.00	0.05	0.05	0.05	0.08	0.07	87.00	0.62	8.00	0.08	15.00
	Min	7.00	2.00	0.05	0.05	0.05	0.05	0.01	53.00	0.32	3.10	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	3.00	1.00	5.00	5.00	5.00	2.00	1.00	

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015

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-5S	6/3/2015	2	<2	<.05	<.05	<.05	<.05	<.01	72	0.38	5.0	0.05	3
	6/30/2015	2	<2	<.05	<.05	<.05	<.05	0.21	37	0.41	6.3	0.23	<3
	7/22/2015	3	<2	<.05	<.05	<.05	<.05	<.01	65	<.25	4.7	<.01	<3
	8/12/2015	3	<2	<.05	<.05	<.05	<.05	<.01	49	0.38	6.6	<.01	<3
	9/1/2015	3	<2	<.05	<.05	<.05	<.05	<.01	66	0.28	3.2	0.01	<3
	Mean	2.60	2.00	0.05	0.05	0.05	0.05	0.05	57.80	0.34	5.16	0.06	3.00
	Stdev	0.55	0.00	0.00	0.00	0.00	0.00	0.09	14.41	0.07	1.36	0.10	0.00
	Max	3.00	2.00	0.05	0.05	0.05	0.05	0.21	72.00	0.41	6.60	0.23	3.00
	Min	2.00	2.00	0.05	0.05	0.05	0.05	0.01	37.00	0.25	3.20	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	4.00	5.00	3.00	1.00	
WA-6S	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	57	0.27	3.3	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	<.01	44	0.39	5.6	<.01	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	<.01	62	0.52	7.3	0.02	3
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	52	0.39	6.0	<.01	<3
	9/1/2015	5	<2	<.05	<.05	<.05	<.05	0.02	74	0.41	5.2	0.02	3
	Mean	5.20	2.00	0.05	0.05	0.05	0.05	0.01	57.80	0.40	5.48	0.01	3.00
	Stdev	0.45	0.00	0.00	0.00	0.00	0.00	0.00	11.23	0.09	1.45	0.01	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.02	74.00	0.52	7.30	0.02	3.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	44.00	0.27	3.30	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	5.00	5.00	2.00	2.00	

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-6M	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	59	<0.25	3.6	<.01	<3
	6/30/2015	4	<2	<.05	<.05	<.05	<.05	<.01	53	0.29	5.7	<.01	<3
	7/22/2015	4	<2	<.05	<.05	<.05	<.05	<.01	72	<.25	6.6	<.01	<3
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	55	0.29	5.6	<.01	<3
	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	60	0.38	5.3	<.01	<3
	Mean	5.00	2.00	0.05	0.05	0.05	0.05	0.01	59.80	0.29	5.36	0.01	3.00
	Stdev	1.00	0.00	0.00	0.00	0.00	0.00	0.00	7.40	0.05	1.10	0.00	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.01	72.00	0.38	6.60	0.01	3.00
	Min	4.00	2.00	0.05	0.05	0.05	0.05	0.01	53.00	0.25	3.60	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	3.00	5.00	0.00	0.00	
WA-6B	6/3/2015	5	<2	<.05	<.05	<.05	<.05	<.01	38	<0.25	3.5	<.01	<3
	6/30/2015	4	<2	<.05	<.05	<.05	<.05	<.01	60	0.27	6.4	0.02	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	0.01	56	0.28	7.7	0.01	<3
	8/12/2015	8	<2	<.05	<.05	<.05	0.1	0.02	57	0.54	5.2	0.09	41
	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	81	0.46	5.3	<.01	7
	Mean	5.60	2.00	0.05	0.05	0.05	0.06	0.01	58.40	0.36	5.62	0.03	11.40
	Stdev	1.52	0.00	0.00	0.00	0.00	0.02	0.00	15.31	0.13	1.56	0.03	16.64
	Max	8.00	2.00	0.05	0.05	0.05	0.10	0.02	81.00	0.54	7.70	0.09	41.00
	Min	4.00	2.00	0.05	0.05	0.05	0.05	0.01	38.00	0.25	3.50	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	1.00	2.00	5.00	4.00	5.00	3.00	2.00	

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015

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-7S	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	56	<0.25	3.4	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	<.01	56	0.40	6.1	0.03	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	<.01	76	0.39	7.0	0.01	<3
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	54	0.45	6.0	<.01	<3
	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	69	0.46	5.5	<.01	<3
	Mean	5.40	2.00	0.05	0.05	0.05	0.05	0.01	62.20	0.39	5.60	0.01	3.00
	Stdev	0.55	0.00	0.00	0.00	0.00	0.00	0.00	9.76	0.08	1.34	0.01	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.01	76.00	0.46	7.00	0.03	3.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	54.00	0.25	3.40	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	4.00	5.00	2.00	0.00	
WA-7M	6/3/2015	6	<2	<.05	<.05	<.05	<.05	0.02	46	0.40	6.4	0.02	<3
	6/30/2015	6	<2	<.05	<.05	<.05	0.06	<.01	52	0.34	6.8	<.01	<3
	7/22/2015	5	<2	<.05	<.05	<.05	0.05	<.01	62	0.27	8.0	<.01	<3
	8/12/2015	7	<2	<.05	<.05	<.05	0.06	<.01	62	0.36	5.9	<.01	<3
	9/1/2015	5	<2	<.05	<.05	<.05	<.05	<.01	72	0.37	5.7	<.01	<3
	Mean	5.80	2.00	0.05	0.05	0.05	0.05	0.01	58.80	0.35	6.56	0.01	3.00
	Stdev	0.84	0.00	0.00	0.00	0.00	0.01	0.00	10.06	0.05	0.91	0.00	0.00
	Max	7.00	2.00	0.05	0.05	0.05	0.06	0.02	72.00	0.40	8.00	0.02	3.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	46.00	0.27	5.70	0.01	3.00
No. of Detec.	5.00	0.00	0.00	0.00	0.00	3.00	1.00	5.00	5.00	5.00	1.00	0.00	

Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015

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-7B	6/3/2015	8	<2	<.05	0.08	<.05	0.06	0.03	63	0.63	3.8	0.03	42
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	0.02	51	0.39	7.9	0.02	5
	7/22/2015	6	<2	<.05	<.05	<.05	0.06	<.01	63	0.34	7.9	<.01	<3
	8/12/2015	7	<2	<.05	<.05	<.05	0.11	0.02	56	0.40	5.5	0.02	12
	9/1/2015	8	<2	<.05	<.05	<.05	<.05	0.05	79	0.77	5.9	0.09	64
	Mean	6.80	2.00	0.05	0.06	0.05	0.07	0.03	62.40	0.51	6.20	0.03	25.20
	Stdev	1.30	0.00	0.00	0.01	0.00	0.03	0.02	10.57	0.19	1.74	0.03	26.75
	Max	8.00	2.00	0.05	0.08	0.05	0.11	0.05	79.00	0.77	7.90	0.09	64.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	51.00	0.34	3.80	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	1.00	0.00	3.00	4.00	5.00	5.00	5.00	4.00	4.00

3.2.1 Ammonia

Total Ammonia (NH₃) is a measure of the most reduced inorganic form of nitrogen in water and includes dissolved ammonia and the ammonium ion. Ammonia is a small component of the nitrogen cycle but 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 only one sample of sixty five total samples measuring greater than the laboratory reporting limit (<0.05 mg/L). One measure of 0.10 mg/L of ammonia was collected at station WA-2B on 22 July (Table 3-1). F.E. Walter Reservoir was in compliance with the PADEP water quality standard for ammonia during 2015. 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.

Table 3-2. PADEP ammonia nitrogen criteria (Pennsylvania Code, Title 25, Chapter 93 1984 and 1997). Specific ammonia criteria dependent on temperature and pH.

PH	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C
6.50	25.5	25.5	25.5	17.4	12.0	8.4	5.9
6.75	23.6	23.6	23.6	16.0	11.1	7.7	5.5
7.00	20.6	20.6	20.6	14.0	9.7	6.8	4.8
7.25	16.7	16.7	16.7	11.4	7.8	5.5	3.9
7.50	12.4	12.4	12.4	8.5	5.9	4.1	2.9
7.75	8.5	8.5	8.5	5.8	4.0	2.8	2.0
8.00	5.5	5.5	5.5	5.8	4.0	2.8	2.0
8.25	3.4	3.4	3.4	2.3	1.6	1.2	0.9
8.50	2.0	2.0	2.0	1.4	1.0	0.7	0.6
8.75	1.2	1.2	1.2	0.9	0.6	0.5	0.4
9.00	0.8	0.8	0.8	0.5	0.4	0.3	0.3

3.2.2 Nitrite and Nitrate

Nitrite (NO₂) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. Concentrations of nitrite at F.E. Walter Reservoir were consistently low during 2015. Concentrations of nitrite measured at all stations and depths were less than the reporting limit of 0.05 mg/L (Table 3-1).

Nitrate (NO₃) is the measure of the most oxidized and stable form of nitrogen. It is the principal form of combined nitrogen in natural waters. Nitrate is the primary form of nitrogen used by plants as a nutrient to stimulate plant growth. Nitrate was also consistently low at F.E. Walter Reservoir during 2015. For all stations and depths, sample results ranged from less than

the reporting limit of 0.05 mg/L to a high of 0.13 mg/L in the surface waters at station WA-3S on 22 July.

In 2015, 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 0.18 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 2015 (Table 3-1). Concentrations measured at all reservoir stations ranged from less than the reporting limit of 0.25 mg/L to a high of 0.77 mg/L at station WA-7B on 01 September. Slightly higher concentrations were most often observed in the bottom waters at all lake sampling stations.

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. Concentrations of total phosphorus were occasionally elevated at many of the reservoir sampling stations throughout the sampling season (Table 3-1). For all stations and depths, concentrations ranged from less than the reporting limit of 0.01 mg/L to a high of 0.23 mg/L. Surface waters of the reservoir tributaries routinely had the higher concentrations. The maximum single sample concentration of 0.23 mg/L was measured on 30 June at station WA-3S. High seasonal mean concentrations of total phosphorus were seen in the deeper waters of the reservoir. Higher concentrations in the lake bottom waters are attributed to phosphorus sediment release under low oxygen conditions. F.E. Walter Reservoir occasionally experienced these conditions in 2015.

3.2.5 Dissolved Phosphorus

Dissolved or soluble phosphorus (DISS P) in the water column of F.E. Walter Reservoir remained consistently low during 2015. Concentrations at all stations and depths during the sampling season were below the reporting limit of 0.05 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 Dissolved Phosphate

Dissolved Phosphate or Orthophosphate (PO₄) is a measure of the inorganic oxidized form of soluble phosphorus. This form of phosphorus is the most readily available for uptake during photosynthesis. In 2015, concentrations of dissolved phosphate were near or below the reporting limit of 0.01 mg/L at all stations and depths (Table 3-1). The single highest measure of 0.21 mg/L was recorded in the surface waters at station WA-5S on 30 June. This high reading is likely associated with a watershed wide heavy rainstorm and associated runoff during that sampling week.

3.2.7 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 2015. Concentrations at all stations and depths over the monitoring period ranged from 37 to 99 mg/L (Table 3-1). The highest mean seasonal concentration of 82.8 mg/L was seen at the upstream surface tributary station WA-3S. F.E. Walter Reservoir and its tributaries were in compliance with the PADEP water quality standard for total dissolved solids during 2015. The water quality standard is a maximum concentration of 500-mg/L.

3.2.8 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 2015 with most sample results less than the reporting limit of 3.0 mg/L up to 64 mg/L (Table 3-1). Elevated results were most seen in the lake bottom water samples. This is likely a result of sampling error and resulting interference of suspended sediment in the sampling apparatus during lake bottom water sample collection. On occasion, bottom sediments are re-suspended during the process of collecting a sample from deeper waters. These elevated results do not accurately reflect conditions at those stations and depths.

3.2.9 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.

Measurements of 5-day Biochemical oxygen demand (BOD) for all but two samples (both measured 3.0 mg/L) at F.E. Walter Reservoir and its tributary stations in 2015 were below the reporting limit of 2.0 mg/L. It is therefore inferred that F.E. Walter Reservoir and its associated tributaries contain very clean water with little biodegradable organic wastes.

3.2.10 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_3 except where natural conditions are less.

Alkalinity measurements in the waters of F.E. Walter Reservoir were routinely low during 2015. Concentrations measured at all stations and depths ranged from 2.0 mg/L to 10.0 mg/L CaCO_3 throughout the monitoring period (Table 3-1). The greatest mean seasonal concentration of 8.2 mg/L CaCO_3 was measured in the tributary surface waters at Station WA-4S. The natural alkalinity of water is largely dependent on the underlying geology and soils within the surrounding watershed. The low alkalinity measured at F.E. Walter Reservoir probably results from the regional geology, which is primarily sandstone and shale (Van Diver 1990).

3.2.11 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 3.1 mg/L to 10.1 mg/L. The highest single measured concentration of 10.1 mg/L was in the surface waters at tributary station WA-3S on 30 June.

3.2.12 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 most part, chlorophyll a was low in the surface waters of F.E. Walter Reservoir in all months sampled except July (Appendix A). Excluding the 22 July sampling, concentrations for all other sampling dates for tributary and lake stations at depths from 0-15 feet ranged from 0.1 ug/L to 8.8 ug/L. Sampling results from 22 July shown that the reservoir body was experiencing an algal bloom in the surface waters of the lake (0-10 feet of depth). Chlorophyll a concentrations at all lake sampling stations (WA-6S, 7S, and 2S) on this date were elevated and ranged from 9.8 ug/L to 30.8 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 early June (37.35), late June (37.35), 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 early June (46.18), late June (47.94), August (49.73) and September (49.31), and eutrophic in July (62.01). TSIs calculated for measures of chlorophyll a classified F.E. Walter Reservoir as eutrophic in July (60.98), mesotrophic in late June (43.43), August (45.57) and September (48.06), and oligotrophic in early June (36.20).

Carlson (1977) warned against averaging TSI values estimated for different parameters, and instead suggested giving priority to chlorophyll a during the summer and to phosphorus in the spring, fall, and winter. With this in mind, and based on the pattern of TSI values for secchi disk depth, chlorophyll a and total phosphorus, F.E. Walter Reservoir was oligotrophic/mesotrophic during the 2015 sampling season. The spike in chlorophyll a and secchi disk readings during the month of July was the result of an algal bloom and was not reflective of the overall seasonal trophic state of the reservoir.

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 was oligotrophic/mesotrophic throughout much of the 2015 sampling season.

Table 3-3. EPA trophic classification criteria and average monthly measures for F.E. Walter Reservoir in 2015

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	03 June	30 June	22 July	12 Aug.	01 Sep.
Total Phosphorus (ppb)	<10	10-20	>20	<10	<10	<10	<10	<10
Chlorophyll a (ppb)	<4	4-10	>10	1.77	3.70	22.13	4.60	5.93
Secchi Depth (m)	>4	2-4	<2	2.61	2.31	0.87	2.04	2.10

3.4 RESERVOIR BACTERIA MONITORING

Two forms of coliform bacteria were monitored in the tributary and lake surface waters at F.E. Walter Reservoir during 2015 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 measures for all lake and tributary stations at F.E. Walter Reservoir during 2015, ranged from 920-clns/100-ml to greater than the detection limit of 2400-clns/100-ml. Fecal coliform counts ranged from less than the detection limit of 2-clns/100-ml to 1300-clns/100-ml for the monitoring period. Overall, bacteria levels were low at F.E. Walter Reservoir with respect to PADEP water quality standards. Elevated bacteria levels were seen primarily in tributary surface water stations WA-3S, WA-4S, and WA-5S and are directly affected by upstream watershed activity. For waters with contact recreation, the water quality standard for bacterial contamination is a single fecal sample standard of 1000 colonies/100-ml. Two single fecal bacteria sample result exceeded the PADEP water contact recreation standard. Both of these samples were collected on 12 August (Table 3-4). Water contact recreation is not permitted at F.E. Walter Reservoir.

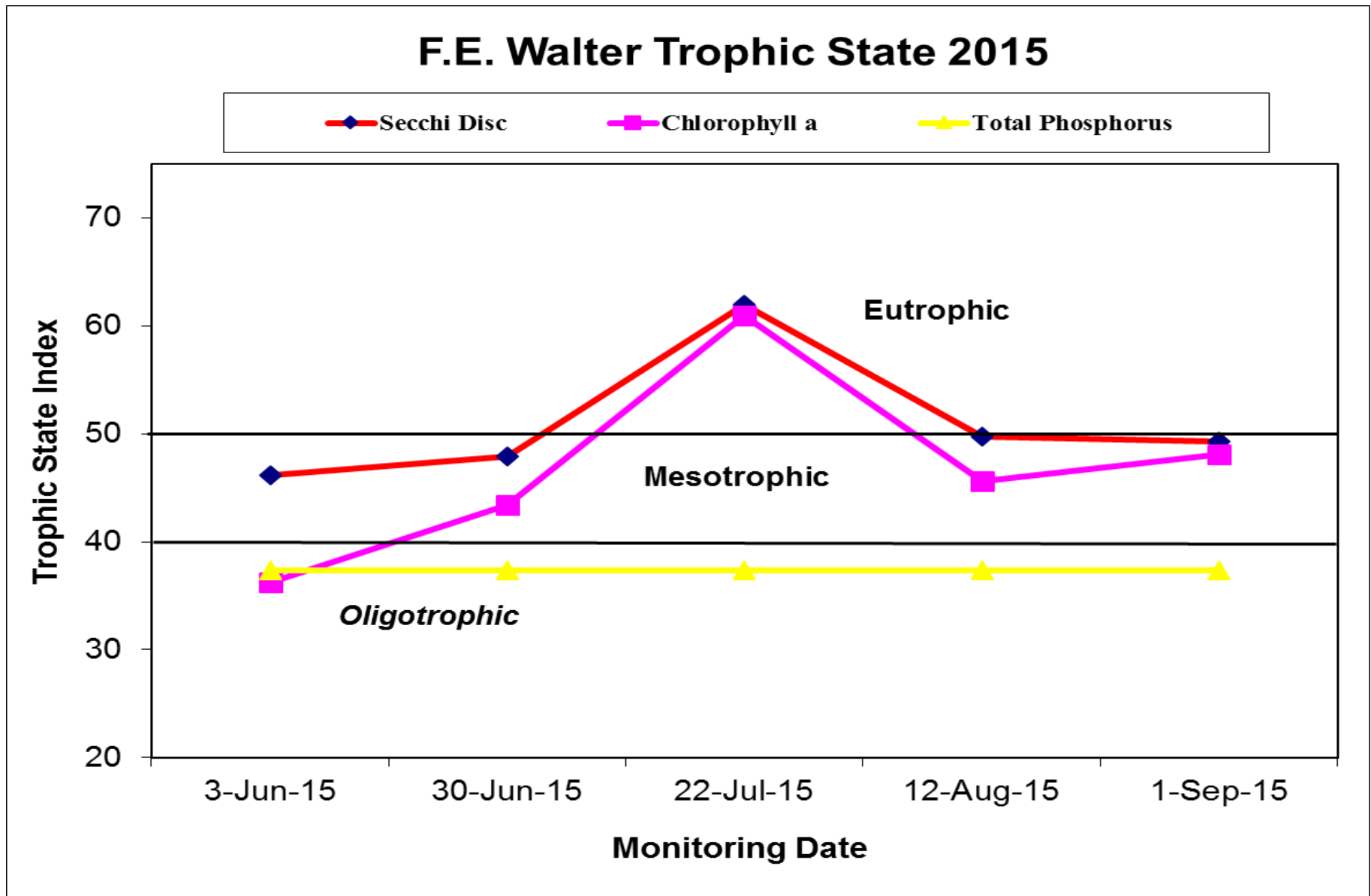


Figure 3-7. Carlson Trophic state indices calculated from secchi disk depth, concentrations of chlorophyll a and Total Phosphorus measured in surface waters of F.E. Walter Reservoir at Station WA-2 during 2015.

Table 3-4. Surface water bacteria counts (colonies/100 ml) at Walter Reservoir during 2015. Shaded values exceed State bacteria criteria. NS = Not Sampled in 2015

STATION	DATE		Total Coliform		Fecal Coliform		Escherichia coli
WA-1S	6/3/15	>	2400		110		NS
	6/30/15	>	2400		100		NS
	7/22/15		2000		6		NS
	8/12/15	>	2400		16		NS
	9/1/15		920	<	2		NS
WA-2S	6/3/15	>	2400		6		NS
	6/30/15	>	2400	<	2		NS
	7/22/15	>	2400	<	2		NS
	8/12/15	>	2400		11		NS
	9/1/15		1400		5		NS
WA-3S	6/3/15	>	2400		70		NS
	6/30/15	>	2400		40		NS
	7/22/15	>	2400		11		NS
	8/12/15	>	2400		94		NS
	9/1/15		2000		28		NS
WA-4S	6/3/15		1000		410		NS
	6/30/15	>	2400		850		NS
	7/22/15	>	2400		130		NS
	8/12/15	>	2400		1100		NS
	9/1/15	>	2400		42		NS
WA-5S	6/3/15	>	2400		86		NS
	6/30/15	>	2400		62		NS
	7/22/15		2400		8		NS
	8/12/15	>	2400		1300		NS
	9/1/15		1600		24		NS
WA-6S	6/3/15	>	2400		3		NS
	6/30/15	>	2400	<	2		NS
	7/22/15	>	2400	<	2		NS
	8/12/15	>	2400	<	2		NS
	9/1/15		2400		2		NS
WA-7S	6/3/15	>	2400	<	2		NS
	6/30/15	>	2400	<	2		NS
	7/22/15	>	2400	<	2		NS
	8/12/15	>	2400		2		NS
	9/1/15		1400		2		NS

4.0 REFERENCES

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APPENDIX A

STRATIFICATION DATA TABLES

2015 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-1S Outfall	6/3/2015	9:15:45	0.5	15.17	100.2	10.06	6.67	-16.7	192.1	97.9	8.2	0.167
	6/30/2015	8:24:54	0.5	18.10	100	9.44	6.71	-19.1	162.5	36.7	4.8	0.077
	7/22/2015	9:35:37	0.5	19.12	93.6	8.66	7.01	-36.4	118.9	37.6	4.7	0.076
	8/12/2015	9:16:37	0.5	20.31	96.1	8.68	6.92	-30.8	108.9	-2.0	3.0	0.105
	9/1/2015	9:56:34	0.5	20.55	95.5	8.58	6.58	-11.1	111.6	41.2	3.4	0.093
WA-2 Lake Tower Lake Tower Secchi 2.61 m	6/3/2015	7:41:44	0.5	20.34	91	8.22	7.03	-37.4	224.8	34.7	1.4	0.162
		7:41:22	5	20.35	91	8.21	7.03	-37.3	224.7	34.8	1.7	0.163
		7:40:37	10	20.34	90.7	8.19	7.00	-35.5	225.8	34.8	2.2	0.163
		7:39:49	15	18.73	87	8.11	6.99	-34.8	229.7	34.9	2.3	0.162
		7:39:03	20	18.17	83.8	7.91	6.97	-33.8	231.5	35.4	2.6	0.168
		7:38:12	25	17.56	82	7.83	6.96	-33.2	233.2	35.7	3.9	0.171
		7:37:15	30	17.42	81.2	7.78	6.96	-33.2	233.7	35.6	3.1	0.172
		7:36:17	35	17.27	79.5	7.64	6.95	-32.8	234.6	35.0	2.6	0.173
		7:35:29	40	17.01	78	7.53	6.95	-32.9	235.1	34.8	2.6	0.175
		7:34:23	45	16.64	77.3	7.52	6.95	-33.1	236.1	34.7	2.0	0.176
		7:33:30	50	16.37	78.1	7.64	6.97	-34.3	235.6	35.8	2.4	0.177
		7:32:00	55	16.34	78.8	7.72	6.99	-35.1	235.7	35.8	3.3	0.177
		7:31:13	60	16.28	79.4	7.79	7.00	-35.6	235.7	36.3	3.6	0.176
		7:30:22	65	16.05	80.3	7.91	7.01	-36.5	235.5	36.5	3.7	0.177
		7:28:51	70	15.67	77.8	7.73	7.00	-35.9	237.5	36.6	3.7	0.179
		7:27:49	75	15.68	76	7.55	7.01	-36	238.6	36.2	3.0	0.18
		7:27:10	80	15.57	74.9	7.46	7.02	-37	239.1	36.0	3.3	0.181
		7:26:07	85	15.57	74.3	7.40	7.03	-37.6	239.1	35.2	2.3	0.185
		7:24:17	90	15.04	74.7	7.52	7.07	-39.7	239.2	35.1	2.7	0.184
		7:22:38	95	14.8	73.4	7.43	7.10	-41.3	240.9	35.2	2.4	0.182
7:21:23	100	14.52	72.9	7.42	7.15	-44.1	241.2	35.4	2.0	0.184		
7:20:17	105	14.41	72.5	7.40	7.20	-46.8	241.1	35.6	2.8	0.185		
7:19:18	110	13.55	70.7	7.35	7.24	-49.3	241.5	35.5	1.7	0.189		
7:17:28	115	12.87	64.2	6.78	7.33	-54.6	242.3	36.0	2.2	0.191		
7:15:41	120	11.17	53.9	5.92	7.47	-62.1	243.8	38.3	2.4	0.193		
7:14:38	121	11.13	54.6	6.00	7.60	-69.1	243.2	38.0	2.8	0.194		

2015 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 2.31 M	6/30/2015	7:01:22	0.5	20.74	83.6	7.49	6.93	-31.4	162.4	33.9	3.8	0.081
		7:00:58	5	20.75	83.3	7.46	6.94	-32.5	161.3	33.7	3.8	0.081
		7:00:10	10	20.67	81.5	7.31	6.94	-32	161.9	33.7	3.5	0.081
		6:58:47	15	20.54	75.8	6.82	6.91	-30.2	163.6	33.9	3.5	0.081
		6:57:53	20	20.13	70.0	6.35	6.91	-30.5	164.5	33.9	3.8	0.081
		6:56:52	25	19.80	71.4	6.52	6.93	-31.7	165.1	33.8	3.7	0.082
		6:56:04	30	19.60	74.3	6.81	7.00	-35.6	164.0	34.0	2.7	0.079
		6:55:18	35	19.48	76.2	7.00	7.04	-38.1	159.9	34.1	4.5	0.079
		6:54:14	40	19.34	77.3	7.12	7.08	-40.1	159.0	34.6	2.6	0.078
		6:53:27	45	19.27	78.6	7.25	7.10	-41.3	158.7	34.7	2.9	0.078
		6:52:43	50	19.09	81.3	7.53	7.16	-45.2	158.0	34.8	3.5	0.075
		6:51:58	55	18.85	81.0	7.53	7.20	-47.1	155.8	34.9	2.8	0.076
		6:50:42	60	18.67	82.8	7.73	7.24	-49.6	152.2	34.9	4.2	0.078
		6:49:58	65	18.43	83.9	7.87	7.28	-51.6	151.6	35.2	2.9	0.077
		6:49:18	70	18.10	84.4	7.97	7.31	-53.6	151.2	35.2	3.4	0.075
		6:48:31	75	17.99	84.7	8.02	7.36	-56.3	149.1	35.3	3.9	0.075
		6:47:44	80	17.84	84.5	8.02	7.38	-57.8	146.7	35.4	4.1	0.078
		6:47:11	85	17.74	84.1	8.00	7.42	-59.9	144.7	35.6	4.2	0.078
		6:46:20	90	17.64	84.3	8.04	7.47	-62.7	142.2	35.8	4.4	0.079
		6:45:14	95	17.48	84.1	8.05	7.51	-65.2	139.9	36.3	4.4	0.08
6:44:04	100	17.44	84.0	8.05	7.56	-67.9	137.4	36.4	4.3	0.08		
6:43:09	105	17.44	83.3	7.98	7.61	-70.9	135.0	36.6	4.3	0.08		
6:42:20	110	17.33	81.7	7.84	7.67	-74	132.7	37.2	3.7	0.08		
6:41:21	115	17.27	80.2	7.70	7.74	-77.9	129.1	38.2	4.3	0.08		
6:40:15	120	17.18	75.9	7.30	7.83	-83	125.0	64.8	4.2	0.08		
WA-2 Lake Tower Secchi 0.87 M	7/22/2015	8:06:38	0.5	24.45	97.4	8.13	7.09	-41	114.8	33.1	27.7	0.076
		8:05:56	5	24.42	96.3	8.04	7.03	-37.5	116.1	32.9	30.8	0.076
		8:05:01	10	23.40	88.2	7.51	6.93	-31.5	124.3	32.0	7.9	0.076
		8:03:30	15	22.22	78.5	6.83	6.81	-24.4	131.3	32.1	5.3	0.075
		8:02:35	20	21.44	71.9	6.36	6.77	-22.2	134.2	32.0	5.4	0.075
		8:01:36	25	20.67	68.0	6.10	6.75	-21	135.8	31.9	5.5	0.075
		8:00:54	30	20.30	67.1	6.06	6.75	-21.3	135.4	32.0	6.8	0.076
		7:59:55	35	20.09	66.9	6.07	6.75	-21	135.9	32.0	5.5	0.076
		7:59:10	40	19.83	67.0	6.12	6.75	-21.3	135.6	32.0	5.3	0.077
		7:58:20	45	19.70	66.5	6.08	6.76	-21.9	135.1	32.0	5.5	0.077
		7:57:36	50	19.59	66.0	6.04	6.77	-22.5	134.3	32.0	5.9	0.077
		7:56:25	55	19.50	64.4	5.91	6.76	-21.7	135.1	31.9	5.7	0.077
		7:55:42	60	19.39	64.5	5.93	6.77	-22.4	135.3	32.0	4.9	0.075
		7:55:05	65	19.28	64.9	5.99	6.79	-23.4	135.5	32.2	4.5	0.074
		7:54:30	70	19.21	65.3	6.03	6.81	-24.8	132.8	32.1	5.3	0.076
		7:53:16	75	19.12	63.5	5.87	6.83	-26.1	133.6	32.7	4.6	0.072
		7:52:02	80	19.00	61.4	5.70	6.88	-28.9	131.5	33.1	4.1	0.072
		7:50:55	85	18.93	59.7	5.54	6.91	-30.8	128.1	33.0	4.4	0.075
		7:49:46	90	18.84	59.6	5.55	6.95	-32.9	126.2	33.9	4.6	0.074
		7:48:41	95	18.64	55.9	5.22	6.99	-35.3	123.5	34.6	5.0	0.078
7:47:07	100	18.43	48.5	4.55	7.04	-38.1	121.4	392.0	5.9	0.079		
7:45:27	105	18.41	48.9	4.59	7.12	-42.7	115.8	41.9	4.5	0.079		
7:43:51	110	18.39	46.5	4.37	7.19	-46.5	110.2	92.2	4.6	0.08		
7:42:48	115	18.27	39.6	3.73	7.25	-50	104.3	47.2	4.7	0.126		
7:40:55	120	18.25	38.2	3.60	7.37	-57.1	93	720.2	5.4	0.156		

2015 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-3S Tobyhanna Creek Upstream	6/3/2015	9:45:57	0.5	16.56	96.2	9.38	6.77	-22.3	170.6	34.9	6.2	0.177
	6/30/2015	8:45:36	0.5	17.77	93.5	8.89	6.78	-23	151.9	35.7	6.9	0.094
	7/22/2015	9:55:11	0.5	18.87	93.3	8.67	7.04	-38.2	114.6	35.6	5.4	0.095
	8/12/2015	9:40:02	0.5	19.21	93.8	8.66	6.96	-33.4	107.2	42.4	5.8	0.120
	9/1/2015	10:21:01	0.5	18.68	95.6	8.93	6.69	-17.9	108.6	39.4	2.8	0.111
WA-4S Lehigh River Upstream	6/3/2015	10:38:17	0.5	13.99	94.5	9.74	6.72	-19.9	192.8	36.5	6.6	0.146
	6/30/2015	8:57:24	0.5	15.98	91.3	9.02	6.80	-24.4	121.0	39.3	4.7	0.073
	7/22/2015	10:06:11	0.5	19.05	95.6	8.86	7.00	-36	110.6	36.5	4.4	0.099
	8/12/2015	9:50:10	0.5	17.16	90.7	8.73	6.96	-33.6	129.1	40.0	7.7	0.106
	9/1/2015	10:32:48	0.5	18.65	94.4	8.82	6.47	-5	127.8	42.5	2.5	0.160
WA-5S Bear Creek Upstream	06/03/15	10:18:45	0.5	14.56	97.4	9.91	6.84	-26.8	186.6	35.0	3.7	0.182
	6/30/2015	9:21:09	0.5	16.06	95.6	9.42	6.46	-5.1	175.8	34.0	4.6	0.061
	7/22/2015	10:26:42	0.5	19.88	93.9	8.56	7.09	-40.6	139.3	35.7	3.1	0.088
	8/12/2015	10:10:19	0.5	18.23	96.0	9.05	6.94	-32.0	143.5	39.4	4.3	0.097
	9/1/2015	10:52:59	0.5	18.85	97.0	9.02	6.85	-26.8	122.0	37.7	0.1	0.093
WA-6 Bear Creek Lake Arm	6/3/2015	8:09:42	0.5	20.38	90.7	8.18	6.88	-28.5	227.2	34.2	1.1	0.164
		8:08:07	5	20.40	90.2	8.13	6.79	-23.6	230.8	34.4	1.7	0.164
		8:07:31	10	20.38	89.2	8.05	6.76	-21.7	232.0	34.5	1.8	0.164
		8:06:52	15	19.06	85.0	7.88	6.74	-20.9	235.3	34.4	2.1	0.168
		8:05:54	20	18.22	81.8	7.70	6.72	-19.7	237.0	35.2	3.7	0.170
		8:05:00	25	17.71	82.1	7.82	6.73	-20.0	237.0	35.0	3.0	0.171
		8:04:07	30	17.39	80.3	7.69	6.71	-19.4	237.9	34.5	2.4	0.172
		8:03:14	35	17.17	79.3	7.63	6.68	-17.5	240.1	34.7	2.3	0.173
		8:02:38	40	16.91	78.5	7.59	6.68	-17.3	240.1	35.4	3.3	0.176
		8:01:58	45	16.67	76.8	7.47	6.69	-18.0	240.5	34.7	2.8	0.175
		8:00:49	50	16.39	77.3	7.56	6.67	-16.9	241.5	35.4	2.8	0.178
		8:00:12	55	16.26	77.6	7.62	6.70	-18.5	240.0	35.7	3.5	0.177
		7:58:38	60	16.01	75.9	7.48	6.68	-17.4	241.2	35.5	2.9	0.178
		7:57:35	65	15.83	74.9	7.42	6.67	-17.0	242.1	35.0	1.9	0.178
		7:56:09	70	15.69	73.4	7.29	6.68	-17.3	243.1	34.8	2.2	0.176
		7:55:17	75	15.50	73.8	7.36	6.71	-19.2	242.1	34.6	1.9	0.178
		7:52:48	80	15.06	73.6	7.41	6.74	-21.1	242.8	34.8	2.6	0.181
7:51:51	85	14.50	72.5	7.39	6.77	-22.9	243.1	34.8	2.1	0.185		
7:50:22	90	14.01	73.5	7.57	6.82	-25.8	242.3	35.9	2.4	0.188		
WA-6 Bear Creek Lake Arm	6/30/2015	7:24:24	0.5	20.87	86.0	7.69	6.63	-14.1	154.4	33.7	4.1	0.08
		7:23:49	5	20.86	84.6	7.56	6.62	-13.5	153.7	33.5	2.8	0.08
		7:23:09	10	20.69	81.0	7.27	6.59	-12.1	154.6	33.7	3.0	0.08
		7:22:17	15	20.12	72.9	6.62	6.54	-9.2	157.8	33.8	3.0	0.082
		7:21:43	20	19.95	72.7	6.62	6.56	-10.3	154.8	33.8	4.7	0.082
		7:20:52	25	19.79	74.9	6.84	6.57	-11.1	153.4	33.9	4.3	0.08
		7:19:47	30	19.59	76.7	7.03	6.61	-13.2	149.9	34.3	3.0	0.078
		7:18:34	35	19.48	77.4	7.11	6.60	-12.6	146.2	34.4	4.4	0.079
		7:17:56	40	19.36	80.2	7.38	6.63	-14.1	146.3	34.5	3.2	0.075
		7:17:21	45	19.25	79.5	7.34	6.64	-14.7	142.5	34.6	3.5	0.076
		7:16:30	50	19.11	82.8	7.66	6.67	-16.8	138.3	34.5	2.8	0.074
		7:15:15	55	18.77	84.0	7.83	6.68	-17.2	132.4	34.6	3.2	0.074
		7:14:36	60	18.71	84.8	7.91	6.71	-19.2	127.1	34.7	3.7	0.073
		7:13:48	65	18.46	85.6	8.03	6.74	-20.8	120.7	34.7	3.5	0.072
		7:12:51	70	18.06	84.3	7.97	6.77	-22.6	109.7	34.9	3.9	0.072
		7:11:59	75	17.82	82.9	7.87	6.79	-23.6	94.7	35.5	3.5	0.074
		7:11:09	80	17.70	77.5	7.38	6.84	-26.6	70.4	36.4	2.9	0.072
7:09:55	85	17.60	47.0	4.49	6.68	-17.6	-50.9	44.3	3.8	0.075		

2015 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	7/22/2015	8:30:47	0.5	24.71	97.6	8.10	6.83	-26.0	135.3	33.0	19.2	0.076
		8:30:12	5	24.68	96.7	8.04	6.77	-22.4	137.2	33.1	24.4	0.076
		8:29:03	10	23.87	89.0	7.51	6.60	-12.1	145.9	32.4	6.7	0.076
		8:28:21	15	22.14	77.9	6.80	6.52	-8.0	151.7	32.4	5.9	0.076
		8:27:21	20	21.22	71.6	6.36	6.49	-6.0	153.9	32.2	5.2	0.075
		8:26:28	25	20.82	69.8	6.25	6.46	-4.6	155.2	32.2	5.4	0.074
		8:25:44	30	20.46	68.5	6.17	6.45	-3.9	155.3	32.1	5.3	0.074
		8:24:27	35	20.21	67.2	6.09	6.42	-2.4	156.4	32.3	5.8	0.074
		8:23:05	40	19.89	65.9	6.00	6.41	-1.6	156.5	32.5	5.3	0.072
		8:21:58	45	19.70	65.2	5.96	6.40	-0.8	157.8	33.1	4.7	0.070
		8:21:00	50	19.59	64.1	5.88	6.40	-1.0	157.4	33.4	4.5	0.070
		8:20:19	55	19.39	63.1	5.81	6.41	-1.8	156.4	33.6	4.7	0.070
		8:19:43	60	19.23	62.5	5.77	6.45	-3.9	155.0	34.2	4.0	0.070
		8:18:50	65	19.16	63.4	5.86	6.47	-5.4	153.1	33.4	4.9	0.072
		8:17:39	70	19.08	64.6	5.98	6.51	-7.5	150.0	32.7	5.0	0.074
		8:16:46	75	19.01	63.5	5.89	6.53	-8.4	148.9	32.7	6.0	0.076
		8:15:36	80	18.87	62.0	5.76	6.61	-13.5	143.3	33.2	5.0	0.077
8:14:21	85	18.82	60.6	5.64	6.64	-15.3	140.7	33.8	5.3	0.077		
WA-6 Bear Creek Lake Arm	8/12/2015	8:16:34	0.5	22.62	81.6	7.05	6.72	-19.3	155.4	35.4	4.3	0.099
		8:15:53	5	22.64	81.0	6.99	6.72	-19.6	154.9	34.6	5.1	0.099
		8:14:53	10	22.63	79.3	6.85	6.68	-16.9	156.6	34.6	4.3	0.099
		8:13:25	15	22.28	62.7	5.45	6.55	-9.5	163.7	34.6	4.2	0.098
		8:12:37	20	21.84	60.1	5.27	6.55	-9.7	164.3	34.6	3.7	0.097
		8:11:14	25	21.53	60.7	5.35	6.57	-10.8	162.8	34.6	3.7	0.099
		8:10:46	30	21.42	60.8	5.38	6.59	-11.8	161.4	34.7	3.7	0.099
		8:09:58	35	21.30	62.6	5.55	6.60	-12.5	161.8	35.0	3.3	0.096
		8:09:05	40	21.20	66.1	5.87	6.63	-14.1	159.9	35.6	2.9	0.095
		8:08:05	45	21.02	66.6	5.93	6.65	-15.7	158.3	36.3	3.2	0.095
		8:07:25	50	20.89	68.6	6.12	6.70	-18.5	154.9	36.6	3.1	0.094
		8:06:37	55	20.73	65.1	5.84	6.72	-19.6	153.0	36.9	3.5	0.096
		8:05:53	60	20.57	61.5	5.53	6.75	-21.2	150.9	37.5	2.6	0.098
		8:04:44	65	20.46	63.2	5.70	6.78	-22.9	143.5	36.5	3.5	0.108
		8:03:25	70	20.36	57.7	5.21	6.81	-24.6	142.3	38.6	2.6	0.103
		8:02:24	75	20.24	68.7	6.21	6.85	-27.2	130.4	37.2	2.5	0.113
		8:01:15	80	20.21	68.7	6.22	6.85	-27.0	121.3	37.5	3.6	0.112
8:00:38	83	20.19	68.7	6.22	6.84	-26.7	112.1	38.2	3.2	0.113		

2015 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	9/1/2015	8:34:06	0.5	23.33	93.2	7.94	6.53	-8.1	120.8	37.9	5.2	0.085
		8:33:11	5	23.32	92.4	7.88	6.47	-4.9	121.7	38.0	5.8	0.085
		8:32:24	10	22.79	87.4	7.53	6.41	-1.2	124.1	37.9	8.8	0.085
		8:31:31	15	22.16	78.3	6.82	6.32	3.9	128.0	37.8	6.7	0.086
		8:30:56	20	21.94	72.0	6.30	6.28	6.2	130.4	37.6	4.5	0.085
		8:29:54	25	21.78	67.3	5.90	6.23	9.0	132.4	37.5	4.6	0.084
		8:28:42	30	21.59	54.1	4.77	6.18	11.8	134.7	37.6	4.6	0.084
		8:27:03	35	21.46	59.3	5.24	6.21	10.2	133.4	37.7	3.1	0.083
		8:25:15	40	21.38	54.4	4.81	6.21	10.2	131.6	37.5	4.2	0.089
		8:24:36	45	21.26	54.6	4.84	6.22	9.8	131.1	37.8	4.2	0.088
		8:23:25	50	21.14	56.7	5.04	6.22	9.8	131.6	38.0	3.6	0.085
		8:22:36	55	21.10	57.1	5.08	6.22	9.3	130.8	38.2	3.4	0.086
		8:21:36	60	20.97	57.6	5.14	6.25	8.0	129.1	38.8	2.4	0.088
		8:20:00	65	20.75	58.5	5.24	6.26	7.1	127.8	40.7	3.4	0.089
8:19:00	70	20.65	58.1	5.22	6.29	5.5	126.5	44.1	2.6	0.089		
8:17:29	75	20.52	61.8	5.56	6.34	2.5	120.5	41.8	3.2	0.092		
WA-7 Lehigh Lake Arm	6/3/2015	8:35:02	0.5	20.37	90.7	8.18	6.80	-23.9	184.4	34.1	2.1	0.164
		8:34:28	5	20.38	90.4	8.16	6.76	-21.8	186.0	34.2	2.3	0.164
		8:33:55	10	20.30	89.6	8.09	6.75	-21.2	186.3	34.3	2.7	0.164
		8:33:10	15	18.87	83.5	7.77	6.70	-18.3	191.3	34.5	2.9	0.169
		8:31:39	20	18.12	83.5	7.88	6.70	-18.4	190.5	35.0	3.1	0.170
		8:31:00	25	17.84	83.1	7.89	6.70	-18.3	190.0	35.2	2.9	0.171
		8:30:01	30	17.53	82.3	7.87	6.69	-18.2	189.5	35.2	3.9	0.172
		8:29:09	35	17.21	79.7	7.66	6.69	-18.1	189.1	34.9	2.8	0.174
		8:27:32	40	16.88	81.4	7.88	6.69	-18.1	187.6	35.7	3.9	0.174
		8:26:42	45	16.76	83.0	8.06	6.71	-19.3	184.4	36.2	3.5	0.173
		8:25:13	50	16.41	86.3	8.44	6.70	-18.8	183.3	36.7	5.5	0.172
		8:24:15	55	16.07	86.9	8.56	6.70	-18.6	182.2	36.7	6.0	0.172
		8:23:10	60	15.96	87.2	8.61	6.70	-18.7	179.0	36.8	6.5	0.172
		8:22:05	65	15.77	87.3	8.66	6.70	-18.7	176.1	37.0	6.1	0.173
		8:21:05	70	15.69	85.4	8.48	6.69	-18.3	173.7	37.1	6.4	0.175
		8:20:10	75	15.62	82.0	8.16	6.68	-17.3	172.2	37.1	5.6	0.177
		8:19:04	80	15.30	71.4	7.15	6.64	-15.2	172.6	37.1	5.0	0.184
		8:18:09	85	14.58	63.0	6.41	6.61	-13.4	169.7	35.9	2.7	0.195
8:16:40	90	13.54	53.9	5.61	6.63	-15.0	152.2	42.2	2.9	0.199		

2015 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	6/30/2015	7:47:47	0.5	20.91	85.1	7.60	6.61	-12.9	177.6	33.6	3.6	0.081
		7:46:45	5	20.83	81.4	7.28	6.54	-9.3	181.5	33.5	3.7	0.081
		7:46:09	10	20.59	78.0	7.01	6.54	-8.9	182.1	33.5	4.0	0.081
		7:44:55	15	20.18	72.5	6.57	6.48	-5.7	186.0	33.7	4.7	0.082
		7:44:22	20	20.03	72.8	6.61	6.52	-7.8	184.0	33.7	4.5	0.082
		7:43:23	25	19.87	73.8	6.73	6.55	-9.9	182.1	33.9	5.8	0.081
		7:41:35	30	19.76	76.2	6.96	6.58	-11.3	181.3	34.2	4.7	0.080
		7:40:21	35	19.58	78.8	7.22	6.61	-13.4	179.4	34.4	4.2	0.080
		7:39:25	40	19.39	80.8	7.44	6.63	-14.2	179.0	34.6	4.4	0.079
		7:38:48	45	19.11	82.1	7.60	6.66	-16.2	177.2	34.5	3.9	0.079
		7:37:55	50	18.94	83.6	7.76	6.66	-16.0	177.2	34.6	4.7	0.080
		7:37:03	55	18.77	84.8	7.90	6.68	-17.1	175.9	34.7	4.8	0.080
		7:36:00	60	18.66	85.2	7.96	6.68	-17.2	175.5	34.9	4.8	0.080
		7:34:54	65	18.34	86.6	8.14	6.67	-16.9	175.6	35.2	5.6	0.080
		7:34:01	70	18.14	87.3	8.24	6.67	-17.0	175.1	35.6	5.2	0.080
		7:33:14	75	18.00	87.4	8.27	6.68	-17.3	174.7	35.7	5.2	0.081
		7:32:13	80	17.87	87.1	8.26	6.68	-17.4	174.5	35.5	5.9	0.081
7:31:10	85	17.73	86.9	8.27	6.69	-18.0	173.7	35.6	5.8	0.081		
WA-7 Lehigh Lake Arm	7/22/2015	8:51:24	0.5	25.00	96.0	7.93	6.73	-20.0	145.3	32.6	9.8	0.078
		8:50:56	5	24.94	94.6	7.83	6.68	-17.0	147.0	32.8	10.3	0.078
		8:50:14	10	23.76	85.7	7.25	6.58	-11.2	153.5	32.6	6.0	0.079
		8:49:30	15	22.07	77.0	6.73	6.50	-6.5	159.0	32.6	5.3	0.079
		8:48:46	20	21.32	72.0	6.38	6.47	-4.9	161.4	32.2	5.4	0.076
		8:48:03	25	20.78	69.3	6.2	6.45	-3.9	162.8	32.4	5.8	0.076
		8:47:27	30	20.43	68.9	6.21	6.45	-4.1	162.7	32.4	6.1	0.077
		8:46:49	35	20.07	68.6	6.23	6.47	-4.8	161.9	32.4	6.2	0.078
		8:46:00	40	19.91	68.2	6.22	6.44	-3.6	163.2	32.4	6.1	0.077
		8:45:02	45	19.75	68.0	6.22	6.45	-4.0	162.6	32.5	5.9	0.078
		8:44:22	50	19.63	68.1	6.24	6.47	-4.9	161.4	32.6	6.4	0.078
		8:43:40	55	19.51	68.1	6.25	6.48	-5.4	160.3	32.6	6.3	0.078
		8:42:34	60	19.38	67.0	6.17	6.46	-4.9	160.4	32.5	6.2	0.078
		8:41:31	65	19.29	66.6	6.14	6.47	-5.4	159.6	32.5	6.3	0.079
		8:40:40	70	19.27	66.4	6.12	6.50	-6.9	157.6	32.7	5.8	0.079
		8:39:38	75	19.26	66.4	6.13	6.53	-8.6	155.0	32.6	6.4	0.079
		8:38:27	80	19.15	65.1	6.02	6.54	-9.4	153.6	32.8	6.2	0.079
8:37:14	85	18.99	62.7	5.82	6.59	-12.2	150.8	33.9	5.8	0.081		

2015 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	8/12/2015	8:35:47	0.5	22.70	81.7	7.04	6.64	-14.6	159.6	34.6	3.8	0.100
		8:35:19	5	22.67	80.2	6.92	6.64	-14.8	158.8	34.8	4.0	0.100
		8:34:41	10	22.64	72.5	6.26	6.58	-11.1	161.5	34.8	4.4	0.099
		8:34:14	15	22.26	60.9	5.30	6.53	-8.6	166.1	34.6	3.8	0.099
		8:33:30	20	22.04	59.6	5.20	6.55	-9.7	165.5	34.6	3.6	0.101
		8:33:02	25	21.60	60.2	5.31	6.58	-11.6	163.8	34.6	3.9	0.103
		8:31:31	30	21.38	61.6	5.45	6.63	-14.3	162.3	34.6	3.7	0.105
		8:30:38	35	21.29	62.9	5.58	6.68	-17.1	159.9	34.8	3.6	0.105
		8:30:01	40	21.18	63.8	5.67	6.68	-17.3	159.5	35.0	3.4	0.107
		8:29:25	45	21.07	63.9	5.69	6.70	-18.1	159.6	35.1	3.0	0.108
		8:28:58	50	20.93	65.4	5.84	6.71	-18.8	159.2	35.2	2.7	0.109
		8:28:06	55	20.77	69.4	6.21	6.73	-20.1	158.8	35.8	3.0	0.111
		8:27:36	60	20.66	74.4	6.68	6.75	-21.3	156.7	36.3	2.8	0.110
		8:26:20	65	20.55	76.6	6.88	6.77	-22.5	155.0	37.2	3.1	0.109
		8:25:11	70	20.36	80.9	7.30	6.80	-24.2	152.4	38.6	3.5	0.108
		8:24:17	75	20.06	86.2	7.82	6.81	-24.8	150.0	40.7	4.0	0.105
8:22:51	80	19.88	85.5	7.80	6.77	-22.2	150.8	41.4	4.0	0.106		
WA-7 Lehigh Lake Arm	9/1/2015	9:00:42	0.5	23.24	89.9	7.68	6.55	-9.7	123.0	38.3	5.8	0.089
		8:59:35	5	22.96	87.6	7.52	6.51	-7.4	123.8	38.4	7.6	0.089
		8:58:34	10	22.72	85.4	7.37	6.46	-4.2	125.4	38.2	8.2	0.087
		8:57:47	14.998	22.25	81.5	7.09	6.43	-2.3	126.4	37.6	6.6	0.087
		8:56:24	20	21.96	72.8	6.37	6.36	1.5	128.4	37.6	5.8	0.086
		8:55:07	25	21.74	57.8	5.08	6.29	5.3	132.2	37.4	3.9	0.085
		8:54:20	30	21.60	56.5	4.98	6.29	5.3	131.5	37.4	3.3	0.091
		8:53:31	35	21.46	55.4	4.89	6.29	5.4	131.2	37.4	4.1	0.092
		8:52:52	40	21.30	54.4	4.82	6.30	5.0	131.0	37.3	4.3	0.092
		8:51:35	45	21.25	52.9	4.69	6.33	3.5	130.1	37.3	4.2	0.090
		8:50:23	50	21.13	58.4	5.20	6.39	-0.1	126.7	37.4	4.1	0.093
		8:49:27	55	21.05	62.5	5.57	6.42	-2.2	124.3	37.6	3.6	0.096
		8:48:31	60	20.95	68.4	6.10	6.44	-3.0	123.3	38.5	3.6	0.098
		8:47:42	65	20.91	69.1	6.17	6.44	-3.0	122.5	38.6	3.4	0.098
8:46:41	70	20.85	69.8	6.24	6.43	-2.8	121.9	39.5	2.8	0.099		
8:45:56	75	20.71	69.3	6.21	6.44	-3.1	121.4	40.2	3.3	0.100		

APPENDIX B

LABORATORY CUSTODY SHEETS



CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020176

Date Collected: 06/03/15 09:40
 Collected By: Client

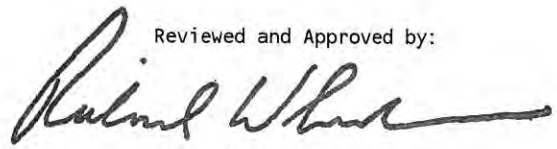
Sample Desc: WA-1 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	110	/100mL	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	02:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:13	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:34	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	06/05	13:08	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	4.2	mg/L	1	1	SM5310 C	06/04	11:14	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	09:45	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/15/15
Lab ID: 3157-15-0020176

Date Collected: 06/03/15 09:40
Collected By: Client

Sample Desc: WA-1 Surface

Date Received: 06/03/15 17:00

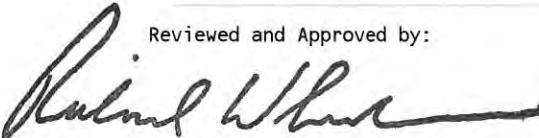
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

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Reviewed and Approved by:

Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020177

Date Collected: 06/03/15 07:30
 Collected By: Client

Sample Desc: WA-2 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	6	/100ml	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	02:31	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:14	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:37	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	06/05	13:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.6	mg/L	1	1	SM5310 C	06/04	11:52	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	06/09	09:45	HRG

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Reviewed and Approved by:

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/15/15
Lab ID: 3157-15-0020177

Date Collected: 06/03/15 07:30
Collected By: Client

Sample Desc: WA-2 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

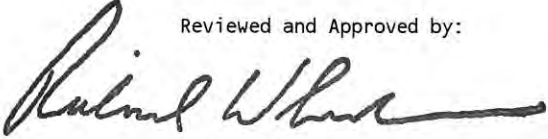
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

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Reviewed and Approved by:

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020178

Date Collected: 06/03/15 07:30
 Collected By: Client

Sample Desc: WA-2 Mid-Depth

Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	02:46	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:15	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:38	JCL
Nitrogen, Total Kjeldahl	0.31	mg/L	.25	1	EPA 351.2	06/05	13:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	4.8	mg/L	1	1	SM5310 C	06/04	13:02	ALD
RESIDUES								
Solids, Total Dissolved	61	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:

Richard Wheeler

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Date of Report: 06/15/15
 Lab ID: 3157-15-0020179

Date Collected: 06/03/15 07:30
 Collected By: Client

Sample Desc: WA-2 Deep

Date Received: 06/03/15 17:00

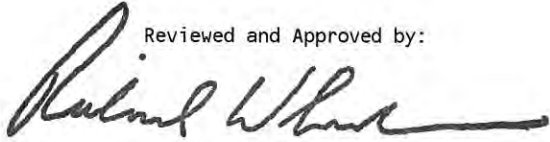
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	03:01	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:16	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:39	JCL
Nitrogen, Total Kjeldahl	0.26	mg/L	.25	1	EPA 351.2	06/05	13:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.5	mg/L	1	1	SM5310 C	06/04	13:20	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020180

Date Collected: 06/03/15 09:55
 Collected By: Client

Sample Desc: WA-3 Surface

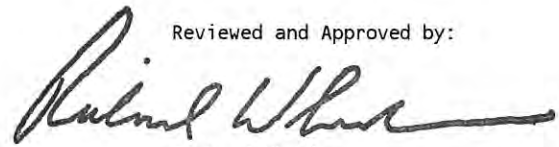
Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	70	/100ml	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	03:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:19	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:40	JCL
Nitrogen, Total Kjeldahl	0.42	mg/L	.25	1	EPA 351.2	06/05	13:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	8.2	mg/L	1	1	SM5310 C	06/04	13:40	ALD
RESIDUES								
Solids, Total Dissolved	83	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/15/15
Lab ID: 3157-15-0020180

Date Collected: 06/03/15 09:55
Collected By: Client

Sample Desc: WA-3 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

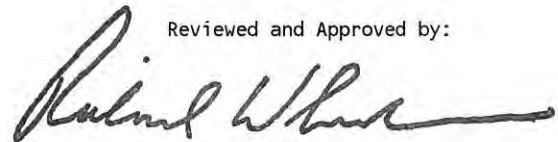
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

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Richard Wheeler

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 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020181

Date Collected: 06/03/15 11:00
 Collected By: Client

Sample Desc: WA-4 Surface

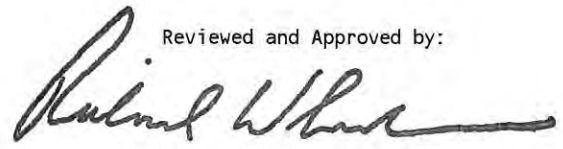
Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	410	/100mL	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	1000	mpn/100mL	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	03:31	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:20	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:41	JCL
Nitrogen, Total Kjeldahl	0.36	mg/L	.25	1	EPA 351.2	06/05	13:14	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	7.8	mg/L	1	1	SM5310 C	06/04	14:00	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/15/15
Lab ID: 3157-15-0020181

Date Collected: 06/03/15 11:00
Collected By: Client

Sample Desc: WA-4 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

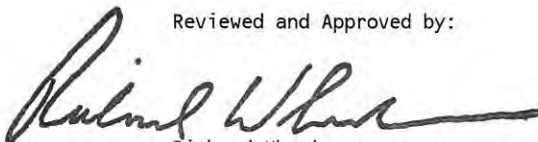
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020182

Date Collected: 06/03/15 10:40
 Collected By: Client

Sample Desc: WA-5 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	86	/100ml	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	0.05	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	04:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:21	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:41	JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	06/05	13:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	5.0	mg/L	1	1	SM5310 C	06/04	14:20	ALD
RESIDUES								
Solids, Total Dissolved	72	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	2	mg/L	1	1	SM 2320 B	06/09	10:15	HRG

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020182

Date Collected: 06/03/15 10:40
 Collected By: Client

Sample Desc: WA-5 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

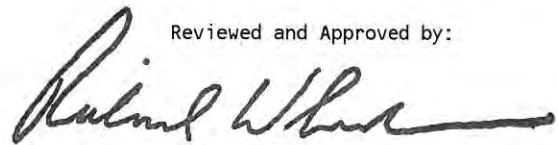
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020183

Date Collected: 06/03/15 08:15
 Collected By: Client

Sample Desc: WA-6 Surface

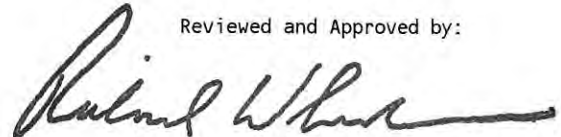
Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	3	/100mL	2	1	SM 9222D	06/03	18:15	PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	04:31	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:21	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:42	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	06/05	13:16	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.3	mg/L	1	1	SM5310 C	06/04	14:53	ALD
RESIDUES								
Solids, Total Dissolved	57	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:15	HRG

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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/15/15
Lab ID: 3157-15-0020183

Date Collected: 06/03/15 08:15
Collected By: Client

Sample Desc: WA-6 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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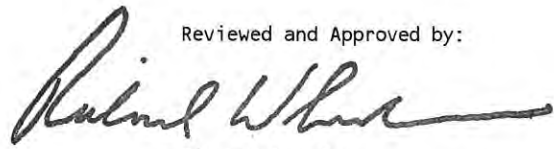
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

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Reviewed and Approved by:



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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020184

Date Collected: 06/03/15 08:15
 Collected By: Client

Sample Desc: WA-6 Mid-Depth

Date Received: 06/03/15 17:00

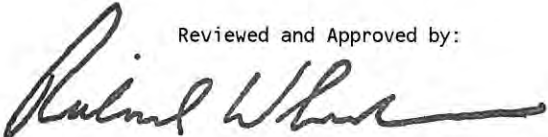
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	04:46	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:45	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/05	13:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.6	mg/L	1	1	SM5310 C	06/04	15:10	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:

 Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020185

Date Collected: 06/03/15 08:15
 Collected By: Client

Sample Desc: WA-6 Deep

Date Received: 06/03/15 17:00

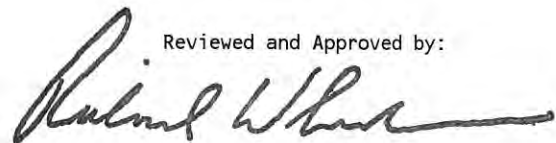
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	05:01	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:25	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:46	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/05	13:20	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.5	mg/L	1	1	SM5310 C	06/04	15:29	ALD
RESIDUES								
Solids, Total Dissolved	38	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	06/09	10:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020186

Date Collected: 06/03/15 08:40
 Collected By: Client

Sample Desc: WA-7 Surface

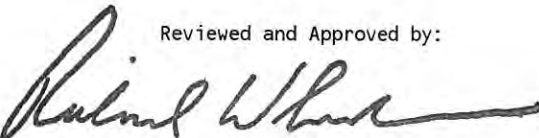
Date Received: 06/03/15 17:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/03	18:15	PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	05:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:26	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:47	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/05	13:21	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.4	mg/L	1	1	SM5310 C	06/04	16:34	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	06/05	13:45	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:30	HRG

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/15/15
Lab ID: 3157-15-0020186

Date Collected: 06/03/15 08:40
Collected By: Client

Sample Desc: WA-7 Surface

Date Received: 06/03/15 17:00

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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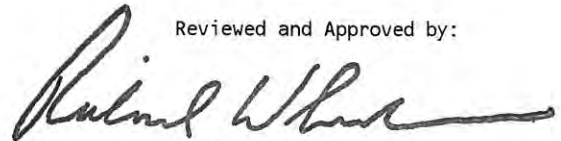
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/03/15 at 18:10.

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 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020187

Date Collected: 06/03/15 08:40
 Collected By: Client

Sample Desc: WA-7 Mid-Depth

Date Received: 06/03/15 17:00

PWSID: 3130843

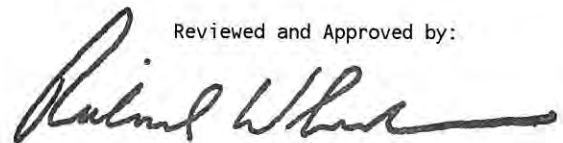
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/04	14:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	05:31	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:27	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:50	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	06/05	13:24	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	6.4	mg/L	1	1	SM5310 C	06/04	17:12	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	06/05	13:45	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020188

Date Collected: 06/03/15 08:40
 Collected By: Client

Sample Desc: WA-7 Deep

Date Received: 06/03/15 17:00

PWSID: 3130843

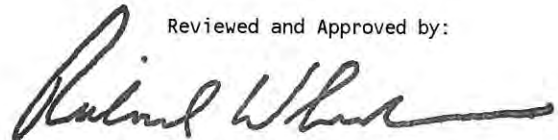
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.03	mg/L	.01	1	SM 4500P-E	06/04	14:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	0.08	mg/L	.05	1	D6919-03	06/04	05:46	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	06/04	18:30	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:51	JCL
Nitrogen, Total Kjeldahl	0.63	mg/L	.25	1	EPA 351.2	06/05	13:25	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.8	mg/L	1	1	SM5310 c	06/04	18:06	ALD
RESIDUES								
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	06/05	13:45	TMH
Solids, Total Suspended	42	mg/L	3	1	SM 2540D	06/05	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	06/09	10:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Chain of Custody

Project Leader: rxw

No: 257588

Account: 3157

Work Order: 006224

Customer: David Wertz

Work Order Description: Walter Reservoir

Address: Tetra Tech (Belleville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Total Sampling Time (hours):

Bottle Prep by:

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

Samplers: WDACIK

20174

Sample No: 1 Desc: WA-1 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod

fc, tc

20177

Sample No: 2 Desc: WA-2 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod

fc, tc

20178

Sample No: 3 Desc: WA-2 Mid-Depth

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod

fc, tc

Matrix: o Date: 6/3/15
Time: 0940

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 6/3/15
Time: 0730

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 6/3/15
Time: 0730

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6/3/15 Time: 330

Date: 6-3-15 Time: 1700

Sample entered by: [Signature]

Chain of Custody

Account: 3157

Work Order: 006224

Project Leader: rxw

No: 257588

Customer: David Wertz

Work Order Description: Walter Reservoir

Address: Tetra Tech (Beltsville Dam)

1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Total Sampling Time (hours):

Bottle Prep by:

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: bsw

Date:

Time:

Signature:

20179

Sample No: 4 Desc: WA-2 Deep

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod,

Matrix: o

Date: 6/3/15

Time: 0730

Signature:

20180

Sample No: 5 Desc: WA-3 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod,

fc, tc,

Matrix: o

Date: 6/3/15

Time: 0955

Signature:

20181

Sample No: 6 Desc: WA-4 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod,

fc, tc,


Matrix: o


Date: 6/3/15


Time: 1100

Signature:

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: 

Received by: 


Received for laboratory by: 

Date: 6/3/15

Time: 5:36

Date: 6-3-15

Time: 1700

Sample entered by: 

Chain of Custody

Account: 3157 Work Order: 006224

Customer: David Wertz Project Leader: rxw

No: 257588

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: _____

Samplers: WDACIK

Remarks: _____

Total Sampling Time (hours): _____

Laboratory Receipt Temp: 5 Deg C, If Temp Unacceptable, On Ice? Y N

Approved By: BSW

20182

Sample No: 7 Desc: WA-5 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod, fc, tc

Matrix: o

20183

Sample No: 8 Desc: WA-6 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod, fc, tc

Matrix: o

20184

Sample No: 9 Desc: WA-6 Mid-Depth

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod, fc, tc

Matrix: o

Date: 6/3/15

Time: 1040

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);

B - 1 X 8oz Alk p w/ Cool to 6 C;

C - 1 X 2xambervoa g w/ H3PO4/zero headspace;

D - 1 X L bod p w/ Cool to 6 C;

E - 1 X Pt no3no2 p w/ Cool to 6 C;

F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

Date: 6/3/15

Time: 0815

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);

B - 1 X 8oz Alk p w/ Cool to 6 C;

C - 1 X 2xambervoa g w/ H3PO4/zero headspace;

D - 1 X L bod p w/ Cool to 6 C;

E - 1 X Pt no3no2 p w/ Cool to 6 C;

F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

Date: 6/3/15

Time: 0815

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);

B - 1 X 8oz Alk p w/ Cool to 6 C;

C - 1 X 2xambervoa g w/ H3PO4/zero headspace;

D - 1 X L bod p w/ Cool to 6 C;

E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]

Received by: [Signature]

Date: 6/2/15 Time: 330

Received for Laboratory by: [Signature]

Date: 6-3-15 Time: 1700

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006224

Customer: David Wertz Work Order Description: Walter Reservoir

Project Leader: rxw No: 257588

Address: Tetra Tech (Belleville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: _____

Samplers: WACIK

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: HSW

20185 Sample No: 10 Desc: WA-6 Deep

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod

20186 Sample No: 11 Desc: WA-7 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod

fc, tbc,

20187 Sample No: 12 Desc: WA-7 Mid-Depth

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod

Matrix: o Date: 6/3/15

Time: 0815

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk P w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o Date: 6/3/15

Time: 0840

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk P w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 6/3/15

Time: 0840

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk P w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]

Date: 6/5/15 Time: 330

Received for Laboratory by: [Signature]

Date: 6-3-15 Time: 1700

Sample entered by: [Signature]

Chain of Custody

Account: 3157

Work Order: 006224

Project Leader: rxw

No: 257588

Customer: David Wertz

Remarks:

Address: Petra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Total Sampling Time (hours):

Bottle Prep by:

Samplers:

WAGIK

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: ASW

20188

Sample No: 13 Desc: WA-7 Deep

Matrix: 0

Date: 6/3/15

nh3-n, tkm, alk, tds, tss, po4-p, toc,

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X l bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

no2-n, no3-n, d-po4-p, o-po4, bod

TK GW

Relinquished by:



Received by:



Received for Laboratory by:



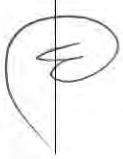
Date: 6/3/15

Time: 330

Date: 6-3-15

Time: 1700

Sample entered by:



CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022988

Date Collected: 06/30/15 09:50
 Collected By: Client

Sample Desc: WA-1 Surface

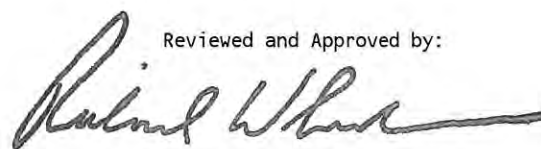
Date Received: 06/30/15 16:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	100	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:07	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:12	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:11	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:23	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	07/01	13:41	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	7.2	mg/L	1	1	SM5310 C	07/01	14:13	ALD
RESIDUES								
Solids, Total Dissolved	37	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	12:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022988
Date Collected: 06/30/15 09:50
Collected By: Client
Date Received: 06/30/15 16:20

Sample Desc: WA-1 Surface

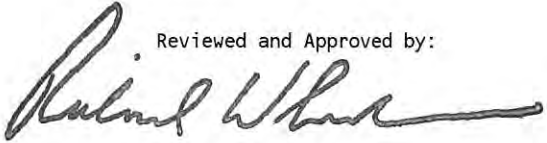
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022989

Date Collected: 06/30/15 07:05
 Collected By: Client

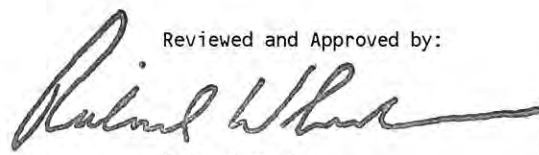
Sample Desc: WA-2 Surface

Date Received: 06/30/15 16:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:07	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	21:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:27	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:12	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:26	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	07/01	13:42	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.2	mg/L	1	1	SM5310 C	07/01	14:47	ALD
RESIDUES								
Solids, Total Dissolved	51	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	12:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022989

Date Collected: 06/30/15 07:05
Collected By: Client

Date Received: 06/30/15 16:20

Sample Desc: WA-2 Surface

PWSID: 3130843

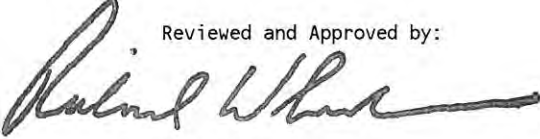
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022990

Date Collected: 06/30/15 07:05
 Collected By: Client

Sample Desc: WA-2 Mid-Depth

Date Received: 06/30/15 16:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:07	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:42	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:13	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:27	JCL
Nitrogen, Total Kjeldahl	0.35	mg/L	.25	1	EPA 351.2	07/01	13:43	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.2	mg/L	1	1	SM5310 C	07/01	15:51	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	12:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022991
 Date Collected: 06/30/15 07:05
 Collected By: Client
 Date Received: 06/30/15 16:20

Sample Desc: WA-2 Deep

PWSID: 3130843

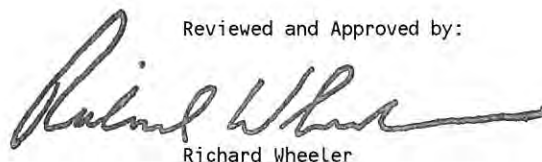
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:57	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:14	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:28	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	07/01	13:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/01	16:23	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	6	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/02	12:45	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022992
 Date Collected: 06/30/15 09:10
 Collected By: Client
 Date Received: 06/30/15 16:20

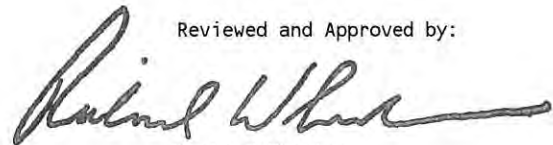
Sample Desc: WA-3 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	40	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	05:12	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:17	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:29	JCL
Nitrogen, Total Kjeldahl	0.48	mg/L	.25	1	EPA 351.2	07/02	16:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	10.1	mg/L	1	1	SM5310 C	07/01	17:44	ALD
RESIDUES								
Solids, Total Dissolved	73	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/02	12:45	HRG

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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022992

Date Collected: 06/30/15 09:10
Collected By: Client

Sample Desc: WA-3 Surface

Date Received: 06/30/15 16:20

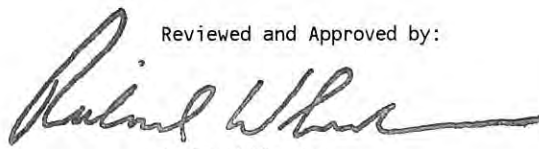
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

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Date of Report: 07/13/15
 Lab ID: 3157-15-0022993

Date Collected: 06/30/15 09:30
 Collected By: Client

Date Received: 06/30/15 16:20

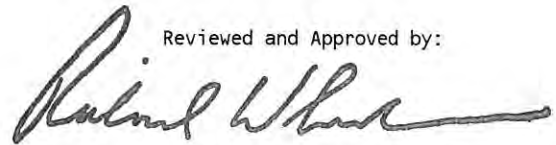
Sample Desc: WA-4 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	850	/100ml	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.07	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.08	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	05:27	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:18	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:30	JCL
Nitrogen, Total Kjeldahl	0.62	mg/L	.25	1	EPA 351.2	07/02	16:45	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.9	mg/L	1	1	SM5310 C	07/01	18:37	ALD
RESIDUES								
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/02	12:45	HRG

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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022993

Date Collected: 06/30/15 09:30
Collected By: Client

Sample Desc: WA-4 Surface

Date Received: 06/30/15 16:20

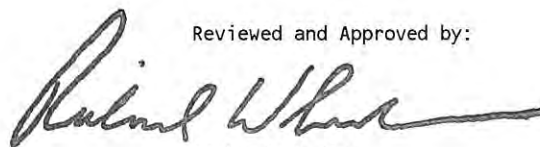
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

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Date of Report: 07/13/15
 Lab ID: 3157-15-0022994

Date Collected: 06/30/15 09:40
 Collected By: Client

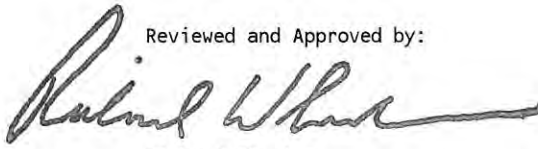
Sample Desc: WA-5 Surface

Date Received: 06/30/15 16:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	62	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.21	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.23	mg/L	.01	1	SM 4500P-E	07/02	12:45	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	05:42	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:19	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:31	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	07/02	16:46	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.3	mg/L	1	1	SM5310 C	07/01	19:12	ALD
RESIDUES								
Solids, Total Dissolved	37	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	2	mg/L	1	1	SM 2320 B	07/02	13:00	HRG

Distribution of Reports:
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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022994

Date Collected: 06/30/15 09:40
Collected By: Client

Sample Desc: WA-5 Surface

Date Received: 06/30/15 16:20

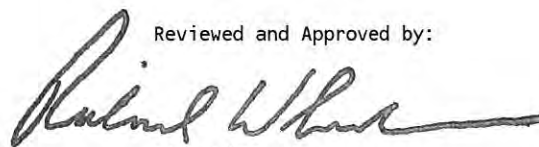
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

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 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022995
 Date Collected: 06/30/15 07:30
 Collected By: Client
 Date Received: 06/30/15 16:20

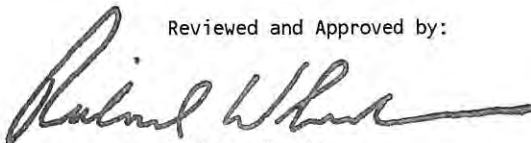
Sample Desc: WA-6 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:12	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:14	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:20	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:31	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	07/02	16:47	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	5.6	mg/L	1	1	SM5310 C	07/01	19:28	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	13:00	HRG

Distribution of Reports:
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Reviewed and Approved by:


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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022995

Date Collected: 06/30/15 07:30
Collected By: Client

Date Received: 06/30/15 16:20

Sample Desc: WA-6 Surface

PWSID: 3130843

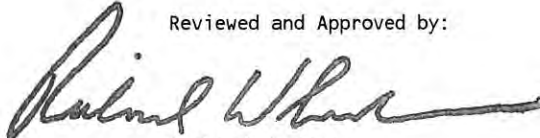
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022996

Date Collected: 06/30/15 07:30
 Collected By: Client

Sample Desc: WA-6 Mid-Depth

Date Received: 06/30/15 16:20

PWSID: 3130843

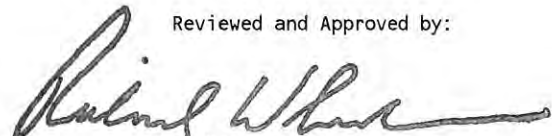
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:12	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:29	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:34	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	07/01	13:39	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	5.7	mg/L	1	1	SM5310 C	07/01	19:44	ALD
RESIDUES								
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/02	13:00	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022997

Date Collected: 06/30/15 07:30
 Collected By: Client

Sample Desc: WA-6 Deep

Date Received: 06/30/15 16:20

PWSID: 3130843

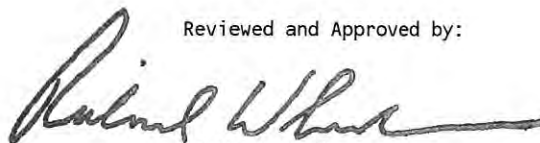
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:12	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:43	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:35	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/01	13:40	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.4	mg/L	1	1	SM5310 C	07/01	20:17	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/02	13:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022998

Date Collected: 06/30/15 07:55
 Collected By: Client

Sample Desc: WA-7 Surface

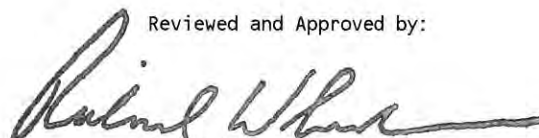
Date Received: 06/30/15 16:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:58	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:36	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	07/02	16:50	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.1	mg/L	1	1	SM5310 C	07/01	20:34	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	07/01	13:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	13:15	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/13/15
Lab ID: 3157-15-0022998

Date Collected: 06/30/15 07:55
Collected By: Client

Sample Desc: WA-7 Surface

Date Received: 06/30/15 16:20

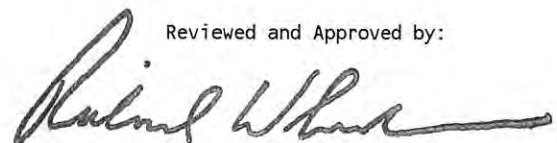
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

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Reviewed and Approved by:

Richard Wheeler

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 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0022999
 Date Collected: 06/30/15 07:55
 Collected By: Client
 Date Received: 06/30/15 16:20

Sample Desc: WA-7 Mid-Depth

PWSID: 3130843

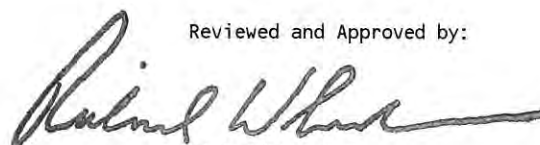
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	13:12	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	07/01	17:25	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:39	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	07/02	16:51	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.8	mg/L	1	1	SM5310 C	07/01	20:51	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	07/01	13:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/02	13:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
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Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0023000

Date Collected: 06/30/15 07:55
 Collected By: Client

Sample Desc: WA-7 Deep

Date Received: 06/30/15 16:20

PWSID: 3130843

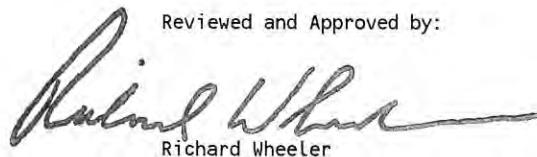
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	07/01	10:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/01	12:40	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	13:27	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:28	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:40	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	07/02	16:52	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/01	21:24	ALD
RESIDUES								
Solids, Total Dissolved	51	mg/L	5	1	SM 2540C	07/01	13:25	TMH
Solids, Total Suspended	5	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	13:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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ejb
05/27/15 8:28:35 AM

M. J. REIDER ASSOCIATES, INC.

COFC.PRT
Page: 1

Chain of Custody

Account: 3157 Work Order: 006224

Customer: David Wertz Project Leader: rxw

No: 258469

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Remarks:

Phone: 703-387-5516 Ext:

Total Sampling Time (hours):

Bottle Prep by:

Samplers: WACIK

Laboratory Receipt Temp: 8 Deg C. If Temp Unacceptable, On Ice? N

Approved By: rxw

=====

Sample No: 1 Desc: WA-1 Surface

Matrix: o Date: 6/30/15
Time: 0950

nh3-n, tkm, alk, tds, tss, po4-p, toc,

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

fc, tc, HE

Sample No: 2 Desc: WA-2 Surface

Matrix: o Date: 6/30/15
Time: 0705

nh3-n, tkm, alk, tds, tss, po4-p, toc,

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

fc, tc, HE

Sample No: 3 Desc: WA-2 Mid-Depth

Matrix: o Date: 6/30/15
Time: 0705

nh3-n, tkm, alk, tds, tss, po4-p, toc,

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

fc, tc, HE

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6/30/15 Time: 1500

Date: 6-30-15 Time: 1620

Sample entered by: [Signature]

ejb
05/27/15 8:28:35 AM

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Account: 3157 Work Order: 006224

Customer: David Wertz Project Leader: rxw

No: 258469

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Remarks:

Phone: 703-387-5516 Ext:

Total Sampling Time (hours):

Bottle Prep by:

Samplers: WACIK

Laboratory Receipt Temp: 8 Deg C. If Temp Unacceptable, On Ice? N

Approved By: ASL

Sample No: 4 Desc: WA-2 Deep

Matrix: 0

Date: 6/30/15

Time: 0705

- nh3-n, tkm, alk, tds, tss, po4-p, toc,
- no2-n, no3-n, d-p04-p, o-p04, bod

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Sample No: 5 Desc: WA-3 Surface

Matrix: 0

Date: 6/30/15

Time: 0710

- nh3-n, tkm, alk, tds, tss, po4-p, toc,
- no2-n, no3-n, d-p04-p, o-p04, bod
- fc, tc

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Sample No: 6 Desc: WA-4 Surface

Matrix: 0

Date: 6/30/15

Time: 0750

- nh3-n, tkm, alk, tds, tss, po4-p, toc,
- no2-n, no3-n, d-p04-p, o-p04, bod
- fc, tc

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6/30/15 Time: 1500

Date: 6/30/15 Time: 1620

Sample entered by: [Signature]

220911

220912

220911

ejb
05/27/15 8:28:35 AM

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Account: 3157 Work Order: 006224

Project Leader: rxw

No: 258469

Customer: David Wertz

Remarks:

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: _____

Total Sampling Time (hours): _____

Bottle Prep by: _____

Samplers: _____

Laboratory Receipt Temp: 8 Deg C. If Temp Unacceptable, On Ice? N

Approved By: BSB

WAGIK

Sample No: 7 Desc: WA-5 Surface

Matrix: 0

Date: 6/30/15

Time: 0940

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod

fc, tds

- A - 1 X Pt nh3 p w/ H2SO4 (PH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2SS203;

Sample No: 8 Desc: WA-6 Surface

Matrix: 0

Date: 6/30/15

Time: 0730

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod

fc, tds

- A - 1 X Pt nh3 p w/ H2SO4 (PH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2SS203;

Sample No: 9 Desc: WA-6 Mid-Depth

Matrix: 0

Date: 6/30/15

Time: 0730

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod

- A - 1 X Pt nh3 p w/ H2SO4 (PH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6/30/15 Time: 1500

Date: 6-30-15 Time: 1620

Sample entered by: [Signature]

ejb
05/27/15 8:28:35 AM

M. J. REIDER ASSOCIATES, INC.

COFC.PRT
Page: 4

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 258469

Customer: David Wertz Work Order Description: Walter Reservoir

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: _____

Samplers: WACIK

Remarks: _____

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: Deg C If Temp Unacceptable, On Ice? N
Approved By: Bsw

=====

Sample No: 10 Desc: WA-6 Deep

Matrix: 0 Date: 6/30/15
Time: 0736

nh3-n, tkm, alk, tds, tss, po4-p, toc,

A - 1 X Pt nh3 p w/ H2SO4 (PH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Sample No: 11 Desc: WA-7 Surface

Matrix: 0 Date: 6/30/15
Time: 0755

nh3-n, tkm, alk, tds, tss, po4-p, toc,

A - 1 X Pt nh3 p w/ H2SO4 (PH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

no2-n, no3-n, d-pod-p, o-pod, bod

Matrix: 0 Date: 6/30/15
Time: 0755

Sample No: 12 Desc: WA-7 Mid-Depth

Matrix: 0 Date: 6/30/15
Time: 0755

nh3-n, tkm, alk, tds, tss, po4-p, toc,

A - 1 X Pt nh3 p w/ H2SO4 (PH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

no2-n, no3-n, d-pod-p, o-pod, bod

fc, tds

Matrix: 0 Date: 6/30/15
Time: 0755

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6/30/15 Time: 1500

Date: 6-30-15 Time: 1620

Sample entered by: [Signature]

170922

89922

89922

eJb
05/27/15 8:28:35 AM

M. J. REIDER ASSOCIATES, INC.

COFC.PRT
Page: 5

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 258469

Customer: David Wertz Work Order Description: Walter Resevior

Address: Retra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WAOIK

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 8 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: BSW

Sample No: 13 Desc: WA-7 Deep

Matrix: 0

Date: 6/30/15

Time: 0755

nh3-n, tkm, alk, tds, tss, po4-p, toc,

ML

ML

no2-n, no3-n, d-pod-p, o-pod, bod

He

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ?
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]

Date: 6/30/15 Time: 1500

Received for laboratory by: [Signature]

Date: 6-30-15 Time: 1600

Sample entered by: [Signature]

23000

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028764

Date Collected: 07/22/15 09:25
 Collected By: Client

Sample Desc: WA-1 Surface

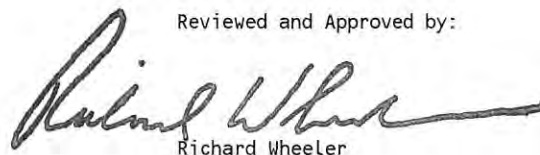
Date Received: 07/22/15 17:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	6	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	2000	mpn/100mL	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	06:20	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:18	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:34	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	07/27	15:32	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.2	mg/L	1	1	SM5310 C	07/27	10:24	ALD
RESIDUES								
Solids, Total Dissolved	64	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/31/15
Lab ID: 3157-15-0028764

Date Collected: 07/22/15 09:25
Collected By: Client

Sample Desc: WA-1 Surface

Date Received: 07/22/15 17:40

PWSID: 3130843

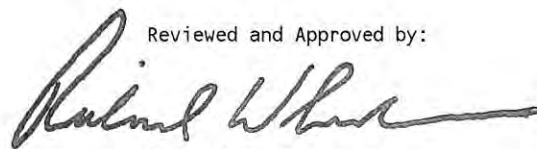
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	--------------	------------------	-----------	--------------	--------------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028765

Date Collected: 07/22/15 07:55
 Collected By: Client

Sample Desc: WA-2 Surface

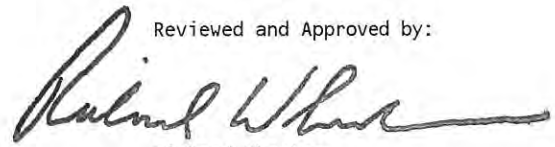
Date Received: 07/22/15 17:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	06:35	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:19	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:37	JCL
Nitrogen, Total Kjeldahl	0.68	mg/L	.25	1	EPA 351.2	07/27	15:35	JCL
OTHER								
Biochemical Oxygen Demand	3	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.4	mg/L	1	1	SM5310 C	07/27	10:43	ALD
RESIDUES								
Solids, Total Dissolved	57	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	6	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028765

Date Collected: 07/22/15 07:55
 Collected By: Client

Sample Desc: WA-2 Surface

Date Received: 07/22/15 17:40

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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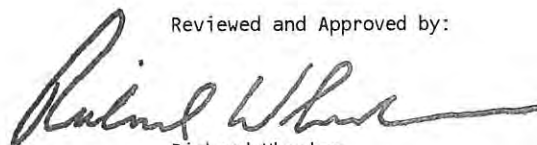
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

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Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028766

Date Collected: 07/22/15 07:35
 Collected By: Client

Sample Desc: WA-2 Mid-Depth

Date Received: 07/22/15 17:40

PWSID: 3130843

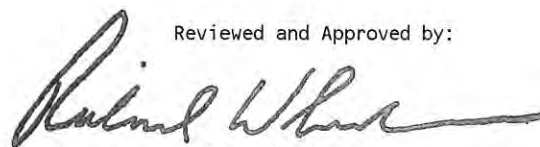
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	06:49	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:22	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:38	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/27	15:36	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	6.7	mg/L	1	1	SM5310 C	07/27	11:14	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/27	12:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
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Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028767

Date Collected: 07/22/15 07:35
 Collected By: Client

Sample Desc: WA-2 Deep

Date Received: 07/22/15 17:40

PWSID: 3130843

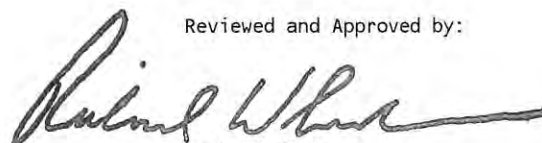
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	0.10	mg/L	.05	1	D6919-03	07/23	11:56	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:39	JCL
Nitrogen, Total Kjeldahl	0.51	mg/L	.25	1	EPA 351.2	07/27	15:37	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/27	11:32	ALD
RESIDUES								
Solids, Total Dissolved	82	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/27	12:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028768

Date Collected: 07/22/15 09:40
 Collected By: Client

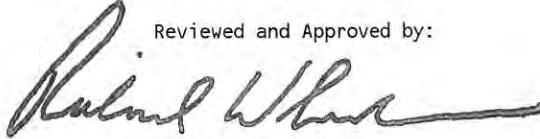
Sample Desc: WA-3 Surface

Date Received: 07/22/15 17:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	11	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.04	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	12:11	JCL
Nitrogen, Nitrate	0.13	mg/L	.05	1	EPA 353.2	07/23	17:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:40	JCL
Nitrogen, Total Kjeldahl	0.33	mg/L	.25	1	EPA 351.2	07/27	15:38	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	8.1	mg/L	1	1	SM5310 C	07/27	11:50	ALD
RESIDUES								
Solids, Total Dissolved	99	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	07/27	12:15	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/31/15
Lab ID: 3157-15-0028768
Date Collected: 07/22/15 09:40
Collected By: Client
Date Received: 07/22/15 17:40

Sample Desc: WA-3 Surface

PWSID: 3130843

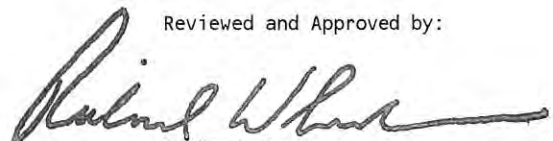
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028769
 Date Collected: 07/22/15 10:00
 Collected By: Client
 Date Received: 07/22/15 17:40

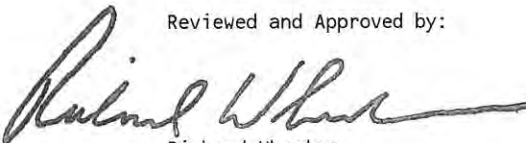
Sample Desc: WA-4 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	130	/100ml	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	12:25	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	07/23	17:25	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:41	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	07/27	15:39	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	5.9	mg/L	1	1	SM5310 C	07/27	12:07	ALD
RESIDUES								
Solids, Total Dissolved	87	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	15	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	07/27	12:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/31/15
Lab ID: 3157-15-0028769

Date Collected: 07/22/15 10:00
Collected By: Client

Sample Desc: WA-4 Surface

Date Received: 07/22/15 17:40

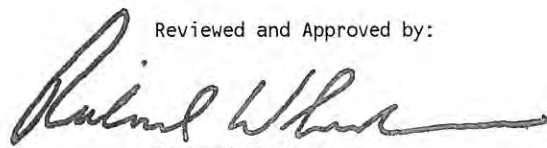
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

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Reviewed and Approved by:

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M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028770
 Date Collected: 07/22/15 10:15
 Collected By: Client
 Date Received: 07/22/15 17:40

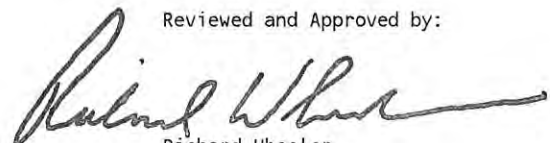
Sample Desc: WA-5 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	8	/100ml	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/28	11:20	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/23	12:40	JCL
Nitrogen, Nitrate	<.05	mg/l	.05	1	EPA 353.2	07/23	17:26	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/23	15:42	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/27	15:40	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	4.7	mg/l	1	1	SM5310 C	07/27	12:24	ALD
RESIDUES								
Solids, Total Dissolved	65	mg/l	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	3	mg/l	1	1	SM 2320 B	07/27	12:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/31/15
Lab ID: 3157-15-0028770
Date Collected: 07/22/15 10:15
Collected By: Client
Date Received: 07/22/15 17:40

Sample Desc: WA-5 Surface

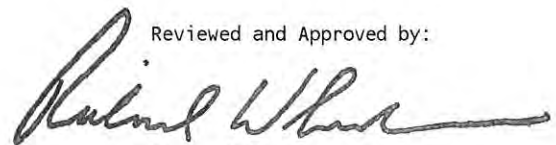
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028771

Date Collected: 07/22/15 08:15
 Collected By: Client

Sample Desc: WA-6 Surface

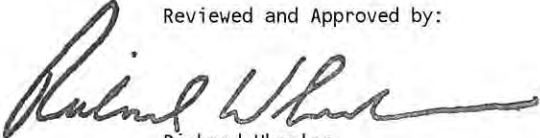
Date Received: 07/22/15 17:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORIMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:20	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	12:54	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:27	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:43	JCL
Nitrogen, Total Kjeldahl	0.52	mg/L	.25	1	EPA 351.2	07/27	15:41	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.3	mg/L	1	1	SM5310 C	07/27	12:42	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:45	HRG

Distribution of Reports:
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Reviewed and Approved by:


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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/31/15
Lab ID: 3157-15-0028771

Date Collected: 07/22/15 08:15
Collected By: Client

Sample Desc: WA-6 Surface

Date Received: 07/22/15 17:40

PWSID: 3130843

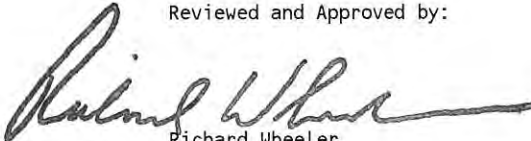
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

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Reviewed and Approved by:


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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028772

Date Collected: 07/22/15 08:15
 Collected By: Client

Sample Desc: WA-6 Mid-Depth

Date Received: 07/22/15 17:40

PWSID: 3130843

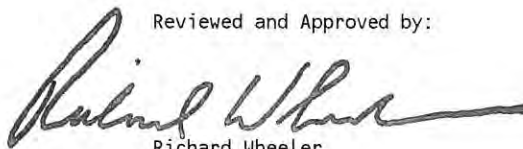
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:00	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:09	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:29	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:46	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/27	15:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	6.6	mg/L	1	1	SM5310 C	07/27	12:59	ALD
RESIDUES								
Solids, Total Dissolved	72	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/27	12:45	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028773
 Date Collected: 07/22/15 08:15
 Collected By: Client
 Date Received: 07/22/15 17:40

Sample Desc: WA-6 Deep

PWSID: 3130843

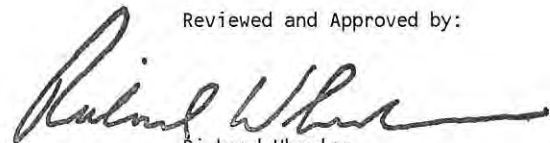
	Result	Unit	Rep Limit	Dilutn Factor	Test Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:24	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:30	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:47	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	07/27	15:45	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.7	mg/L	1	1	SM5310 C	07/27	13:34	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:45	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028774

Date Collected: 07/22/15 08:30
 Collected By: Client

Sample Desc: WA-7 Surface

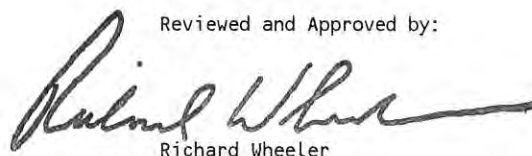
Date Received: 07/22/15 17:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:46	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:38	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:31	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:48	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	07/27	15:46	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.0	mg/L	1	1	SM5310 C	07/27	15:12	ALD
RESIDUES								
Solids, Total Dissolved	76	mg/L	5	1	SM 2540C	07/28	14:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	13:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 07/31/15
Lab ID: 3157-15-0028774
Date Collected: 07/22/15 08:30
Collected By: Client
Date Received: 07/22/15 17:40

Sample Desc: WA-7 Surface

PWSID: 3130843

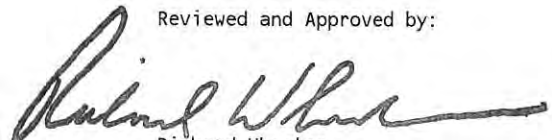
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/22/15 at 18:50.

Distribution of Reports:
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Reviewed and Approved by:


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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028775

Date Collected: 07/22/15 08:30
 Collected By: Client

Sample Desc: WA-7 Mid-Depth

Date Received: 07/22/15 17:40

PWSID: 3130843

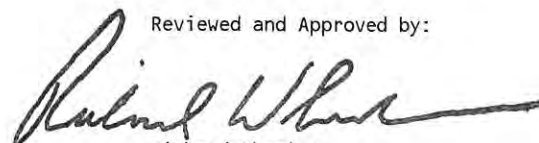
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:46	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:53	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/23	17:32	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:51	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/27	15:48	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	8.0	mg/L	1	1	SM5310 C	07/27	16:04	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	07/28	14:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	13:00	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028776
 Date Collected: 07/22/15 08:50
 Collected By: Client
 Date Received: 07/22/15 17:40

Sample Desc: WA-7 Deep

PWSID: 3130843

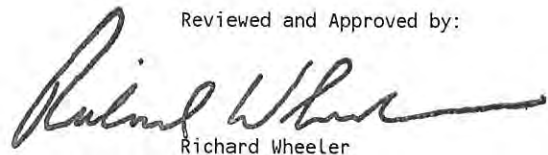
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:46	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	14:37	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	07/23	17:35	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:51	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	07/27	15:49	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/27	16:38	ALD
RESIDUES								
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	07/28	14:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/27	13:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M. J. REIDER ASSOCIATES, INC.

jbs
06/24/15 4:28:05 PM

Chain of Custody

No: 260279

Project Leader: rxw

Work Order: 006224

Account: 3157

Customer: David Wertz

Work Order Description: Walter Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 12 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: REN

Remarks: _____

- Sample No: 1 Desc: WA-1 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M JN
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, WAP
- Sample No: 2 Desc: WA-2 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M JN
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, WAP
- Sample No: 3 Desc: WA-2 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M JN
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, WAP

- Matrix: o Date: 7/22/15
Time: ~~0735~~ 0725
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
- Matrix: o Date: 7/22/15
Time: ~~0735~~ 0735
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
- Matrix: o Date: 7/22/15
Time: ~~0735~~ 0735
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: Thomas C Nelson
Date: 7/22/15 Time: 1530

Date: 7/22/15 Time: 1740

Sample entered by: ATC

Chain of Custody

Account: 3157 Work Order: 006224
Customer: David Wertz Work Order Description: Walter Reservoir
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

No: 260279

Project Leader: rxw

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____
Laboratory Receipt Temp: 12 Deg C. If Temp Unacceptable, On Ice? Y
Approved By: TRJ

Phone: 703-387-5516 Ext: _____

Samplers: WACIK

Sample No: 4 Desc: WA-2 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
WACIK NAP

Matrix: o Date: 7/22/15
Time: 0735
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Sample No: 5 Desc: WA-3 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
WACIK NAP

Matrix: o Date: 7/22/15
Time: 0940
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Sample No: 6 Desc: WA-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
WACIK NAP

Matrix: o Date: 7/22/15
Time: 1000
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature]
Date: 7/22/15 Time: 1530

Received by: [Signature]
Date: 7/22/15 Time: 1740

Received for laboratory by: Thomas Nelson

Sample entered by: RJC

Chain of Custody

Account: 3157 Work Order: 006224
Customer: David Wertz Work Order Description: Walter Reservoir
Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

No: 260279

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 12 Deg C. If Temp Unacceptable, On Ice? Y
Approved By: Jan

28770 Sample No: 7 Desc: WA-5 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,
m
no2-n, no3-n, d-po4-p, o-po4, bod,
NAP
fc, tc, N/NP

Date: 7/22/15
Time: 1015

Matrix: o
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

28771 Sample No: 8 Desc: WA-6 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,
m
no2-n, no3-n, d-po4-p, o-po4, bod,
NAP
fc, tc, NAP

Date: 7/22/15
Time: 0815

Matrix: o
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

28772 Sample No: 9 Desc: WA-6 Mid-Depth

nh3-n, tkn, alk, tds, tss, po4-p, toc,
m
no2-n, no3-n, d-po4-p, o-po4, bod,
NAP

Date: 7/22/15
Time: 0815

Matrix: o
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Cool to 6 C;

Relinquished by: [Signature]
Date: 7/22/15 Time: 1530

Received by: Thomas C Nelson
Date: 7/22/15 Time: 1740

Received for Laboratory by: Thomas C Nelson

Sample entered by: RSC

M. J. REIDER ASSOCIATES, INC.

jbs
06/24/15 4:28:05 PM

Chain of Custody

No: 260279

Project Leader: rxw

Work Order: 006224

Work Order Description: rxw

Customer: David Wertz

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 12 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: TR

Samplers: WACIK

Phone: 703-387-5516 Ext: _____

78773
Date: 08/15 7/22/15
Time: 0815

Sample No: 10 Desc: WA-6 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,

W no2-n, no3-n, d-po4-p, o-po4, bod,
NAP

Sample No: 11 Desc: WA-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

W no2-n, no3-n, d-po4-p, o-po4, bod,
NAP
fc, tc,

Sample No: 12 Desc: WA-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,

W no2-n, no3-n, d-po4-p, o-po4, bod,
NAP

Matrix: o
Date: 08/15 7/22/15
Time: 0815

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o
Date: 7/22/15
Time: 0830

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o
Date: 7/22/15
Time: 0830

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: Thomas C Nelson
Date: 7/22/15 Time: 1530
Date: 7/22/15 Time: 1740
Sample entered by: RJC

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 260279
Customer: David Wertz Work Order Description: Walter Resevior

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 12 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: rxw

28716
Sample No: 13 Desc: WA-7 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
WAP

Matrix: 0 Date: 7/22/15
Time: 0830

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: Thomas DeLeon
Date: 7/22/15 Time: 1530

Date: 7/22/15 Time: 1740

Sample entered by: PTC

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032784

Date Collected: 08/12/15 09:05
 Collected By: Client

Sample Desc: WA-1 Surface

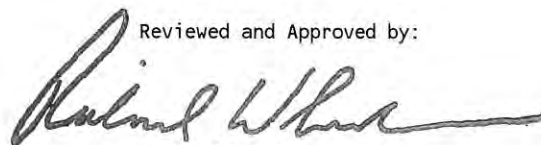
Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	16	/100mL	2	1	SM 9222D	08/12	16:05	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	02:36	JCL
Nitrogen, Nitrate	0.08	mg/L	.05	1	EPA 353.2	08/13	16:54	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:39	JCL
Nitrogen, Total Kjeldahl	0.35	mg/L	.25	1	EPA 351.2	08/20	13:55	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.3	mg/L	1	1	SM5310 C	08/17	11:39	ALD
RESIDUES								
Solids, Total Dissolved	50	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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ACIL Seal of Excellence



CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/28/15
Lab ID: 3157-15-0032784

Date Collected: 08/12/15 09:05
Collected By: Client

Date Received: 08/12/15 16:30

Sample Desc: WA-1 Surface

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

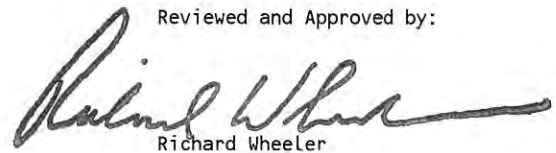
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

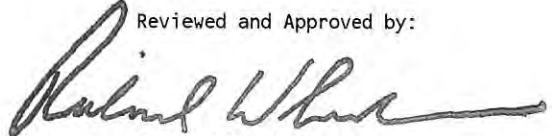
Date of Report: 08/28/15
 Lab ID: 3157-15-0032785
 Date Collected: 08/12/15 07:30
 Collected By: Client
 Date Received: 08/12/15 16:30

Sample Desc: WA-2 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	11	/100mL	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	02:51	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	16:55	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:41	JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	08/20	13:58	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.9	mg/L	1	1	SM5310 C	08/17	12:28	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/28/15
Lab ID: 3157-15-0032785

Date Collected: 08/12/15 07:30
Collected By: Client

Sample Desc: WA-2 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

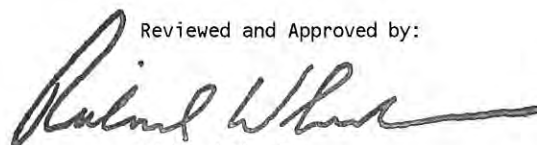
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	--------------	------------------	-----------	--------------	--------------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032786

Date Collected: 08/12/15 07:30
 Collected By: Client

Sample Desc: WA-2 Mid-Depth

Date Received: 08/12/15 16:30

PWSID: 3130843

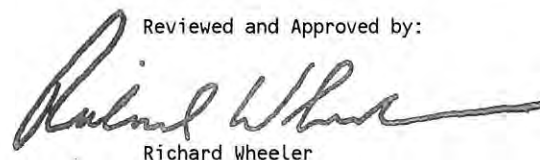
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	03:05	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	16:58	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:42	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	08/20	13:59	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	6.0	mg/L	1	1	SM5310 C	08/17	12:44	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032787

Date Collected: 08/12/15 07:30
 Collected By: Client

Sample Desc: WA-2 Deep

Date Received: 08/12/15 16:30

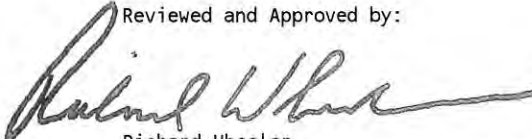
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	03:20	JCL
Nitrogen, Nitrate	0.11	mg/L	.05	1	EPA 353.2	08/13	16:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:43	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	08/20	14:00	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.1	mg/L	1	1	SM5310 C	08/17	13:01	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	22	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032788

Date Collected: 08/12/15 09:30
 Collected By: Client

Sample Desc: WA-3 Surface

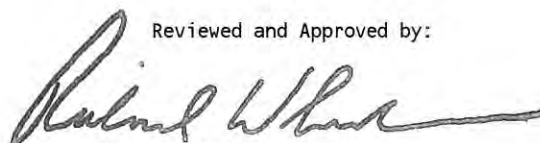
Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGICAL								
MICROBIOLOGY								
Fecal Coliform	94	/100mL	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	03:34	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	08/13	17:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:44	JCL
Nitrogen, Total Kjeldahl	0.46	mg/L	.25	1	EPA 351.2	08/20	14:01	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	7.7	mg/L	1	1	SM5310 C	08/17	13:18	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	6	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

Distribution of Reports:
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Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/28/15
Lab ID: 3157-15-0032788

Date Collected: 08/12/15 09:30
Collected By: Client

Sample Desc: WA-3 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

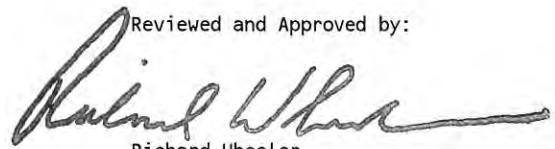
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032789

Date Collected: 08/12/15 09:45
 Collected By: Client

Sample Desc: WA-4 Surface

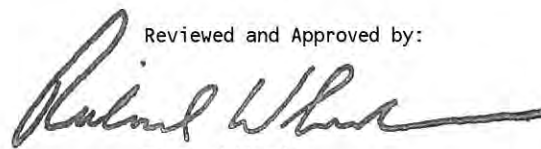
Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	1100	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	03:49	JCL
Nitrogen, Nitrate	<.05	mg/l	.05	1	EPA 353.2	08/13	17:01	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	15:44	JCL
Nitrogen, Total Kjeldahl	0.44	mg/l	.25	1	EPA 351.2	08/20	14:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	8.0	mg/l	1	1	SM5310 C	08/17	13:52	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/l	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/l	1	1	SM 2320 B	08/17	10:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/28/15
Lab ID: 3157-15-0032789

Date Collected: 08/12/15 09:45
Collected By: Client

Sample Desc: WA-4 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

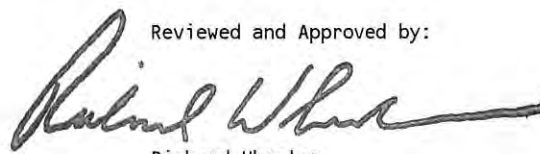
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032790

Date Collected: 08/12/15 09:55
 Collected By: Client

Sample Desc: WA-5 Surface

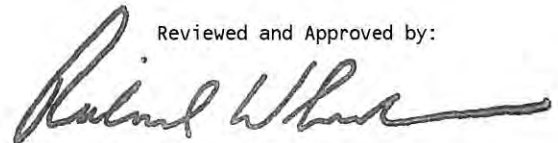
Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	1300	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	04:33	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	17:02	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:45	JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	08/20	14:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	EMW
Total Organic Carbon	6.6	mg/L	1	1	SM5310 C	08/17	14:10	ALD
RESIDUES								
Solids, Total Dissolved	49	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	3	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/28/15
Lab ID: 3157-15-0032790

Date Collected: 08/12/15 09:55
Collected By: Client

Sample Desc: WA-5 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

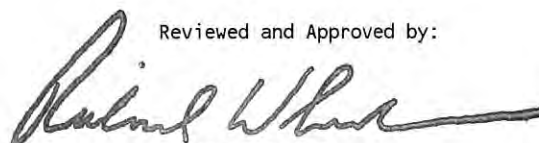
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

Distribution of Reports:
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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032791

Date Collected: 08/12/15 05:00
 Collected By: Client

Sample Desc: WA-6 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	04:47	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	17:03	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:46	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	08/20	14:05	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	6.0	mg/L	1	1	SM5310 C	08/17	14:42	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

Distribution of Reports:
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Reviewed and Approved by:

Richard Wheeler

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032791

Date Collected: 08/12/15 05:00
 Collected By: Client

Sample Desc: WA-6 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

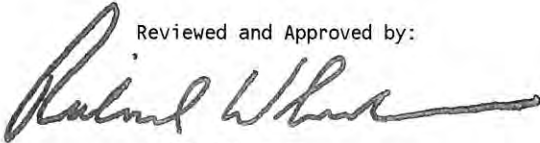
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032792

Date Collected: 08/12/15 08:00
 Collected By: Client

Sample Desc: WA-6 Mid-Depth

Date Received: 08/12/15 16:30

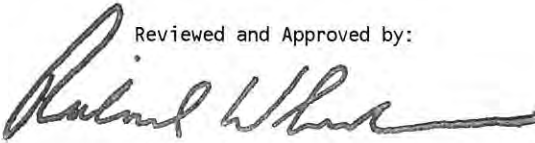
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	05:02	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	17:06	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:49	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	08/20	14:06	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.6	mg/L	1	1	SM5310 C	08/17	14:58	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032793

Date Collected: 08/12/15 08:00
 Collected By: Client

Sample Desc: WA-6 Deep

Date Received: 08/12/15 16:30

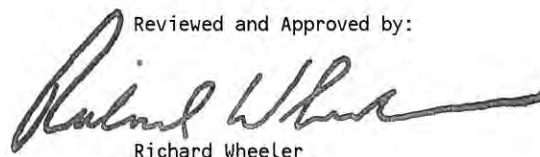
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	0.09	mg/L	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	05:16	JCL
Nitrogen, Nitrate	0.10	mg/L	.05	1	EPA 353.2	08/13	17:07	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:50	JCL
Nitrogen, Total Kjeldahl	0.54	mg/L	.25	1	EPA 351.2	08/20	14:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.2	mg/L	1	1	SM5310 C	08/17	16:17	ALD
RESIDUES								
Solids, Total Dissolved	57	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	41	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032794

Date Collected: 08/12/15 08:20
 Collected By: Client

Sample Desc: WA-7 Surface

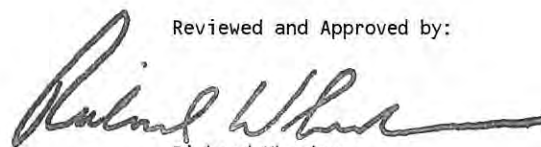
Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	2	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	05:31	JCL
Nitrogen, Nitrate	<.05	mg/l	.05	1	EPA 353.2	08/13	17:08	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	15:51	JCL
Nitrogen, Total Kjeldahl	0.45	mg/l	.25	1	EPA 351.2	08/24	16:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	6.0	mg/l	1	1	SM5310 C	08/17	16:49	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/l	5	1	SM 2540C	08/17	14:00	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/l	1	1	SM 2320 B	08/17	10:45	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032794

Date Collected: 08/12/15 08:20
 Collected By: Client

Sample Desc: WA-7 Surface

Date Received: 08/12/15 16:30

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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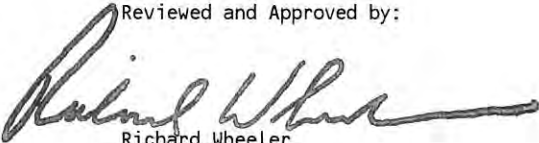
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample placed in the incubator on 08/12/15 at 17:20

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032795

Date Collected: 08/12/15 08:20
 Collected By: Client

Sample Desc: WA-7 Mid-Depth

Date Received: 08/12/15 16:30

PWSID: 3130843

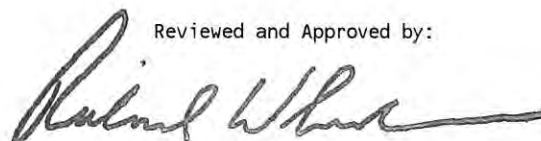
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	05:46	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	08/13	17:09	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:54	JCL
Nitrogen, Total Kjeldahl	0.36	mg/L	.25	1	EPA 351.2	08/24	16:06	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.9	mg/L	1	1	SM5310 C	08/17	17:38	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	08/17	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	08/17	10:45	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032795

Date Collected: 08/12/15 08:20
 Collected By: Client

Sample Desc: WA-7 Mid-Depth

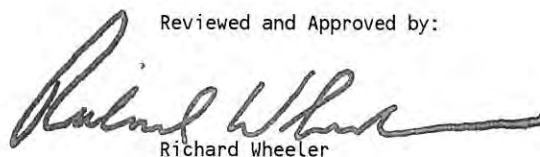
Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The Nitrate matrix spike was low indicating possible sample matrix interference.							

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/28/15
 Lab ID: 3157-15-0032796

Date Collected: 08/12/15 08:20
 Collected By: Client

Sample Desc: WA-7 Deep

Date Received: 08/12/15 16:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	06:00	JCL
Nitrogen, Nitrate	0.11	mg/L	.05	1	EPA 353.2	08/13	17:11	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:55	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	08/24	16:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.5	mg/L	1	1	SM5310 C	08/17	17:54	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	08/17	14:00	TMH
Solids, Total Suspended	12	mg/L	3	1	SM 2540D	08/17	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	08/17	10:45	HRG

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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11g
07/17/15 3:15:36 PM

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Account: 3157 Work Order: 006224 No: 261503
Customer: David Wertz Work Order Description: Walter Reservoir Project Leader: rxw

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 2 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RES

Sample No: 1 Desc: WA-1 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAP

fc, tc, RES

Sample No: 2 Desc: WA-2 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAP

fc, tc, RES

Sample No: 3 Desc: WA-2 Mid-Depth

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAP

Matrix: o Date: 8/12/15
Time: 0905

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 8/12/15
Time: 0730

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 8/12/15
Time: 0730

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

32784

32785

32786

Relinquished by: [Signature] Date: 8/12/15 Time: 1500

Received by: [Signature]

Received for Laboratory by: [Signature] Date: 8/12/15 Time: 1630

Sample entered by: [Signature]

07/17/15 3:15:36 PM

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 261503

Customer: David Wertz Work Order Description: Walter Reservoir

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 2 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: RES

32167

Sample No: 4 Desc: WA-2 Deep

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAP

Matrix: o Date: 8/12/15
Time: 0716

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X l bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

32168

Sample No: 5 Desc: WA-3 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAP

fc, tc, RES

Matrix: o Date: 8/12/15
Time: 0950

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X l bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

32169

Sample No: 6 Desc: WA-4 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAP

fc, tc, RES

Matrix: o Date: 8/12/15
Time: 0945

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X l bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature]

Received by: [Signature]

Date: 8/12/15 Time: 1500

Received for Laboratory by: [Signature]

Date: 8/12/15 Time: 1630

Sample entered by: [Signature]

11g
07/17/15 3:15:37 PM

M. J. REIDER ASSOCIATES, INC.

COFC, PRT
Page: 3/15

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 261503

Customer: David Wertz Work Order Description: Walter Reservoir

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 2 Deg C. If Temp Unacceptable, On Ice? N

Approved By: RES

Sample No: 7 Desc: WA-5 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod, NAP

fc, tc, RES

Sample No: 8 Desc: WA-6 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod, NAP

fc, tc, RES

Sample No: 9 Desc: WA-6 Mid-Depth

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod, NAP

- Matrix: o Date: 8/12/15 Time: 0955
- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 - B - 1 X 8oz Alk p w/ Cool to 6 C;
 - C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 - D - 1 X L bod p w/ Cool to 6 C;
 - E - 1 X Pt no3no2 p w/ Cool to 6 C;
 - F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
- Matrix: o Date: 8/12/15 Time: 0800
- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 - B - 1 X 8oz Alk p w/ Cool to 6 C;
 - C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 - D - 1 X L bod p w/ Cool to 6 C;
 - E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]

Received by: [Signature]

Date: 8/12/15 Time: 1500

Received for laboratory by: [Signature]

Date: 8/12/15 Time: 1630

Sample entered by: [Signature]

11g
07/17/15 3:15:37 PM

M. J. REIDER ASSOCIATES, INC.

COFC, PRT
Page: 4/5

Chain of Custody

Account: 3157

Work Order: 006224

Project Leader: rxw

No: 261503

Customer: David Wertz

Remarks:

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Total Sampling Time (hours):

Bottle Prep by:

Samplers:

WACIK

Laboratory Receipt Temp: 2 Deg C. If Temp Unacceptable, On Ice?

Approved By: PES

N

32793

Sample No: 10 Desc: WA-6 Deep

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAH

Matrix: o

Date: 8/12/15
Time: 0800

32794

Sample No: 11 Desc: WA-7 Surface

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAH

fc, tc, PES

Matrix: o

Date: 8/12/15
Time: 0820

32795

Sample No: 12 Desc: WA-7 Mid-Depth

nh3-n, tkm, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-p04-p, o-p04, bod, NAH

Matrix: o

Date: 8/12/15
Time: 0820

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X 1 bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature]
Date: 8/12/15 Time: 1500

Received by: [Signature]

Received for laboratory by: [Signature]
Date: 8/12/15 Time: 1630

Sample entered by: [Signature]

11g
07/17/15 3:15:37 PM

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 261503

Customer: David Wertz

Address: Tetra Tech (Belzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACK

Remarks: _____

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 2 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: DES

Sample No: 13 Desc: WA-7 Deep

nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4⁴-p, o-po4, bod, NH₄⁺

Matrix: 0

Date: 8/12/15
Time: 0820

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2) ;
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]
Date: 8/12/15 Time: 1500

Received by: [Signature]

Received for laboratory by: [Signature]
Date: 8/12/15 Time: 1630

Sample entered by: [Signature]

Sample entered by: [Signature]



CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036157

Date Collected: 09/01/15 09:30
 Collected By: Client

Sample Desc: WA-1 Surface

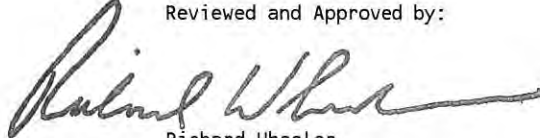
Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	920	mpn/100mL	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	14:50	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:53	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:40	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	09/03	13:58	JCL
OTHER								
Biochemical Oxygen Demand	3	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.7	mg/L	1	1	SM5310 C	09/03	12:27	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	09/08	14:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036157

Date Collected: 09/01/15 09:30
Collected By: Client

Date Received: 09/01/15 17:50

Sample Desc: WA-1 Surface

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

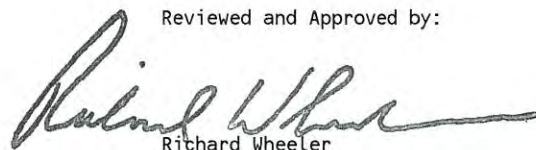
COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036158

Date Collected: 09/01/15 07:15
 Collected By: Client

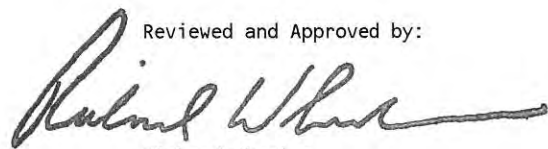
Sample Desc: WA-2 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	5	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	1400	mpn/100mL	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORIMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:04	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:53	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:42	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	09/03	14:01	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.4	mg/L	1	1	SM5310 C	09/03	12:44	ALD
RESIDUES								
Solids, Total Dissolved	50	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	14:30	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036158

Date Collected: 09/01/15 07:15
Collected By: Client

Date Received: 09/01/15 17:50

Sample Desc: WA-2 Surface

PWSID: 3130843

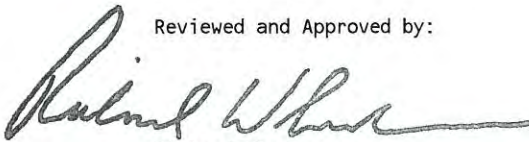
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036159

Date Collected: 09/01/15 07:15
 Collected By: Client

Sample Desc: WA-2 Mid-Depth

Date Received: 09/01/15 17:50

PWSID: 3130843

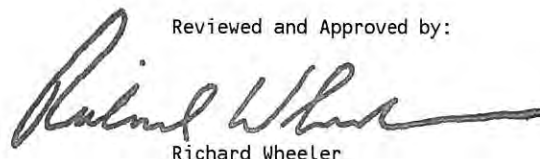
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:19	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:56	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:43	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	09/03	14:02	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.1	mg/L	1	1	SM5310 C	09/03	13:00	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	09/08	14:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
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Reviewed and Approved by:


 Richard Wheeler

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036160

Date Collected: 09/01/15 07:15
 Collected By: Client

Sample Desc: WA-2 Deep

Date Received: 09/01/15 17:50

PWSID: 3130843

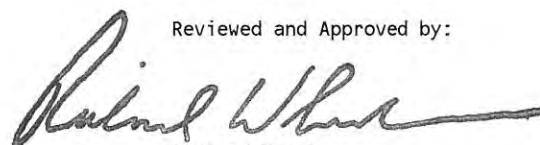
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:34	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:57	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:44	JCL
Nitrogen, Total Kjeldahl	0.51	mg/L	.25	1	EPA 351.2	09/03	14:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.6	mg/L	1	1	SM5310 C	09/03	14:04	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	12	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	09/08	14:45	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036161

Date Collected: 09/01/15 09:50
 Collected By: Client

Sample Desc: WA-3 Surface

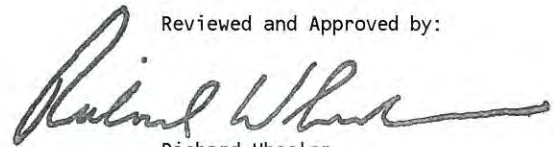
Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	28	/100ml	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/02	15:48	JCL
Nitrogen, Nitrate	0.08	mg/l	.05	1	EPA 353.2	09/02	14:58	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/02	09:45	JCL
Nitrogen, Total Kjeldahl	0.37	mg/l	.25	1	EPA 351.2	09/03	14:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.4	mg/l	1	1	SM5310 C	09/03	14:38	ALD
RESIDUES								
Solids, Total Dissolved	91	mg/l	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/l	1	1	SM 2320 B	09/08	15:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036161

Date Collected: 09/01/15 09:50
Collected By: Client

Sample Desc: WA-3 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

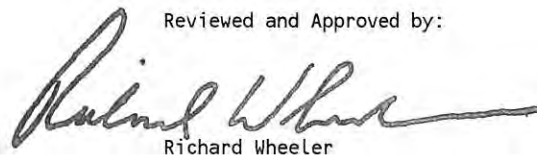
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036162

Date Collected: 09/01/15 10:30
 Collected By: Client

Sample Desc: WA-4 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	42	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	16:03	JCL
Nitrogen, Nitrate	0.08	mg/L	.05	1	EPA 353.2	09/02	14:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:46	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	09/03	14:05	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	3.1	mg/L	1	1	SM5310 C	09/03	14:53	ALD
RESIDUES								
Solids, Total Dissolved	77	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	09/08	15:00	HRG

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036162

Date Collected: 09/01/15 10:30
Collected By: Client

Sample Desc: WA-4 Surface

Date Received: 09/01/15 17:50

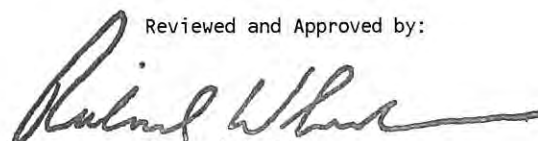
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

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Reviewed and Approved by:

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036163

Date Collected: 09/01/15 10:45
 Collected By: Client

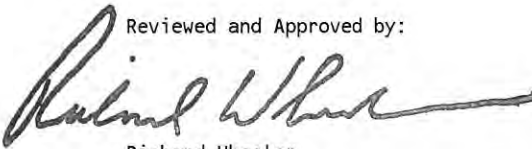
Sample Desc: WA-5 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	24	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	1600	mpn/100mL	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	16:18	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:47	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	09/03	14:06	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	3.2	mg/L	1	1	SM5310 C	09/03	15:23	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	3	mg/L	1	1	SM 2320 B	09/08	15:00	HRG

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036163

Date Collected: 09/01/15 10:45
Collected By: Client

Sample Desc: WA-5 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

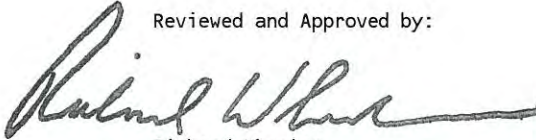
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036164

Date Collected: 09/01/15 08:00
 Collected By: Client

Sample Desc: WA-6 Surface

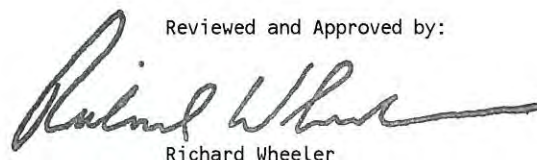
Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	09/01	18:55	PLW
Total Coliform	2400	mpn/100mL	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	16:32	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:01	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:48	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	09/03	14:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.2	mg/L	1	1	SM5310 C	09/03	16:10	ALD
RESIDUES								
Solids, Total Dissolved	74	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	09/08	15:00	HRG

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036164

Date Collected: 09/01/15 08:00
Collected By: Client

Sample Desc: WA-6 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

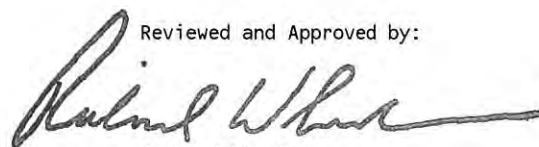
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036165
 Date Collected: 09/01/15 08:00
 Collected By: Client
 Date Received: 09/01/15 17:50

Sample Desc: WA-6 Mid-Depth

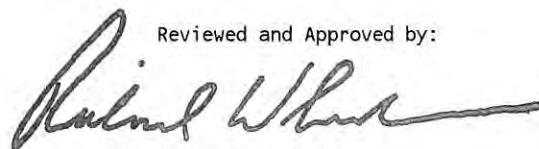
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/02	16:47	JCL
Nitrogen, Nitrate	<.05	mg/l	.05	1	EPA 353.2	09/02	15:04	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/02	09:51	JCL
Nitrogen, Total Kjeldahl	0.38	mg/l	.25	1	EPA 351.2	09/03	14:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.3	mg/l	1	1	SM5310 C	09/03	16:40	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/l	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/l	1	1	SM 2320 B	09/08	15:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036166

Date Collected: 09/01/15 08:00
 Collected By: Client

Sample Desc: WA-6 Deep

Date Received: 09/01/15 17:50

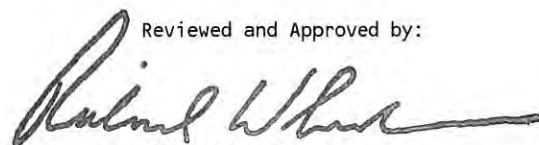
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	17:01	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:05	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:52	JCL
Nitrogen, Total Kjeldahl	0.46	mg/L	.25	1	EPA 351.2	09/03	14:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.3	mg/L	1	1	SM5310 C	09/03	16:57	ALD
RESIDUES								
Solids, Total Dissolved	81	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	7	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	15:15	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036167

Date Collected: 09/01/15 08:30
 Collected By: Client

Sample Desc: WA-7 Surface

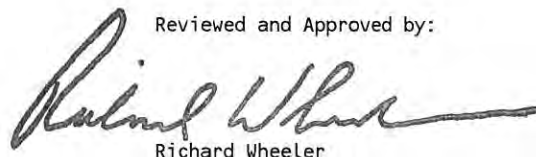
Date Received: 09/01/15 17:50

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	09/01	18:55	PLW
Total Coliform	1400	mpn/100mL	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	17:45	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:06	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:53	JCL
Nitrogen, Total Kjeldahl	0.46	mg/L	.25	1	EPA 351.2	09/03	14:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.5	mg/L	1	1	SM5310 C	09/03	17:13	ALD
RESIDUES								
Solids, Total Dissolved	69	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	15:15	HRG

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Reviewed and Approved by:


 Richard Wheeler

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036167

Date Collected: 09/01/15 08:30
Collected By: Client

Sample Desc: WA-7 Surface

Date Received: 09/01/15 17:50

PWSID: 3130843

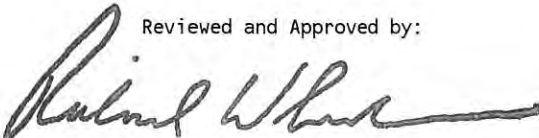
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/01/15 at 18:30.

Distribution of Reports:
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036168

Date Collected: 09/01/15 08:30
 Collected By: Client

Sample Desc: WA-7 Mid-Depth

Date Received: 09/01/15 17:50

PWSID: 3130843

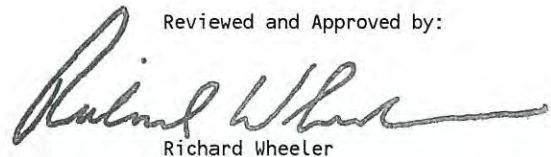
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	18:00	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:07	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:56	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	09/03	14:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.7	mg/L	1	1	SM5310 C	09/03	17:30	ALD
RESIDUES								
Solids, Total Dissolved	72	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	09/08	15:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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ACIL Seal of Excellence



CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036169

Date Collected: 09/01/15 09:55
 Collected By: Client

Sample Desc: WA-7 Deep

Date Received: 09/01/15 17:50

PWSID: 3130843

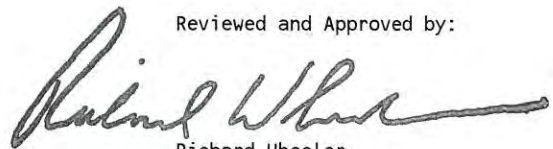
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.05	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:45	HRG
Phosphorus as P, Total	0.09	mg/L	.01	1	SM 4500P-E	09/02	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	18:14	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:10	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:57	JCL
Nitrogen, Total Kjeldahl	0.77	mg/L	.25	1	EPA 351.2	09/03	14:16	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.9	mg/L	1	1	SM5310 C	09/03	18:02	ALD
RESIDUES								
Solids, Total Dissolved	79	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	64	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	09/08	15:30	HRG

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Chain of Custody

Account: 3157

Work Order: 006224

Project Leader: rxw

No: 262654

Customer: David Wertz

Work Order Description: Walter Reservoir

Remarks:

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Total Sampling Time (hours): 5 Bottle Prep by: _____

Laboratory Receipt Temp: 5 Deg C. (If Temp Unacceptable, On Ice: Y N

Approved By: ARM

36157 Sample No: 1 Desc: WA-1 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP
no2-n, no3-n, d-po4-p, o-po4, bod, NAP
fc, tc, NAP

36158 Sample No: 2 Desc: WA-2 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP
no2-n, no3-n, d-po4-p, o-po4, bod, NAP
fc, tc, NAP

36159 Sample No: 3 Desc: WA-2 Mid-Depth
 nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP
no2-n, no3-n, d-po4-p, o-po4, bod, NAP
NAP

Matrix: o Date: 9/1/15
 Time: 0930
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 9/1/15
 Time: 0715
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 9/1/15
 Time: 0715
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]

Received for laboratory by: [Signature]

Date: 9/1/15 Time: 345

Date: 9-1-15 Time: 1750

ARM 9-1-15 1630

Sample entered by: rxw

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 262654
Customer: David Wertz Work Order Description: Walter Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Total Sampling Time (hours): 5 Bottle Prep by: _____

Laboratory Receipt Temp: 5 Deg C If Temp Unacceptable, On Ice? Y N
Approved By: APM

36160 Sample No: 4 Desc: WA-2 Deep

nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP

no2-n, no3-n, d-po4-p, o-po4, bod, NAP

36161 Sample No: 5 Desc: WA-3 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP

no2-n, no3-n, d-po4-p, o-po4, bod, NAP

36162 Sample No: 6 Desc: WA-4 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP

no2-n, no3-n, d-po4-p, o-po4, bod, NAP

fc, tc, NAP

Matrix: o Date: 9/1/15
Time: 0715

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o Date: 9/1/15
Time: 0950

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 9/1/15
Time: 1030

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

1 X 1000 pc
1 container
broken upon receipt

APM-9-1-15

Received for laboratory by: [Signature]

Received by: [Signature]

Date: 9-1-15 Time: 1750

Date: 9/1/15 Time: 345

Date: 9-1-15 Time: 1750

Date: 9/1/15 Time: 1630

Sample entered by: MTL

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 262654
 Customer: David Wertz Work Order Description: Walter Reservoir
 Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201
 Phone: 703-387-5516 Ext: _____
 Samplers: WACIK

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: S Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: Agm

- Sample No: 7 Desc: WA-5 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc, ^{NAP}
 no2-n, no3-n, d-po4-p, o-po4, bod, ^{ATG NAP}
 fc, tc, ^{NAP}
- Sample No: 8 Desc: WA-6 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc, ^{NAP}
 no2-n, no3-n, d-po4-p, o-po4, bod, ^{ATG NAP}
 fc, tc, ^{NAP}
- Sample No: 9 Desc: WA-6 Mid-Depth
 nh3-n, tkn, alk, tds, tss, po4-p, toc, ^{NAP}
 no2-n, no3-n, d-po4-p, o-po4, bod, ^{ATG NAP}

- Matrix: 0 Date: 9/1/15
 Time: 1045
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
- Matrix: 0 Date: 9/1/15
 Time: 0800
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
- Matrix: 0 Date: 9/1/15
 Time: 0800
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]
 Date: 9/1/15 Time: 345
Agm 9/1/15 1630

Received for laboratory by: [Signature]
 Date: 9-1-15 Time: 1750

Sample entered by: RF

M. J. REIDER ASSOCIATES, INC.

IXW
08/07/15 8:01:09 AM

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 262654
 Customer: David Wertz Work Order Description: Walter Resevior
 Address: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201
 Phone: 703-387-5516 Ext: _____
 Samplers: WACIK

Remarks: _____
 Total Sampling Time (hours): _____ Bottle Prep by: _____
 Laboratory Receipt Temp: 5 Deg C If Temp Unacceptable, On Ice: Y
 Approved By: APM

=====

36166 Sample No: 10 Desc: WA-6 Deep
 nh3-n, tkn, alk, tds, tss, po4-p, toc, NAR
 no2-n, no3-n, d-po4-p, o-po4, bod, NAR
 36167 Sample No: 11 Desc: WA-7 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc, NAR
 no2-n, no3-n, d-po4-p, o-po4, bod, NAR
 fc, tc, NAR
 36168 Sample No: 12 Desc: WA-7 Mid-Depth
 nh3-n, tkn, alk, tds, tss, po4-p, toc, NAR
 no2-n, no3-n, d-po4-p, o-po4, bod, NAR

Matrix: o Date: 9/1/15
 Time: 0830
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 Matrix: o Date: 9/1/15
 Time: 0830
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;
 F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
 Matrix: o Date: 9/1/15
 Time: 0830
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]
 Date: 9/1/15 Time: 345
ASMA 9/1/15 1630

Received for Laboratory by: [Signature]
 Date: 9-1-15 Time: 1750
 Sample entered by: ms

M. J. REIDER ASSOCIATES, INC.

rxw
08/07/15 8:01:09 AM

Chain of Custody

Account: 3157 Work Order: 006224 Project Leader: rxw No: 262654
 Customer: David Wertz Work Order Description: Walter Reservoir
 Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201
 Phone: 703-387-5516 Ext: _____
 Samplers: WACIK

Remarks: _____
 Total Sampling Time (hours): _____ Bottle Prep by: _____
 Laboratory Receipt Temp: S Deg C If Temp Unacceptable, On Ice Y N
 Approved By: ASW

36169
 Sample No: 13 Desc: WA-7 Deep
 nh3-n, tkn, alk, tds, tss, po4-p, toc, P
 no2-n, no3-n, d-po4-p, o-po4, bod, NAD
 NR AG

Matrix: o Date: 9/1/15
 Time: 0955
 A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
 B - 1 X 8oz Alk p w/ Cool to 6 C;
 C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
 D - 1 X L bod p w/ Cool to 6 C;
 E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]
 Date: 9/1/15 Time: 345
 Received for laboratory by: [Signature]
 Date: 9-1-15 Time: 1750
 Sample entered by: MRZ
 ARM 9/1/15 1630